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# Representations by Certain Sextenary Quadratic Forms Whose Coefficients Are 1, 2, 3 and 6

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## Abstract

**Here, we determine formulae, for the numbers of representations of a positive integer by certain sextenary quadratic forms whose coefficients are 1, 2, 3 and 6.**

## Keywords

**Sextenary Quadratic Forms, Representations, Theta Functions, Dedekind Eta Function, Eisenstein Series, Eisenstein Forms, Modular Forms, Cusp Forms**

## 1. Introduction

The divisor function $\sigma_i(n)$ is defined for a positive integer $i$ by

$$\sigma_i(n) := \sum_{d \text{ positive integer}, d|n} d^i, \text{ if } n \text{ is a positive integer, and}$$

$$\sigma_i(n) := 0 \text{ if } n \text{ is not a positive integer.}$$

The Dedekind eta function and the theta function are defined by

$$\eta(z) := q^{1/24}\prod_{n=1}^{\infty}\left(1-q^n\right),\ \varphi(q) := \sum_{n\in\mathbb{Z}} q^{n^2},$$

where

$$q := \mathrm{e}^{2\pi i z},\ z \in H = \{x+iy : y>0\},$$

and an eta quotient of level $N$ is defined by

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$$f(z) := \prod_{m|N} \eta(mz)^{a_m},\ N, m \in \mathbb{N},\ a_m \in Z. \tag{1}$$

It is important and interesting to determine explicit formulas of the representation number of positive definite quadratic forms.

Here we give the following Lemma, see ([1], Theorem 1.64), about the modularity of an eta quotient.

**Lemma 1**. An eta quotient of level $N$ is a meromorphic modular form of weight $\frac{1}{2}\sum_{m|N} a_m$ on $\Gamma_0(N)$ having rational coefficients with respect to $q$ if

a) $\sum_{m|N} a_m$ is even,

b) $\prod_{m|N} m a_m \equiv \sum_{m|N} \frac{N}{m} a_m \equiv 0 \bmod 24$,

c) $\prod_{m|N} m^{a_m}$ is a square in $\mathbb{Q}$.

For $a_1, \cdots, a_{16} \in \mathbb{N}$ and a nonnegative integer $n$, we define

$$N(a_1, \cdots, a_{16}; n) := card\left\{(x_1, \cdots, x_{16}) \in \mathbb{Z}^{16} \mid n = a_1 x_1^2 + \cdots + a_{16} x_{16}^2\right\}.$$

Clearly $N(a_1, \cdots, a_{16}; 0) = 1$, and without loss of generality we can assume that $a_1 \le \cdots \le a_{16}$.

Now, let's consider sextenary quadratic forms of the form

$$Q := x_1^2 + \cdots + x_a^2 + 2\left(x_{a+1}^2 + \cdots + x_{a+b}^2\right) + 3\left(x_{a+b+1}^2 + \cdots + x_{a+b+c}^2\right) + 6\left(x_{a+b+c+1}^2 + \cdots + x_{a+b+c+d=16}^2\right),$$

where $a, b, c \in \mathbb{Z}, 0 \le a \le 16, 0 \le b \le 16, 0 \le c \le 16, 0 \le d \le 16$.

We write $N\left(1^a, 2^b, 3^c, 6^d; n\right)$ to denote the number of representations of $n$ by a sextenary quadratic form $(a, b, c, d)$. Its theta function is obviously

$$\Theta_Q = \varphi^a(q)\varphi^b\left(q^2\right)\varphi^c\left(q^3\right)\varphi^d\left(q^6\right).$$

Formulae for $N\left(1^{2i}, 2^{2j}, 3^{2k}, 6^{2l}; n\right)$ for the nine octonary quadratic forms $(2i, 2j, 2k, 2l) = (8, 0, 0, 0)$, $(2, 6, 0, 0)$, $(4, 4, 0, 0)$, $(6, 2, 0, 0)$, $(2, 0, 6, 0)$, $(4, 0, 4, 0)$, $(6, 0, 2, 0)$, $(4, 0, 0, 4)$, and $(0, 4, 4, 0)$ appear in the literature, (cf. [2]-[12]). Alaca and Williams have obtained some results on sextenary quadratic forms in terms of the functions $G_4$ and $H_4$, see [13] [14]. There are more works on representation number of sextenary quadratic forms in [15]-[17]. Other methods for representation number have been used in (cf. [7] [10] [12] [18] [19]). Here, we will classify all fourtuples $(a, b, c, d)$ for which $\Theta_Q$ is a modular form of weight 8 with level 24. Then we will obtain their representation numbers in terms of the coefficients of Eisenstein series and some eta quotients.

First, by the following Theorem, we characterize the facts that

$$\varphi^a(q)\varphi^b\left(q^2\right)\varphi^c\left(q^3\right)\varphi^d\left(q^6\right)$$

are in $M_8\left(\Gamma_0(24)\right)$.

**Theorem 1**. Let

$$Q := x_1^2 + \cdots + x_a^2 + 2\left(x_{a+1}^2 + \cdots + x_{a+b}^2\right) + 3\left(x_{a+b+1}^2 + \cdots + x_{a+b+c}^2\right) + 6\left(x_{a+b+c+1}^2 + \cdots + x_{a+b+c+d=16}^2\right)$$

where, $a, b, c \in \mathbb{Z}, 0 \le a \le 16, 0 \le b \le 16, 0 \le c \le 16, 0 \le d \le 16$, be a sextenary quadratic form. Then its theta series is of the form

$$\begin{aligned}\Theta_Q &= \varphi^a(q)\varphi^b\left(q^2\right)\varphi^c\left(q^3\right)\varphi^d\left(q^6\right)\\ &= \eta^{-2a}(q)\eta^{5a-2b}\left(q^2\right)\eta^{-2c}\left(q^3\right)\eta^{5b-2a}\left(q^4\right)\eta^{5c-2d}\left(q^6\right)\eta^{-2b}\left(q^8\right)\eta^{5d-2c}\left(q^{12}\right)\eta^{-2d}\left(q^{24}\right).\end{aligned}$$

Moreover, it is in $M_8\left(\Gamma_0(24)\right)$ if and only if $(a, b, c, d)$ is given in the **Table 1**. Here we also see that $a, b, c, d$ are either both even or both odd.

*Proof.* It follows from the Lemma 1, holomorphicity criterion in ([20] Corollary 2.3, p. 37) and the fact

**Table 1.** Sextenary quadratic forms

| | | | |
|---|---|---|---|
| (0 2 2 12), | (0 2 4 10), | (0 2 6 8), | (0 2 8 6) |
| (0 2 10 4), | (0 2 12 2), | (0 2 14 0), | (0 4 2 10) |
| (0 4 4 8), | (0 4 6 6), | (0 4 8 4), | (0 4 10 2) |
| (0 4 12 0), | (0 6 2 8), | (0 6 4 6), | (0 6 6 4) |
| (0 6 8 2), | (0 6 10 0), | (0 8 2 6), | (0 8 4 4) |
| (0 8 6 2), | (0 8 8 0), | (0 10 2 4), | (0 10 4 2) |
| (0 10 6 0), | (0 12 2 2), | (0 12 4 0), | (0 14 2 0) |
| (1 1 1 13), | (1 1 3 11), | (1 1 5 9), | (1 1 7 7) |
| (1 1 9 5), | (1 1 11 3), | (1 1 13 1), | (1 3 1 11) |
| (1 3 3 9), | (1 3 5 7), | (1 3 7 5), | (1 3 9 3) |
| (1 3 11 1), | (1 5 1 9), | (1 5 3 7), | (1 5 5 5) |
| (1 5 7 3), | (1 5 9 1), | (1 7 1 7), | (1 7 3 5) |
| (1 7 5 3), | (1 7 7 1), | (1 9 1 5), | (1 9 3 3) |
| (1 9 5 1), | (1 11 1 3), | (1 11 3 1), | (1 13 1 1) |
| (2 0 0 14), | (2 0 2 12), | (2 0 4 10), | (2 0 6 8) |
| (2 0 8 6), | (2 0 10 4), | (2 0 12 2), | (2 0 14 0) |
| (2 2 0 12), | (2 2 2 10), | (2 2 4 8), | (2 2 6 6) |
| (2 2 8 4), | (2 2 10 2), | (2 2 12 0), | (2 4 0 10) |
| (2 4 2 8), | (2 4 4 6), | (2 4 6 4), | (2 4 8 2) |
| (2 4 10 0), | (2 6 0 8), | (2 6 2 6), | (2 6 4 4) |
| (2 6 6 2), | (2 6 8 0), | (2 8 0 6), | (2 8 2 4) |
| (2 8 4 2), | (2 8 6 0), | (2 10 0 4), | (2 10 2 2) |
| (2 10 4 0), | (2 12 0 2), | (2 12 2 0), | (2 14 0 0) |
| (3 1 1 11), | (3 1 3 9), | (3 1 5 7), | (3 1 7 5) |
| (3 1 9 3), | (3 1 11 1), | (3 3 1 9), | (3 3 3 7) |
| (3 3 5 5), | (3 3 7 3), | (3 3 9 1), | (3 5 1 7) |
| (3 5 3 5), | (3 5 5 3), | (3 5 7 1), | (3 7 1 5) |
| (3 7 3 3), | (3 7 5 1), | (3 9 1 3), | (3 9 3 1) |
| (3 11 1 1), | (4 0 0 12), | (4 0 2 10), | (4 0 4 8) |
| (4 0 6 6), | (4 0 8 4), | (4 0 10 2), | (4 0 12 0) |
| (4 2 0 10), | (4 2 2 8), | (4 2 4 6), | (4 2 6 4) |
| (4 2 8 2), | (4 2 10 0), | (4 4 0 8), | (4 4 2 6) |
| (4 4 4 4), | (4 4 6 2), | (4 4 8 0), | (4 6 0 6) |
| (4 6 2 4), | (4 6 4 2), | (4 6 6 0), | (4 8 0 4) |
| (4 8 2 2), | (4 8 4 0), | (4 10 0 2), | (4 10 2 0) |
| (4 12 0 0), | (5 1 1 9), | (5 1 3 7), | (5 1 5 5) |
| (5 1 7 3), | (5 1 9 1), | (5 3 1 7), | (5 3 3 5) |
| (5 3 5 3), | (5 3 7 1), | (5 5 1 5), | (5 5 3 3) |
| (5 5 5 1), | (5 7 1 3), | (5 7 3 1), | (5 9 1 1) |

**Continued**

| | | | |
|---|---|---|---|
| (6 0 0 10), | (6 0 2 8), | (6 0 4 6), | (6 0 6 4) |
| (6 0 8 2), | (6 0 10 0), | (6 2 0 8), | (6 2 2 6) |
| (6 2 4 4), | (6 2 6 2), | (6 2 8 0), | (6 4 0 6) |
| (6 4 2 4), | (6 4 4 2), | (6 4 6 0), | (6 6 0 4) |
| (6 6 2 2), | (6 6 4 0), | (6 8 0 2), | (6 8 2 0) |
| (6 10 0 0), | (7 1 1 7), | (7 1 3 5), | (7 1 5 3) |
| (7 1 7 1), | (7 3 1 5), | (7 3 3 3), | (7 3 5 1) |
| (7 5 1 3), | (7 5 3 1), | (7 7 1 1), | (8 0 0 8) |
| (8 0 2 6), | (8 0 4 4), | (8 0 6 2), | (8 0 8 0) |
| (8 2 0 6), | (8 2 2 4), | (8 2 4 2), | (8 2 6 0) |
| (8 4 0 4), | (8 4 2 2), | (8 4 4 0), | (8 6 0 2) |
| (8 6 2 0), | (8 8 0 0), | (9 1 1 5), | (9 1 1 3) |
| (9 1 5 1), | (9 3 1 3), | (9 3 3 1), | (9 5 1 1) |
| (10 0 0 6), | (10 0 2 4), | (10 0 4 2), | (10 0 6 0) |
| (10 2 0 4), | (10 2 2 2), | (10 2 4 0), | (10 4 0 2) |
| (10 4 2 0), | (10 6 0 0), | (11 1 1 3), | (11 1 3 1) |
| (11 3 1 1), | (12 0 0 4), | (12 0 2 2), | (12 0 4 0) |
| (12 2 0 2), | (12 2 2 0), | (12 4 0 0), | (13 1 1 1) |
| (14 0 0 2), | (14 0 2 0), | (14 2 0 0), | (16 0 0 0) |

that

$$\varphi(q)=\frac{\eta^5(q^2)}{\eta^2(q)\eta^2(q^4)}.$$

The condition $1^{a_1}2^{a_2}3^{a_3}4^{a_4}6^{a_6}8^{a_8}12^{a_{12}}24^{a_{24}}$ is a square of a rational number implies that either $a,b,c,d$ are both even or both odd integers.

Now let,

$$E_8(q)=1+480\sum_{n=1}^{\infty}\sigma_7(n)q^n,$$

$$A_1(q):=\eta(z)^8\eta(2z)^8=q\prod_{n=1}^{\infty}\left(1-q^n\right)^8\left(1-q^{2n}\right)^8,$$

$$A_2(q):=\frac{\eta(2z)^{30}\eta(4z)^2}{\eta(z)^{12}\eta(8z)^4}=q\prod_{n=1}^{\infty}\frac{\left(1-q^{2n}\right)^{30}\left(1-q^{4n}\right)^2}{\left(1-q^n\right)^{12}\left(1-q^{8n}\right)^4},$$

$$A_3(q):=\frac{\eta(2z)^{16}\eta(4z)^{16}}{\eta(z)^8\eta(8z)^8}=q\prod_{n=1}^{\infty}\frac{\left(1-q^{2n}\right)^{16}\left(1-q^{4n}\right)^{16}}{\left(1-q^n\right)^8\left(1-q^{8n}\right)^8},$$

$\Delta_{3,8}$ the unique newform in $S_8\left(\Gamma_0(3)\right)$,

$$A_4(q):=\frac{\eta(2z)^{26}\eta(3z)^6}{\eta(z)^{10}\eta(6z)^6}=q\prod_{n=1}^{\infty}\frac{\left(1-q^{2n}\right)^{26}\left(1-q^{3n}\right)^6}{\left(1-q^n\right)^{10}\left(1-q^{6n}\right)^6},$$

$$A_5 := \frac{\eta(2z)^8\eta(3z)^4\eta(12z)^8}{\eta(z)^4} = q^5\prod_{n=1}^{\infty}\frac{(1-q^{2n})^8(1-q^{3n})^4(1-q^{12n})^8}{(1-q^n)^4},$$

$$A_6 := \frac{\eta(z)^{14}\eta(12z)^8}{\eta(2z)^4\eta(3z)^2} = q^4\prod_{n=1}^{\infty}\frac{(1-q^n)^{14}(1-q^{12n})^8}{(1-q^{2n})^4(1-q^{3n})^2},$$

$$A_7 := \frac{\eta(2z)^3\eta(3z)^4\eta(4z)^4\eta(6z)^3\eta(8z)^3\eta(12z)^4}{\eta(z)^4\eta(24z)}$$
$$= q^4\prod_{n=1}^{\infty}\frac{(1-q^{2n})^3(1-q^{3n})^4(1-q^{4n})^4(1-q^{6n})^3(1-q^{8n})^3(1-q^{12n})^4}{(1-q^n)^4(1-q^{24n})},$$

$$A_8 := q^6\frac{\eta(2z)^3\eta(3z)^4\eta(4z)^5\eta(6z)^3\eta(8z)^4\eta(24z)^4}{\eta(z)^4\eta(12z)^3}$$
$$= q^6\prod_{n=1}^{\infty}\frac{(1-q^{2n})^3(1-q^{3n})^4(1-q^{4n})^5(1-q^{6n})^3(1-q^{8n})^4(1-q^{24n})^4}{(1-q^n)^4(1-q^{12n})^3},$$

$$A_9 := q^5\frac{\eta(2z)^4\eta(3z)^4\eta(4z)\eta(6z)^4\eta(8z)^5\eta(12z)\eta(24z)}{\eta(z)^4}$$
$$= q^5\prod_{n=1}^{\infty}\frac{(1-q^{2n})^4(1-q^{3n})^4(1-q^{4n})(1-q^{6n})^4(1-q^{8n})^5(1-q^{12n})(1-q^{24n})}{(1-q^n)^4}.$$

**Theorem 2**. The set

$$\{E_8, E_8(2z), E_8(3z), E_8(4z), E_8(6z), E_8(8z), E_8(12z), E_8(24z),$$
$$A_1, A_1(2z), A_1(3z), A_1(4z), A_1(6z), A_1(12z), A_2, A_2(3z), A_3,$$
$$A_3(3z), \Delta_{3,8}, \Delta_{3,8}(2z), \Delta_{3,8}(4z), \Delta_{3,8}(8z), A_4, A_4(2z), A_4(4z),$$
$$A_5, A_5(2z), A_6, A_6(2z), A_7, A_8, A_9\}$$

is a basis of $M_8(\Gamma_0(24))$. Moreover, the unique newform in $S_8(\Gamma_0(2))$ is $A_1$, the unique newform in $S_8(\Gamma_0(6))$ is $A_4$, the two unique newforms in $S_8(\Gamma_0(8))$ are

$$\Delta_{8,8,1} = -A_1 - 24A_1(2z) - 256A_1(4z) + 2A_3,$$

$$\Delta_{8,8,2} = -A_1 - 8A_1(2z) + 256A_1(4z) - 4A_2 + 6A_3,$$

the two unique newforms in $S_8(\Gamma_0(12))$ are

$$\Delta_{12,8,1} = -\frac{23}{9}A_1 - \frac{304}{45}A_1(2z) - 81A_1(3z) - \frac{1296}{5}A_1(6z) - \frac{744}{5}\Delta_{3,8}(2z)$$
$$-\frac{864}{5}\Delta_{3,8}(4z) + \frac{32}{9}A_4 + \frac{896}{9}A_4(2z) - 864A_5 - 48A_6,$$

$$\Delta_{12,8,2}(q) = -\frac{49}{45}A_1 - \frac{64}{45}A_1(2z) - \frac{81}{5}A_1(3z) + \frac{5184}{5}A_1(6z) + \frac{6}{5}\Delta_{3,8} - \frac{828}{5}\Delta_{3,8}(2z)$$
$$-\frac{1344}{5}\Delta_{3,8}(4z) + \frac{8}{9}A_4 + \frac{1280}{9}A_4(2z) - 1728A_5 - 48A_6,$$

and the three unique newforms in $S_8\left(\Gamma_0(24)\right)$ are

$$\begin{aligned}\Delta_{24,8,1} =& -\frac{799}{171}A_1 - \frac{2984}{285}A_1(2z) + \frac{2511}{19}A_1(3z) + \frac{282368}{855}A_1(4z) + \frac{206712}{95}A_1(6z)\\ &+ \frac{2426112}{95}A_1(12z) - \frac{12}{19}A_2 + \frac{968}{95}A_2(3z) + \frac{313536}{95}A_3 - \frac{69632}{95}A_3(3z)\\ &+ \frac{736}{171}\Delta_{3,8} - \frac{4352}{57}\Delta_{3,8}(2z) - \frac{16384}{9}\Delta_{3,8}(4z) - 4\Delta_{3,8}(8z) - \frac{1620}{19}A_4 + 6A_4(2z)\\ &- \frac{1458}{19}A_4(4z) + \frac{41472}{19}A_5 + \frac{304128}{19}A_5(2z) + \frac{15360}{19}A_6(2z) - \frac{18432}{19}A_7\\ &+ \frac{15360}{19}A_8 + \frac{27648}{19}A_9,\end{aligned}$$

$$\begin{aligned}\Delta_{24,8,2} =& -\frac{33187}{7695}A_1 - \frac{29000}{171}A_1(2z) + \frac{6363}{95}A_1(3z) + \frac{6506752}{7695}A_1(4z) - \frac{22968}{19}A_1(6z)\\ &- \frac{2573568}{95}A_1(12z) + \frac{148}{855}A_2 + \frac{21608}{855}A_2(3z) - \frac{7839808}{855}A_3 - \frac{16928768}{855}A_3(3z)\\ &+ \frac{4832}{1539}\Delta_{3,8} + \frac{10496}{171}\Delta_{3,8}(2z) + \frac{704512}{81}\Delta_{3,8}(4z) + \frac{4320}{19}A_4 + 2A_4(2z)\\ &- \frac{7398}{19}A_4(4z) + \frac{20736}{19}A_5 - \frac{1569792}{19}A_5(2z) - \frac{60416}{19}A_6(2z) - \frac{48128}{19}A_7\\ &- \frac{60416}{19}A_8 + \frac{140288}{19}A_9,\end{aligned}$$

$$\begin{aligned}\Delta_{24,8,3} =& \frac{113}{162}A_1 - \frac{12764}{135}A_1(2z) - \frac{279}{2}A_1(3z) + \frac{228352}{405}A_1(4z) - \frac{13212}{5}A_1(6z)\\ &+ \frac{18432}{5}A_1(12z) + \frac{13}{18}A_2 + \frac{413}{45}A_2(3z) - \frac{82880}{9}A_3 - \frac{674048}{45}A_3(3z)\\ &- \frac{196}{81}\Delta_{3,8} + \frac{2560}{27}\Delta_{3,8}(2z) + \frac{603136}{81}\Delta_{3,8}(4z) - 216A_4 + 2A_4(2z)\\ &+ 378A_4(4z) - 1584A_5 - 79104A_5(2z) - 2816A_6(2z) - 512A_7 - 2816A_8\\ &+ 3200A_9.\end{aligned}$$

*Proof.* $M_8\left(\Gamma_0(24)\right)$ is 32 dimensional, $S_8\left(\Gamma_0(24)\right)$ is 24 dimensional, see ([21] Chapter 3, p. 87 and Chapter 5, p. 197), and generated by

$$\Delta_{2,8}(z), \Delta_{2,8}(2z), \Delta_{2,8}(3z), \Delta_{2,8}(4z), \Delta_{2,8}(6z), \Delta_{2,8}(12z)$$

$$\Delta_{3,8}(z), \Delta_{3,8}(2z), \Delta_{3,8}(4z), \Delta_{3,8}(8z),$$

$$\Delta_{6,8}(z) = (-10, 26, 6, -6), \Delta_{6,8}(2z), \Delta_{6,8}(4z),$$

$$\Delta_{8,8,1}(z), \Delta_{8,8,1}(3z), \Delta_{8,8,2}(z), \Delta_{8,8,2}(3z),$$

$$\Delta_{12,8,1}(z), \Delta_{12,8,1}(3z), \Delta_{12,8,2}(z), \Delta_{12,8,2}(3z),$$

$$\Delta_{24,8,1}(z), \Delta_{24,8,2}(z), \Delta_{24,8,3}(z)$$

where $\Delta_{2,8}$ is the unique newform in $S_8\left(\Gamma_0(2)\right)$; $\Delta_{3,8}$ is the unique newform in $S_8\left(\Gamma_0(3)\right)$; $\Delta_{6,8}$ is the unique newform in $S_8\left(\Gamma_0(6)\right)$, $\Delta_{8,8,1}, \Delta_{8,8,2}$ are the unique newforms in $S_8\left(\Gamma_0(8)\right)$; $\Delta_{12,8,1}, \Delta_{12,8,2}$ are the unique newforms in $S_8\left(\Gamma_0(12)\right)$ and $\Delta_{24,8,1}, \Delta_{24,8,2}, \Delta_{24,8,3}$ are the unique newforms in $S_8\left(\Gamma_0(24)\right)$.

As a consequence of this Theorem, we have obtained the following Corollary.We have used Magma for the

calculations.

## 2. Corollary

The following representation numbers formulae are valid.

$$N\left(2^2,3^2,6^8;n\right)=\frac{1}{53529600}\sigma_7(n)-\frac{1}{53529600}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{17843200}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{17843200}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)$$
$$-\frac{24851479}{62791200}a_1(n)+\frac{75407}{15390}a_1\left(\frac{n}{2}\right)+\frac{3035817}{258400}a_1\left(\frac{n}{3}\right)-\frac{22005632}{654075}a_1\left(\frac{n}{4}\right)$$
$$+\frac{26007}{190}a_1\left(\frac{n}{6}\right)+\frac{26971008}{8075}a_1\left(\frac{n}{12}\right)-\frac{1218751}{8413200}\Delta_{3,8}(n)-\frac{1913293}{4206600}\Delta_{3,8}\left(\frac{n}{2}\right)$$
$$+\frac{118785814}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{117613184}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{24961}{46170}a_4(n)-\frac{9464}{1539}a_4\left(\frac{n}{2}\right)$$
$$-\frac{214528}{405}a_4\left(\frac{n}{4}\right)-\frac{1}{2}a_2(n)-\frac{411}{38}a_2\left(\frac{n}{3}\right)+\frac{1}{2}a_3(n)-\frac{45}{38}a_3\left(\frac{n}{3}\right)+\frac{14707}{57}a_5(n)$$
$$+\frac{303488}{57}a_5\left(\frac{n}{2}\right)-\frac{1}{2}a_6(n)+\frac{3840}{19}a_6\left(\frac{n}{2}\right)+\frac{1072}{57}a_7(n)+\frac{6272}{19}a_8(n)-\frac{5248}{19}a_9(n),$$

$$N\left(2^2,3^4,6^{10};n\right)=\frac{1}{26764800}\sigma_7(n)-\frac{1}{26764800}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{8921600}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{8921600}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{24851479}{31395600}a_1(n)$$
$$+\frac{271669}{23085}a_1\left(\frac{n}{2}\right)+\frac{3035817}{129200}a_1\left(\frac{n}{3}\right)-\frac{5172928}{72675}a_1\left(\frac{n}{4}\right)+\frac{37863}{95}a_1\left(\frac{n}{6}\right)+\frac{50618688}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1218751}{4206600}\Delta_{3,8}(n)-\frac{4219133}{2103300}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{827129692}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{84171008}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{24961}{23085}a_4(n)$$
$$-\frac{79280}{4617}a_4\left(\frac{n}{2}\right)-\frac{54272}{45}a_4\left(\frac{n}{4}\right)-a_2(n)-\frac{411}{19}a_2\left(\frac{n}{3}\right)+a_3(n)-\frac{45}{19}a_3\left(\frac{n}{3}\right)+\frac{29414}{57}a_5(n)$$
$$+\frac{232320}{19}a_5\left(\frac{n}{2}\right)-a_6(n)+\frac{8896}{19}a_6\left(\frac{n}{2}\right)+\frac{2144}{57}a_7(n)+\frac{12544}{19}a_8(n)-\frac{10496}{19}a_9(n),$$

$$N\left(2^2,3^6,6^8;n\right)=\frac{1}{13382400}\sigma_7(n)-\frac{1}{13382400}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{4460800}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{4460800}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{21863219}{15697800}a_1(n)$$
$$+\frac{585584}{23085}a_1\left(\frac{n}{2}\right)+\frac{2649237}{64600}a_1\left(\frac{n}{3}\right)-\frac{93405632}{654075}a_1\left(\frac{n}{4}\right)+\frac{78408}{95}a_1\left(\frac{n}{6}\right)+\frac{96086208}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1063361}{2103300}\Delta_{3,8}(n)-\frac{2003201}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{1673520572}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{507670784}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{43822}{23085}a_4(n)$$
$$-\frac{160432}{4617}a_4\left(\frac{n}{2}\right)-\frac{990208}{405}a_4\left(\frac{n}{4}\right)-2a_2(n)-\frac{984}{19}a_2\left(\frac{n}{3}\right)+2a_3(n)+\frac{300}{19}a_3\left(\frac{n}{3}\right)+\frac{52604}{57}a_5(n)$$
$$+\frac{1419008}{57}a_5\left(\frac{n}{2}\right)-2a_6(n)+\frac{18112}{19}a_6\left(\frac{n}{2}\right)+\frac{6176}{57}a_7(n)+\frac{24192}{19}a_8(n)-\frac{21632}{19}a_9(n),$$

$$N\left(2^2,3^8,6^6;n\right)=\frac{1}{6691200}\sigma_7(n)-\frac{1}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{2230400}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{547}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{6291653}{2616300}a_1(n)+\frac{243304}{4617}a_1\left(\frac{n}{2}\right)+\frac{2262657}{32300}a_1\left(\frac{n}{3}\right)$$
$$-\frac{183404992}{654075}a_1\left(\frac{n}{4}\right)+\frac{30384}{19}a_1\left(\frac{n}{6}\right)+\frac{187674048}{8075}a_1\left(\frac{n}{12}\right)-\frac{302657}{350550}\Delta_{3,8}(n)$$
$$-\frac{7021073}{525825}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{3270058112}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{996863104}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{25148}{7695}a_4(n)$$
$$-\frac{305152}{4617}a_4\left(\frac{n}{2}\right)-\frac{1945088}{405}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{2292}{19}a_2\left(\frac{n}{3}\right)+4a_3(n)+\frac{1380}{19}a_3\left(\frac{n}{3}\right)$$
$$+\frac{30920}{19}a_5(n)+\frac{2788480}{57}a_5\left(\frac{n}{2}\right)-4a_6(n)+\frac{35648}{19}a_6\left(\frac{n}{2}\right)+\frac{5376}{19}a_7(n)$$
$$+\frac{46592}{19}a_8(n)-\frac{44544}{19}a_9(n),$$

$$N\left(2^2,3^{10},6^4;n\right)=\frac{1}{3345600}\sigma_7(n)-\frac{1}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{1115200}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{547}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{8283562}{1962225}a_1(n)+\frac{832268}{7695}a_1\left(\frac{n}{2}\right)+\frac{988401}{8075}a_1\left(\frac{n}{3}\right)$$
$$-\frac{362533312}{654075}a_1\left(\frac{n}{4}\right)+\frac{292668}{95}a_1\left(\frac{n}{6}\right)+\frac{372644928}{8075}a_1\left(\frac{n}{12}\right)+\frac{1419008}{57}a_5\left(\frac{n}{2}\right)$$
$$-2a_6(n)+\frac{18112}{19}a_6\left(\frac{n}{2}\right)+\frac{6176}{57}a_7(n)+\frac{24192}{19}a_8(n)-\frac{21632}{19}a_9(n),$$

$$N\left(2^2,3^8,6^6;n\right)=\frac{1}{6691200}\sigma_7(n)-\frac{1}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{2230400}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{547}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{6291653}{2616300}a_1(n)+\frac{243304}{4617}a_1\left(\frac{n}{2}\right)+\frac{2262657}{32300}a_1\left(\frac{n}{3}\right)$$
$$-\frac{183404992}{654075}a_1\left(\frac{n}{4}\right)+\frac{30384}{19}a_1\left(\frac{n}{6}\right)+\frac{187674048}{8075}a_1\left(\frac{n}{12}\right)-\frac{302657}{350550}\Delta_{3,8}(n)$$
$$-\frac{7021073}{525825}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{3270058112}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{996863104}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{25148}{7695}a_4(n)$$
$$-\frac{305152}{4617}a_4\left(\frac{n}{2}\right)-\frac{1945088}{405}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{2292}{19}a_2\left(\frac{n}{3}\right)+4a_3(n)+\frac{1380}{19}a_3\left(\frac{n}{3}\right)$$
$$+\frac{30920}{19}a_5(n)+\frac{2788480}{57}a_5\left(\frac{n}{2}\right)-4a_6(n)+\frac{35648}{19}a_6\left(\frac{n}{2}\right)+\frac{5376}{19}a_7(n)$$
$$+\frac{46592}{19}a_8(n)-\frac{44544}{19}a_9(n),$$

$$N\left(2^2,3^{10},6^4;n\right)=\frac{1}{3345600}\sigma_7(n)-\frac{1}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{1115200}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{8283562}{1962225}a_1(n)$$
$$+\frac{832268}{7695}a_1\left(\frac{n}{2}\right)+\frac{988401}{8075}a_1\left(\frac{n}{3}\right)-\frac{362533312}{654075}a_1\left(\frac{n}{4}\right)+\frac{292668}{95}a_1\left(\frac{n}{6}\right)+\frac{372644928}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1586137}{1051650}\Delta_{3,8}(n)-\frac{14965261}{525825}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{2129080184}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{1967638144}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{132268}{23085}a_4(n)-\frac{193504}{1539}a_4\left(\frac{n}{2}\right)-\frac{3819008}{405}a_4\left(\frac{n}{4}\right)-8a_2(n)-\frac{5040}{19}a_2\left(\frac{n}{3}\right)+8a_3(n)$$
$$+\frac{3900}{19}a_3\left(\frac{n}{3}\right)+\frac{166976}{57}a_5(n)+\frac{5469952}{57}a_5\left(\frac{n}{2}\right)-8a_6(n)+\frac{70080}{19}a_6\left(\frac{n}{2}\right)+\frac{38336}{57}a_7(n)$$
$$+\frac{90752}{19}a_8(n)-\frac{91520}{19}a_9(n),$$

$$N\left(2^2,3^{12},6^2;n\right)=\frac{1}{1672800}\sigma_7(n)-\frac{1}{1672800}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{557600}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{557600}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{14939714}{1962225}a_1(n)$$
$$+\frac{1018528}{4617}a_1\left(\frac{n}{2}\right)+\frac{1791672}{8075}a_1\left(\frac{n}{3}\right)-\frac{8993472}{8075}a_1\left(\frac{n}{4}\right)+\frac{113688}{19}a_1\left(\frac{n}{6}\right)+\frac{747907008}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1437307}{525825}\Delta_{3,8}(n)+-\frac{30527482}{525825}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{12589064552}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{1313856128}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{238856}{23085}a_4(n)-\frac{1119904}{4617}a_4\left(\frac{n}{2}\right)-\frac{280064}{15}a_4\left(\frac{n}{4}\right)-16a_2(n)-\frac{10608}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$+\frac{9240}{19}a_3\left(\frac{n}{3}\right)+\frac{309568}{57}a_5(n)+\frac{3604864}{19}a_5\left(\frac{n}{2}\right)-16a_6(n)+\frac{138816}{19}a_6\left(\frac{n}{2}\right)+\frac{85888}{57}a_7(n)$$
$$+\frac{178944}{19}a_8(n)-\frac{187648}{19}a_9(n),$$

$$N\left(2^2,3^{14};n\right)=\frac{1}{836400}\sigma_7(n)-\frac{1}{836400}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{278800}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{278800}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{21952838}{1962225}a_1(n)$$
$$+\frac{12667768}{23085}a_1\left(\frac{n}{2}\right)+\frac{2947374}{8075}a_1\left(\frac{n}{3}\right)-\frac{1907645632}{654075}a_1\left(\frac{n}{4}\right)+\frac{1186896}{95}a_1\left(\frac{n}{6}\right)$$
$$+\frac{1369372608}{8075}a_1\left(\frac{n}{12}\right)-\frac{2363344}{525825}\Delta_{3,8}(n)-\frac{4688252}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{27425449192}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$+\frac{10006681984}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{454352}{23085}a_4(n)-\frac{1936544}{4617}a_4\left(\frac{n}{2}\right)-\frac{16890368}{405}a_4\left(\frac{n}{4}\right)-28a_2(n)$$
$$-\frac{17772}{19}a_2\left(\frac{n}{3}\right)+24a_3(n)+\frac{16176}{19}a_3\left(\frac{n}{3}\right)+\frac{506272}{57}a_5(n)+\frac{24172672}{57}a_5\left(\frac{n}{2}\right)-64a_6(n)$$
$$+\frac{307264}{19}a_6\left(\frac{n}{2}\right)+\frac{258688}{57}a_7(n)+\frac{386304}{19}a_8(n)-\frac{456448}{19}a_9(n),$$

$$N\left(2^4,3^2,6^{10};n\right)=\frac{1}{26764800}\sigma_7(n)-\frac{1}{26764800}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{8921600}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{8921600}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{27875381}{31395600}a_1(n)$$
$$-\frac{316207}{23085}a_1\left(\frac{n}{2}\right)-\frac{2854263}{129200}a_1\left(\frac{n}{3}\right)+\frac{43510784}{654075}a_1\left(\frac{n}{4}\right)-\frac{66579}{95}a_1\left(\frac{n}{6}\right)$$
$$-\frac{29114496}{8075}a_1\left(\frac{n}{12}\right)+\frac{1146539}{4206600}\Delta_{3,8}(n)+\frac{8765039}{701100}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1054441684}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{251915008}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)-\frac{26789}{23085}a_4(n)+\frac{102800}{4617}a_4\left(\frac{n}{2}\right)+\frac{603136}{405}a_4\left(\frac{n}{4}\right)+a_2(n)+\frac{162}{19}a_2\left(\frac{n}{3}\right)$$
$$-a_3(n)+\frac{522}{19}a_3\left(\frac{n}{3}\right)-\frac{8654}{19}a_5(n)-\frac{296960}{19}a_5\left(\frac{n}{2}\right)+3a_6(n)-\frac{11264}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{544}{57}a_7(n)-\frac{11264}{19}a_8(n)+\frac{7936}{19}a_9(n),$$

$$N\left(2^4,3^4,6^8;n\right)=\frac{1}{13382400}\sigma_7(n)-\frac{1}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{4460800}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{27875381}{15697800}a_1(n)$$
$$-\frac{546686}{23085}a_1\left(\frac{n}{2}\right)-\frac{2854263}{64600}a_1\left(\frac{n}{3}\right)+\frac{79708544}{654075}a_1\left(\frac{n}{4}\right)-\frac{116742}{95}a_1\left(\frac{n}{6}\right)$$
$$-\frac{69457536}{8075}a_1\left(\frac{n}{12}\right)+\frac{1146539}{2103300}\Delta_{3,8}(n)+\frac{2568533}{116850}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1879910264}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{458633728}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)-\frac{53578}{23085}a_4(n)+\frac{165472}{4617}a_4\left(\frac{n}{2}\right)+\frac{1079296}{405}a_4\left(\frac{n}{4}\right)+2a_2(n)$$
$$+\frac{324}{19}a_2\left(\frac{n}{3}\right)-2a_3(n)+\frac{1044}{19}a_3\left(\frac{n}{3}\right)-\frac{17308}{19}a_5(n)-\frac{530688}{19}a_5\left(\frac{n}{2}\right)+6a_6(n)$$
$$-\frac{20096}{19}a_6\left(\frac{n}{2}\right)+\frac{1088}{57}a_7(n)-\frac{22528}{19}a_8(n)+\frac{15872}{19}a_9(n),$$

$$N\left(2^4,3^6,6^6;n\right)=\frac{1}{6691200}\sigma_7(n)-\frac{1}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{24853801}{7848900}a_1(n)$$
$$-\frac{1075376}{23085}a_1\left(\frac{n}{2}\right)-\frac{2469723}{32300}a_1\left(\frac{n}{3}\right)+\frac{156782464}{654075}a_1\left(\frac{n}{4}\right)-\frac{195312}{95}a_1\left(\frac{n}{6}\right)$$
$$-\frac{154060416}{8075}a_1\left(\frac{n}{12}\right)+\frac{991969}{1051650}\Delta_{3,8}(n)+\frac{2459063}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3446270984}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{889914368}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)-\frac{94876}{23085}a_4(n)+\frac{264352}{4617}a_4\left(\frac{n}{2}\right)+\frac{2011136}{405}a_4\left(\frac{n}{4}\right)+4a_2(n)$$
$$\frac{1278}{19}a_2\left(\frac{n}{3}\right)-4a_3(n)+\frac{774}{19}a_3\left(\frac{n}{3}\right)-\frac{30680}{19}a_5(n)-\frac{980224}{19}a_5\left(\frac{n}{2}\right)+12a_6(n)$$
$$-\frac{37248}{19}a_6\left(\frac{n}{2}\right)-\frac{4288}{57}a_7(n)-\frac{44544}{19}a_8(n)+\frac{35584}{19}a_9(n),$$

$$N\left(2^4,3^8,6^4;n\right)=\frac{1}{3345600}\sigma_7(n)-\frac{1}{3345600}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{1115200}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{1115200}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{7277407}{1308150}a_1(n)$$
$$-\frac{732736}{7695}a_1\left(\frac{n}{2}\right)-\frac{2085183}{16150}a_1\left(\frac{n}{3}\right)+\frac{106718848}{218025}a_1\left(\frac{n}{4}\right)-\frac{337536}{95}a_1\left(\frac{n}{6}\right)-\frac{330903936}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{279133}{175275}\Delta_{3,8}(n)+\frac{1607942}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2164119808}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{596421376}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{55064}{7695}a_4(n)+\frac{146432}{1539}a_4\left(\frac{n}{2}\right)+\frac{1283072}{135}a_4\left(\frac{n}{4}\right)+8a_2(n)+\frac{3816}{19}a_2\left(\frac{n}{3}\right)-8a_3(n)$$
$$-\frac{1080}{19}a_3\left(\frac{n}{3}\right)-\frac{53488}{19}a_5(n)-\frac{1861376}{19}a_5\left(\frac{n}{2}\right)+24a_6(n)-\frac{71040}{19}a_6\left(\frac{n}{2}\right)-\frac{7168}{19}a_7(n)$$
$$-\frac{88064}{19}a_8(n)+\frac{78848}{19}a_9(n),$$

$$N\left(2^4,3^{10},6^2;n\right)=\frac{1}{1672800}\sigma_7(n)-\frac{1}{1672800}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{557600}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{557600}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{19332796}{1962225}a_1(n)$$
$$-\frac{4611944}{23085}a_1\left(\frac{n}{2}\right)-\frac{1811058}{8075}a_1\left(\frac{n}{3}\right)+\frac{226137728}{218025}a_1\left(\frac{n}{4}\right)-\frac{621768}{95}a_1\left(\frac{n}{6}\right)-\frac{700845696}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{1454423}{525825}\Delta_{3,8}(n)+\frac{28667026}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{12639600944}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{414534912}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{291304}{23085}a_4(n)+\frac{778432}{4617}a_4\left(\frac{n}{2}\right)+\frac{2532352}{135}a_4\left(\frac{n}{4}\right)+16a_2(n)+\frac{9540}{19}a_2\left(\frac{n}{3}\right)-16a_3(n)$$
$$-\frac{6120}{19}a_3\left(\frac{n}{3}\right)-\frac{94656}{19}a_5(n)-\frac{3649024}{19}a_5\left(\frac{n}{2}\right)+48a_6(n)-\frac{139904}{19}a_6\left(\frac{n}{2}\right)-\frac{65920}{57}a_7(n)$$
$$-\frac{176384}{19}a_8(n)+\frac{172800}{19}a_9(n),$$

$$N\left(2^4,3^{12};n\right)=\frac{1}{836400}\sigma_7(n)-\frac{1}{836400}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{278800}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{278800}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{34711052}{1962225}a_1(n)$$
$$-\frac{1909376}{4617}a_1\left(\frac{n}{2}\right)-\frac{3294696}{8075}a_1\left(\frac{n}{3}\right)+\frac{17986944}{8075}a_1\left(\frac{n}{4}\right)-\frac{239232}{19}a_1\left(\frac{n}{6}\right)-\frac{1496543616}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{2645626}{525825}\Delta_{3,8}(n)+\frac{56769892}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{24849079504}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2627712256}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{524528}{23085}a_4(n)+\frac{1422656}{4617}a_4\left(\frac{n}{2}\right)+\frac{560128}{15}a_4\left(\frac{n}{4}\right)+32a_2(n)+\frac{21672}{19}a_2\left(\frac{n}{3}\right)-32a_3(n)$$
$$-\frac{17568}{19}a_3\left(\frac{n}{3}\right)-\frac{171520}{19}a_5(n)-\frac{7209728}{19}a_5\left(\frac{n}{2}\right)+96a_6(n)-\frac{277632}{19}a_6\left(\frac{n}{2}\right)-\frac{171776}{57}a_7(n)$$
$$-\frac{357888}{19}a_8(n)+\frac{375296}{19}a_9(n),$$

$$N\left(2^6,3^2,6^8;n\right)=\frac{7}{53529600}\sigma_7(n)-\frac{7}{53529600}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{17843200}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{17843200}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{15567697}{6976800}a_1(n)$$
$$+\frac{101681}{15390}a_1\left(\frac{n}{2}\right)+\frac{14187879}{258400}a_1\left(\frac{n}{3}\right)-\frac{47241344}{654075}a_1\left(\frac{n}{4}\right)+\frac{141201}{190}a_1\left(\frac{n}{6}\right)+\frac{67268736}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{633493}{934800}\Delta_{3,8}(n)-\frac{27091157}{1402200}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{137626406}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{278969728}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{14923}{5130}a_4(n)-\frac{18728}{1539}a_4\left(\frac{n}{2}\right)-\frac{702976}{405}a_4\left(\frac{n}{4}\right)-\frac{3}{2}a_2(n)+\frac{891}{38}a_2\left(\frac{n}{3}\right)+\frac{3}{2}a_3(n)$$
$$-\frac{4995}{38}a_3\left(\frac{n}{3}\right)+\frac{19911}{19}a_5(n)+\frac{348288}{19}a_5\left(\frac{n}{2}\right)-\frac{15}{2}a_6(n)+\frac{12800}{19}a_6\left(\frac{n}{2}\right)-\frac{2896}{19}a_7(n)$$
$$+\frac{20096}{19}a_8(n)-\frac{8576}{19}a_9(n),$$

$$N\left(2^6,3^4,6^6;n\right)=\frac{7}{26764800}\sigma_7(n)-\frac{7}{26764800}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{8921600}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{8921600}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{15567697}{3488400}a_1(n)$$
$$+\frac{153817}{7695}a_1\left(\frac{n}{2}\right)+\frac{14187879}{129200}a_1\left(\frac{n}{3}\right)-\frac{105683264}{654075}a_1\left(\frac{n}{4}\right)+\frac{171297}{95}a_1\left(\frac{n}{6}\right)+\frac{124698816}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{633493}{467400}\Delta_{3,8}(n)-\frac{28898437}{701100}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{104093692}{19475}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{625101568}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{14923}{2565}a_4(n)-\frac{62384}{1539}a_4\left(\frac{n}{2}\right)-\frac{1586176}{405}a_4\left(\frac{n}{4}\right)-3a_2(n)+\frac{891}{19}a_2\left(\frac{n}{3}\right)+3a_3(n)-\frac{4995}{19}a_3\left(\frac{n}{3}\right)$$
$$+\frac{39822}{19}a_5(n)+\frac{776832}{19}a_5\left(\frac{n}{2}\right)-15a_6(n)+\frac{29248}{19}a_6\left(\frac{n}{2}\right)-\frac{5792}{19}a_7(n)+\frac{40192}{19}a_8(n)$$
$$-\frac{17152}{19}a_9(n),$$

$$N\left(2^6,3^6,6^4;n\right)=\frac{7}{13382400}\sigma_7(n)-\frac{7}{13382400}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{4460800}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{4460800}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{39774911}{5232600}a_1(n)$$
$$+\frac{386272}{7695}a_1\left(\frac{n}{2}\right)+\frac{11473659}{64600}a_1\left(\frac{n}{3}\right)-\frac{233088064}{654075}a_1\left(\frac{n}{4}\right)+\frac{312552}{95}a_1\left(\frac{n}{6}\right)+\frac{247588416}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1536809}{701100}\Delta_{3,8}(n)-\frac{31625347}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{1827576428}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{1341978368}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{75358}{7695}a_4(n)-\frac{107120}{1539}a_4\left(\frac{n}{2}\right)-\frac{3163136}{405}a_4\left(\frac{n}{4}\right)-6a_2(n)-\frac{108}{19}a_2\left(\frac{n}{3}\right)+6a_3(n)$$
$$-\frac{6048}{19}a_3\left(\frac{n}{3}\right)+\frac{65100}{19}a_5(n)+\frac{1543680}{19}a_5\left(\frac{n}{2}\right)-30a_6(n)+\frac{58176}{19}a_6\left(\frac{n}{2}\right)-\frac{5728}{19}a_7(n)$$
$$+\frac{76416}{19}a_8(n)-\frac{43392}{19}a_9(n),$$

$$N\left(2^6,3^8,6^2;n\right)=\frac{7}{6691200}\sigma_7(n)-\frac{7}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{2230400}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{32846731}{2616300}a_1(n)$$
$$+\frac{897368}{7695}a_1\left(\frac{n}{2}\right)+\frac{8759439}{32300}a_1\left(\frac{n}{3}\right)-\frac{163314368}{218025}a_1\left(\frac{n}{4}\right)+\frac{556128}{95}a_1\left(\frac{n}{6}\right)+\frac{508838976}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1173139}{350550}\Delta_{3,8}(n)-\frac{3716513}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{3447267488}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{920319616}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{122356}{7695}a_4(n)-\frac{161920}{1539}a_4\left(\frac{n}{2}\right)-\frac{2033152}{135}a_4\left(\frac{n}{4}\right)-12a_2(n)-\frac{3996}{19}a_2\left(\frac{n}{3}\right)+12a_3(n)$$
$$-\frac{4212}{19}a_3\left(\frac{n}{3}\right)+\frac{101112}{19}a_5(n)+\frac{2957952}{19}a_5\left(\frac{n}{2}\right)-60a_6(n)+\frac{112064}{19}a_6\left(\frac{n}{2}\right)+\frac{256}{19}a_7(n)$$
$$+\frac{144896}{19}a_8(n)-\frac{104960}{19}a(n),$$

$$N\left(2^6,3^{10};n\right)=\frac{7}{3345600}\sigma_7(n)-\frac{7}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{1115200}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{13425458}{654075}a_1(n)$$
$$+\frac{404948}{1539}a_1\left(\frac{n}{2}\right)+\frac{3435327}{8075}a_1\left(\frac{n}{3}\right)-\frac{342442688}{218025}a_1\left(\frac{n}{4}\right)+\frac{208260}{19}a_1\left(\frac{n}{6}\right)+\frac{1063751616}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1840133}{350550}\Delta_{3,8}(n)-\frac{7648481}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{6479819368}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{1891094656}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{198332}{7695}a_4(n)-\frac{235424}{1539}a_4\left(\frac{n}{2}\right)-\frac{3907072}{135}a_4\left(\frac{n}{4}\right)-24a_2(n)-\frac{13608}{19}a_2\left(\frac{n}{3}\right)+24a_3(n)$$
$$+\frac{3348}{19}a_3\left(\frac{n}{3}\right)+\frac{152832}{19}a_5(n)+\frac{5639424}{19}a_5\left(\frac{n}{2}\right)-120a_6(n)+\frac{215360}{19}a_6\left(\frac{n}{2}\right)+\frac{22464}{19}a_7(n)$$
$$+\frac{277376}{19}a_8(n)-\frac{245888}{19}a_9(n),$$

$$N\left(2^8,3^2,6^6;n\right)=\frac{1}{2676480}\sigma_7(n)-\frac{1}{2676480}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{892160}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{892160}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{605447}{116280}a_1(n)$$
$$-\frac{35158}{2565}a_1\left(\frac{n}{2}\right)-\frac{1735857}{12920}a_1\left(\frac{n}{3}\right)+\frac{1071104}{8721}a_1\left(\frac{n}{4}\right)-\frac{251964}{95}a_1\left(\frac{n}{6}\right)-\frac{1558656}{323}a_1\left(\frac{n}{12}\right)$$
$$+\frac{77519}{46740}\Delta_{3,8}(n)+\frac{343787}{7790}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{70391368}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{7043584}{2337}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{1174}{171}a_4(n)+\frac{39968}{513}a_4\left(\frac{n}{2}\right)+\frac{112640}{27}a_4\left(\frac{n}{4}\right)+2a_2(n)-\frac{3321}{19}a_2\left(\frac{n}{3}\right)-2a_3(n)$$
$$+\frac{9477}{19}a_3\left(\frac{n}{3}\right)-\frac{45900}{19}a_5(n)-\frac{838656}{19}a_5\left(\frac{n}{2}\right)+14a_6(n)-\frac{31744}{19}a_6\left(\frac{n}{2}\right)+\frac{14016}{19}a_7(n)$$
$$-\frac{31744}{19}a_8(n)-\frac{4608}{19}a_9(n),$$

$$N\left(2^8,3^4,6^4;n\right)=\frac{1}{1338240}\sigma_7(n)-\frac{1}{1338240}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{446080}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{446080}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{605447}{58140}a_1(n)$$
$$-\frac{14116}{855}a_1\left(\frac{n}{2}\right)-\frac{1735857}{6460}a_1\left(\frac{n}{3}\right)+\frac{712448}{2907}a_1\left(\frac{n}{4}\right)-\frac{479304}{95}a_1\left(\frac{n}{6}\right)-\frac{3379968}{323}a_1\left(\frac{n}{12}\right)$$
$$+\frac{77519}{23370}\Delta_{3,8}(n)+\frac{331323}{3895}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{130981168}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{4566016}{779}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{2348}{171}a_4(n)+\frac{22592}{171}a_4\left(\frac{n}{2}\right)+\frac{69632}{9}a_4\left(\frac{n}{4}\right)+4a_2(n)-\frac{6642}{19}a_2\left(\frac{n}{3}\right)-4a_3(n)$$
$$+\frac{18954}{19}a_3\left(\frac{n}{3}\right)-\frac{91800}{19}a_5(n)-\frac{1589760}{19}a_5\left(\frac{n}{2}\right)+28a_6(n)-\frac{58624}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{28032}{19}a_7(n)-\frac{63488}{19}a_8(n)-\frac{9216}{19}a_9(n),$$

$$N\left(2^8,3^6,6^2;n\right)=\frac{1}{669120}\sigma_7(n)+\frac{27}{223040}\sigma_7\left(\frac{n}{2}\right)-\frac{1}{669120}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{223040}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{301157}{17442}a_1(n)$$
$$-\frac{5536}{171}a_1\left(\frac{n}{2}\right)-\frac{267489}{646}a_1\left(\frac{n}{3}\right)+\frac{17458432}{43605}a_1\left(\frac{n}{4}\right)-\frac{145584}{19}a_1\left(\frac{n}{6}\right)-\frac{39930624}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{11945}{2337}\Delta_{3,8}(n)+\frac{417694}{2337}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{72114608}{3895}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{113035264}{11685}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{11480}{513}a_4(n)+\frac{28864}{171}a_4\left(\frac{n}{2}\right)+\frac{352256}{27}a_4\left(\frac{n}{4}\right)+8a_2(n)-\frac{7614}{19}a_2\left(\frac{n}{3}\right)-8a_3(n)$$
$$+\frac{26082}{19}a_3\left(\frac{n}{3}\right)-\frac{142704}{19}a_5(n)-\frac{2668032}{19}a_5\left(\frac{n}{2}\right)+56a_6(n)-\frac{98048}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{40320}{19}a_7(n)-\frac{112640}{19}a_8(n)+\frac{1536}{19}a_9(n),$$

$$N\left(2^8,3^8;n\right)=\frac{1}{334560}\sigma_7(n)-\frac{1}{334560}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{111520}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{111520}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{1195229}{43605}a_1(n)$$
$$-\frac{208064}{2565}a_1\left(\frac{n}{2}\right)-\frac{939033}{1615}a_1\left(\frac{n}{3}\right)+\frac{1774336}{2907}a_1\left(\frac{n}{4}\right)-\frac{1084752}{95}a_1\left(\frac{n}{6}\right)-\frac{17715456}{323}a_1\left(\frac{n}{12}\right)$$
$$+\frac{27954}{3895}\Delta_{3,8}(n)+\frac{1442716}{3895}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{350230144}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{35466752}{2337}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{17744}{513}a_4(n)+\frac{94720}{513}a_4\left(\frac{n}{2}\right)+\frac{194560}{9}a_4\left(\frac{n}{4}\right)+16a_2(n)-\frac{3888}{19}a_2\left(\frac{n}{3}\right)-16a_3(n)$$
$$+\frac{28512}{19}a_3\left(\frac{n}{3}\right)-\frac{203616}{19}a_5(n)-\frac{4400640}{19}a_5\left(\frac{n}{2}\right)+112a_6(n)-\frac{162560}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{49152}{19}a_7(n)-\frac{196608}{19}a_8(n)+\frac{43008}{19}a_9(n),$$

$$N\left(2^{10},3^{2},6^{4};n\right)=\frac{61}{53529600}\sigma_{7}(n)-\frac{61}{53529600}\sigma_{7}\left(\frac{n}{2}\right)-\frac{567}{17843200}\sigma_{7}\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_{7}\left(\frac{n}{4}\right)$$
$$+\frac{567}{17843200}\sigma_{7}\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_{7}\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_{7}\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_{7}\left(\frac{n}{24}\right)-\frac{285322073}{20930400}a_{1}(n)$$
$$-\frac{219391}{5130}a_{1}\left(\frac{n}{2}\right)+\frac{97787637}{258400}a_{1}\left(\frac{n}{3}\right)-\frac{43532672}{654075}a_{1}\left(\frac{n}{4}\right)+\frac{1081467}{190}a_{1}\left(\frac{n}{6}\right)+\frac{9283968}{8075}a_{1}\left(\frac{n}{12}\right)$$
$$-\frac{13101737}{2804400}\Delta_{3,8}(n)-\frac{66256091}{1402200}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{1694052494}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{448987264}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{281687}{15390}a_{4}(n)-\frac{73928}{513}a_{4}\left(\frac{n}{2}\right)-\frac{2395648}{405}a_{4}\left(\frac{n}{4}\right)-\frac{5}{2}a_{2}(n)+\frac{26865}{38}a_{2}\left(\frac{n}{3}\right)+\frac{5}{2}a_{3}(n)$$
$$-\frac{63801}{38}a_{3}\left(\frac{n}{3}\right)+\frac{127917}{19}a_{5}(n)+\frac{1315968}{19}a_{5}\left(\frac{n}{2}\right)-\frac{45}{2}a_{6}(n)+\frac{45312}{19}a_{6}\left(\frac{n}{2}\right)-\frac{49328}{19}a_{7}(n)$$
$$+\frac{57472}{19}a_{8}(n)+\frac{57728}{19}a_{9}(n),$$

$$N\left(2^{10},3^{4},6^{2};n\right)=\frac{61}{26764800}\sigma_{7}(n)-\frac{61}{26764800}\sigma_{7}\left(\frac{n}{2}\right)-\frac{567}{8921600}\sigma_{7}\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_{7}\left(\frac{n}{4}\right)$$
$$+\frac{567}{8921600}\sigma_{7}\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_{7}\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_{7}\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_{7}\left(\frac{n}{24}\right)-\frac{285322073}{10465200}a_{1}(n)$$
$$-\frac{57373}{855}a_{1}\left(\frac{n}{2}\right)+\frac{97787637}{129200}a_{1}\left(\frac{n}{3}\right)-\frac{30634432}{654075}a_{1}\left(\frac{n}{4}\right)+\frac{1056843}{95}a_{1}\left(\frac{n}{6}\right)-\frac{20140992}{8075}a_{1}\left(\frac{n}{12}\right)$$
$$-\frac{13101737}{1402200}\Delta_{3,8}(n)-\frac{72425771}{701100}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{3569401924}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{688112384}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{281687}{7695}a_{4}(n)-\frac{54352}{171}a_{4}\left(\frac{n}{2}\right)-\frac{5116928}{405}a_{4}\left(\frac{n}{4}\right)-5a_{2}(n)+\frac{26865}{19}a_{2}\left(\frac{n}{3}\right)+5a_{3}(n)$$
$$-\frac{63801}{19}a_{3}\left(\frac{n}{3}\right)+\frac{255834}{19}a_{5}(n)+\frac{2697600}{19}a_{5}\left(\frac{n}{2}\right)-45a_{6}(n)+\frac{96704}{19}a_{6}\left(\frac{n}{2}\right)-\frac{98656}{19}a_{7}(n)$$
$$+\frac{114944}{19}a_{8}(n)+\frac{115456}{19}a_{9}(n),$$

$$N\left(2^{10},3^{6};n\right)=\frac{61}{13382400}\sigma_{7}(n)-\frac{61}{13382400}\sigma_{7}\left(\frac{n}{2}\right)-\frac{567}{4460800}\sigma_{7}\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_{7}\left(\frac{n}{4}\right)$$
$$+\frac{567}{4460800}\sigma_{7}\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_{7}\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_{7}\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_{7}\left(\frac{n}{24}\right)-\frac{234601213}{5232600}a_{1}(n)$$
$$-\frac{371312}{2565}a_{1}\left(\frac{n}{2}\right)+\frac{72362097}{64600}a_{1}\left(\frac{n}{3}\right)+\frac{185115968}{654075}a_{1}\left(\frac{n}{4}\right)+\frac{1400904}{95}a_{1}\left(\frac{n}{6}\right)$$
$$-\frac{83299392}{8075}a_{1}\left(\frac{n}{12}\right)-\frac{9695047}{701100}\Delta_{3,8}(n)-\frac{86556421}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{5289552004}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$+\frac{18992384}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{451394}{7695}a_{4}(n)-\frac{210800}{513}a_{4}\left(\frac{n}{2}\right)-\frac{7482368}{405}a_{4}\left(\frac{n}{4}\right)-10a_{2}(n)$$
$$+\frac{37152}{19}a_{2}\left(\frac{n}{3}\right)+10a_{3}(n)-\frac{92556}{19}a_{3}\left(\frac{n}{3}\right)+\frac{394884}{19}a_{5}(n)+\frac{4018944}{19}a_{5}\left(\frac{n}{2}\right)-90a_{6}(n)$$
$$+\frac{140224}{19}a_{6}\left(\frac{n}{2}\right)-\frac{161824}{19}a_{7}(n)+\frac{170624}{19}a_{8}(n)+\frac{201088}{19}a_{9}(n),$$

$$N\left(2^{12},3^{2},6^{2};n\right)=\frac{91}{26764800}\sigma_{7}\left(n\right)-\frac{91}{26764800}\sigma_{7}\left(\frac{n}{2}\right)+\frac{243}{8921600}\sigma_{7}\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_{7}\left(\frac{n}{4}\right)$$
$$-\frac{243}{8921600}\sigma_{7}\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_{7}\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_{7}\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_{7}\left(\frac{n}{24}\right)+\frac{389706157}{10465200}a_{1}\left(n\right)$$
$$+\frac{238627}{2565}a_{1}\left(\frac{n}{2}\right)-\frac{142817733}{129200}a_{1}\left(\frac{n}{3}\right)-\frac{112946176}{654075}a_{1}\left(\frac{n}{4}\right)-\frac{1627389}{95}a_{1}\left(\frac{n}{6}\right)+\frac{188060544}{8075}a_{1}\left(\frac{n}{12}\right)$$
$$+\frac{19135483}{1402200}\Delta_{3,8}\left(n\right)+\frac{16314349}{701100}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{4824391508}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{225196288}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{391573}{7695}a_{4}\left(n\right)+\frac{318256}{513}a_{4}\left(\frac{n}{2}\right)+\frac{6470656}{405}a_{4}\left(\frac{n}{4}\right)+3a_{2}\left(n\right)-\frac{46116}{19}a_{2}\left(\frac{n}{3}\right)-3a_{3}\left(n\right)$$
$$+\frac{101520}{19}a_{3}\left(\frac{n}{3}\right)-\frac{374778}{19}a_{5}\left(n\right)-\frac{3296256}{19}a_{5}\left(\frac{n}{2}\right)+33a_{6}\left(n\right)-\frac{126976}{19}a_{6}\left(\frac{n}{2}\right)+\frac{155168}{19}a_{7}\left(n\right)$$
$$-\frac{126976}{19}a_{8}\left(n\right)-\frac{217856}{19}a_{9}\left(n\right),$$

$$N\left(2^{12},3^{4};n\right)=\frac{91}{13382400}\sigma_{7}\left(n\right)-\frac{91}{13382400}\sigma_{7}\left(\frac{n}{2}\right)+\frac{243}{4460800}\sigma_{7}\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_{7}\left(\frac{n}{4}\right)$$
$$-\frac{243}{4460800}\sigma_{7}\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_{7}\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_{7}\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_{7}\left(\frac{n}{24}\right)+\frac{389706157}{5232600}a_{1}\left(n\right)$$
$$+\frac{127918}{513}a_{1}\left(\frac{n}{2}\right)-\frac{142817733}{64600}a_{1}\left(\frac{n}{3}\right)-\frac{24807296}{654075}a_{1}\left(\frac{n}{4}\right)-\frac{591858}{19}a_{1}\left(\frac{n}{6}\right)+\frac{500817024}{8075}a_{1}\left(\frac{n}{12}\right)$$
$$+\frac{19135483}{701100}\Delta_{3,8}\left(n\right)+\frac{28092829}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{9499635448}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1307176448}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{783146}{7695}a_{4}\left(n\right)+\frac{574496}{513}a_{4}\left(\frac{n}{2}\right)+\frac{12978176}{405}a_{4}\left(\frac{n}{4}\right)+6a_{2}\left(n\right)-\frac{92232}{19}a_{2}\left(\frac{n}{3}\right)-6a_{3}\left(n\right)$$
$$+\frac{203040}{19}a_{3}\left(\frac{n}{3}\right)-\frac{749556}{19}a_{5}\left(n\right)-\frac{6986496}{19}a_{5}\left(\frac{n}{2}\right)+66a_{6}\left(n\right)-\frac{246656}{19}a_{6}\left(\frac{n}{2}\right)+\frac{310336}{19}a_{7}\left(n\right)$$
$$-\frac{253952}{19}a_{8}\left(n\right)-\frac{435712}{19}a_{9}\left(n\right),$$

$$N\left(2^{14},3^{2};n\right)=\frac{547}{53529600}\sigma_{7}\left(n\right)-\frac{547}{53529600}\sigma_{7}\left(\frac{n}{2}\right)-\frac{729}{17843200}\sigma_{7}\left(\frac{n}{3}\right)+\frac{547}{418200}\sigma_{7}\left(\frac{n}{4}\right)$$
$$+\frac{729}{17843200}\sigma_{7}\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_{7}\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_{7}\left(\frac{n}{12}\right)+\frac{23328}{17425}\sigma_{7}\left(\frac{n}{24}\right)-\frac{724244357}{6976800}a_{1}\left(n\right)$$
$$-\frac{1724201}{5130}a_{1}\left(\frac{n}{2}\right)+\frac{861519699}{258400}a_{1}\left(\frac{n}{3}\right)-\frac{77762176}{72675}a_{1}\left(\frac{n}{4}\right)+\frac{10262997}{190}a_{1}\left(\frac{n}{6}\right)-\frac{544696704}{8075}a_{1}\left(\frac{n}{12}\right)$$
$$-\frac{38477233}{934800}\Delta_{3,8}\left(n\right)+\frac{69754901}{467400}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{4634810446}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{1683844736}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{743663}{5130}a_{4}\left(n\right)-\frac{925912}{513}a_{4}\left(\frac{n}{2}\right)-\frac{2077184}{45}a_{4}\left(\frac{n}{4}\right)-\frac{7}{2}a_{2}\left(n\right)+\frac{292167}{38}a_{2}\left(\frac{n}{3}\right)+\frac{7}{2}a_{3}\left(n\right)$$
$$-\frac{624591}{38}a_{3}\left(\frac{n}{3}\right)+\frac{1114371}{19}a_{5}\left(n\right)+\frac{10415232}{19}a_{5}\left(\frac{n}{2}\right)-\frac{91}{2}a_{6}\left(n\right)+\frac{363520}{19}a_{6}(\frac{n}{2})$$
$$-\frac{444432}{19}a_{7}\left(n\right)+\frac{380544}{19}a_{8}\left(n\right)+\frac{603264}{19}a_{9}\left(n\right),$$

$$N\left(1,2,3,6^{13};n\right)=\frac{1}{107\,059\,200}\sigma_7\left(n\right)-\frac{1}{107\,059\,200}\sigma_7\left(\frac{n}{2}\right)$$
$$+\frac{1093}{35\,686\,400}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{836\,400}\sigma_7\left(\frac{n}{4}\right)-\frac{1093}{35\,686\,400}\sigma_7\left(\frac{n}{6}\right)$$
$$+\frac{16}{52\,275}\sigma_7\left(\frac{n}{8}\right)-\frac{1093}{278\,800}\sigma_7\left(\frac{n}{12}\right)+\frac{17\,488}{17\,425}\sigma_7\left(\frac{n}{24}\right)$$
$$-\frac{94\,244\,213}{41\,860\,800}a_1\left(n\right)-\frac{974\,467}{18\,468}a_1\left(\frac{n}{2}\right)-\frac{17\,320\,503}{516\,800}a_1\left(\frac{n}{3}\right)$$
$$+\frac{226\,133\,056}{654\,075}a_1\left(\frac{n}{4}\right)-\frac{13197}{76}a_1\left(\frac{n}{6}\right)+\frac{63\,457\,536}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{2\,319\,703}{5\,608\,800}\Delta_{3,8}\left(n\right)-\frac{397\,749\,433}{8\,413\,200}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1\,484\,822\,891}{525\,825}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{1\,083\,399\,872}{175\,275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{56\,567}{30\,780}a_4\left(n\right)+\frac{250\,108}{4617}a_4\left(\frac{n}{2}\right)$$
$$+\frac{1\,051\,904}{405}a_4\left(\frac{n}{4}\right)-\frac{7}{4}a_2\left(n\right)-\frac{7347}{76}a_2\left(\frac{n}{3}\right)+\frac{15}{4}a_3\left(n\right)$$
$$+\frac{7803}{76}a_3\left(\frac{n}{3}\right)-\frac{23\,893}{114}a_5\left(n\right)-\frac{512\,704}{19}a_5\left(\frac{n}{2}\right)-\frac{65}{4}a_6\left(n\right)$$
$$-\frac{17\,984}{19}a_6\left(\frac{n}{2}\right)-\frac{38\,344}{57}a_7\left(n\right)-\frac{17\,984}{19}a_8\left(n\right)+\frac{39\,616}{19}a_9\left(n\right),$$

$$N\left(1,2,3^3,6^{11};n\right)=\frac{1}{53\,529\,600}\sigma_7\left(n\right)-\frac{1}{53\,529\,600}\sigma_7\left(\frac{n}{2}\right)$$
$$+\frac{1093}{17\,843\,200}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{836\,400}\sigma_7\left(\frac{n}{4}\right)-\frac{1093}{17\,843\,200}\sigma_7\left(\frac{n}{6}\right)$$
$$+\frac{16}{52\,275}\sigma_7\left(\frac{n}{8}\right)-\frac{1093}{278\,800}\sigma_7\left(\frac{n}{12}\right)+\frac{17\,488}{17\,425}\sigma_7\left(\frac{n}{24}\right)$$
$$-\frac{127\,428\,629}{62\,791\,200}a_1\left(n\right)-\frac{2\,568\,887}{46\,170}a_1\left(\frac{n}{2}\right)-\frac{10\,090\,233}{258\,400}a_1\left(\frac{n}{3}\right)$$
$$+\frac{236\,112\,736}{654\,075}a_1\left(\frac{n}{4}\right)-\frac{62\,349}{190}a_1\left(\frac{n}{6}\right)+\frac{50\,426\,016}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{506\,603}{1\,051\,650}\Delta_{3,8}\left(n\right)-\frac{10\,529\,371}{233\,700}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1\,691\,626\,276}{525\,825}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{379\,689\,344}{58\,425}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{35\,728}{23\,085}a_4\left(n\right)+\frac{268\,208}{4617}a_4\left(\frac{n}{2}\right)$$
$$+\frac{1\,170\,944}{405}a_4\left(\frac{n}{4}\right)-\frac{3}{2}a_2\left(n\right)-\frac{3621}{38}a_2\left(\frac{n}{3}\right)+\frac{7}{2}a_3\left(n\right)+\frac{4305}{38}a_3\left(\frac{n}{3}\right)$$
$$-\frac{18\,437}{57}a_5\left(n\right)-\frac{1\,708\,544}{57}a_5\left(\frac{n}{2}\right)-\frac{31}{2}a_6\left(n\right)-\frac{20\,192}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{12\,736}{19}a_7\left(n\right)-\frac{20\,800}{19}a_8\left(n\right)+\frac{41\,600}{19}a_9\left(n\right),$$

$$N\left(1,2,3^5,6^9;n\right)=\frac{1}{26764800}\sigma_7\left(n\right)-\frac{1}{26764800}\sigma_7\left(\frac{n}{2}\right)+\frac{1093}{8921600}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1093}{8921600}\sigma_7\left(\frac{n}{6}\right)+\frac{16}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1093}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17488}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{54251789}{31395600}a_1\left(n\right)$$
$$-\frac{1433218}{23085}a_1\left(\frac{n}{2}\right)-\frac{6179553}{129200}a_1\left(\frac{n}{3}\right)+\frac{86149792}{218025}a_1\left(\frac{n}{4}\right)-\frac{52266}{95}a_1\left(\frac{n}{6}\right)+\frac{27773856}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{620221}{1051650}\Delta_{3,8}\left(n\right)-\frac{45487259}{1051650}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2097692326}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1260874112}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{26276}{23085}a_4\left(n\right)+\frac{307448}{4617}a_4\left(\frac{n}{2}\right)+\frac{470528}{135}a_4\left(\frac{n}{4}\right)-a_2\left(n\right)-\frac{1587}{19}a_2\left(\frac{n}{3}\right)+3a_3\left(n\right)$$
$$+\frac{2157}{19}a_3\left(\frac{n}{3}\right)-\frac{9966}{19}a_5\left(n\right)-\frac{2054272}{57}a_5\left(\frac{n}{2}\right)-15a_6\left(n\right)-\frac{24608}{19}a_6\left(\frac{n}{2}\right)-\frac{39760}{57}a_7\left(n\right)$$
$$-\frac{26432}{19}a_8\left(n\right)+\frac{46784}{19}a_9\left(n\right),$$

$$N\left(1,2,3^7,6^7;n\right)=\frac{1}{13382400}\sigma_7\left(n\right)-\frac{1}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{1093}{4460800}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1093}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{16}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1093}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17488}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{19174159}{15697800}a_1\left(n\right)$$
$$-\frac{193982}{2565}a_1\left(\frac{n}{2}\right)-\frac{4031943}{64600}a_1\left(\frac{n}{3}\right)+\frac{303568736}{654075}a_1\left(\frac{n}{4}\right)-\frac{89466}{95}a_1\left(\frac{n}{6}\right)$$
$$-\frac{18199584}{8075}a_1\left(\frac{n}{12}\right)+\frac{1617629}{2103300}\Delta_{3,8}\left(n\right)-\frac{41411053}{1051650}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{963303712}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{501902144}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{10442}{23085}a_4\left(n\right)+\frac{42112}{513}a_4\left(\frac{n}{2}\right)+\frac{1886464}{405}a_4\left(\frac{n}{4}\right)$$
$$-\frac{954}{19}a_2\left(\frac{n}{3}\right)+2a_3\left(n\right)+\frac{1752}{19}a_3\left(\frac{n}{3}\right)-\frac{49868}{57}a_5\left(n\right)-\frac{2734720}{57}a_5\left(\frac{n}{2}\right)-14a_6\left(n\right)$$
$$-\frac{33312}{19}a_6\left(\frac{n}{2}\right)-\frac{44480}{57}a_7\left(n\right)-\frac{37568}{19}a_8\left(n\right)+\frac{58112}{19}a_9\left(n\right),$$

$$N\left(1,2,3^9,6^5;n\right)=\frac{1}{6691200}\sigma_7\left(n\right)-\frac{1}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{1093}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1093}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{16}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1093}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17488}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{7027}{22950}a_1\left(n\right)$$
$$-\frac{125374}{1215}a_1\left(\frac{n}{2}\right)-\frac{37668}{425}a_1\left(\frac{n}{3}\right)+\frac{6899168}{11475}a_1\left(\frac{n}{4}\right)-\frac{8418}{5}a_1\left(\frac{n}{6}\right)-\frac{5834976}{425}a_1\left(\frac{n}{12}\right)$$
$$+\frac{13423}{12300}\Delta_{3,8}\left(n\right)-\frac{1754749}{55350}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{233832964}{27675}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{34935616}{3075}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{106}{135}a_4\left(n\right)+\frac{27152}{243}a_4\left(\frac{n}{2}\right)+\frac{940288}{135}a_4\left(\frac{n}{4}\right)+2a_2\left(n\right)+24a_2\left(\frac{n}{3}\right)$$
$$+30a_3\left(\frac{n}{3}\right)-\frac{4576}{3}a_5\left(n\right)-71424a_5\left(\frac{n}{2}\right)-12a_6\left(n\right)-2656a_6\left(\frac{n}{2}\right)$$
$$-\frac{2912}{3}a_7\left(n\right)-3136a_8\left(n\right)+4288a_9\left(n\right),$$

$$N\left(1,2,3^{11},6^{3};n\right)=\frac{1}{3345600}\sigma_7(n)-\frac{1}{3345600}\sigma_7\left(\frac{n}{2}\right)+\frac{1093}{1115200}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1093}{1115200}\sigma_7\left(\frac{n}{6}\right)+\frac{16}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1093}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17488}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{2737708}{1962225}a_1(n)$$
$$-\frac{3684128}{23085}a_1\left(\frac{n}{2}\right)-\frac{1119009}{8075}a_1\left(\frac{n}{3}\right)+\frac{576221536}{654075}a_1\left(\frac{n}{4}\right)-\frac{299196}{95}a_1\left(\frac{n}{6}\right)$$
$$-\frac{298495584}{8075}a_1\left(\frac{n}{12}\right)+\frac{1793083}{1051650}\Delta_{3,8}(n)-\frac{2917237}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{7542242636}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{2978295232}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)-\frac{71572}{23085}a_4(n)+\frac{785584}{4617}a_4\left(\frac{n}{2}\right)+\frac{4692224}{405}a_4\left(\frac{n}{4}\right)+6a_2(n)$$
$$\frac{3354}{19}a_2\left(\frac{n}{3}\right)-4a_3(n)-\frac{2100}{19}a_3\left(\frac{n}{3}\right)-\frac{157936}{57}a_5(n)-\frac{6743488}{57}a_5\left(\frac{n}{2}\right)-8a_6(n)$$
$$-\frac{84832}{19}a_6\left(\frac{n}{2}\right)-\frac{26368}{19}a_7(n)-\frac{103680}{19}a_8(n)+\frac{129536}{19}a_9(n),$$

$$N\left(1,2,3^{13},6;n\right)=\frac{1}{1672800}\sigma_7(n)-\frac{1}{1672800}\sigma_7\left(\frac{n}{2}\right)+\frac{1093}{557600}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1093}{557600}\sigma_7\left(\frac{n}{6}\right)+\frac{16}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1093}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17488}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{9141551}{1962225}a_1(n)$$
$$-\frac{1259116}{4617}a_1\left(\frac{n}{2}\right)-\frac{1906773}{8075}a_1\left(\frac{n}{3}\right)+\frac{953822816}{654075}a_1\left(\frac{n}{4}\right)-\frac{114768}{19}a_1\left(\frac{n}{6}\right)$$
$$-\frac{685051104}{8075}a_1\left(\frac{n}{12}\right)+\frac{1526788}{525825}\Delta_{3,8}(n)+\frac{6615238}{525825}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{13736655476}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{5003340992}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)-\frac{174584}{23085}a_4(n)+\frac{1318480}{4617}a_4\left(\frac{n}{2}\right)+\frac{8445184}{405}a_4\left(\frac{n}{4}\right)$$
$$+14a_2(n)+\frac{9114}{19}a_2\left(\frac{n}{3}\right)-12a_3(n)-\frac{7632}{19}a_3\left(\frac{n}{3}\right)-\frac{99376}{19}a_5(n)-\frac{12086336}{57}a_5\left(\frac{n}{2}\right)$$
$$-\frac{153632}{19}a_6\left(\frac{n}{2}\right)-\frac{129344}{57}a_7(n)-\frac{193152}{19}a_8(n)+\frac{228224}{19}a_9(n),$$

$$N\left(1,2^3,3,6^{11};n\right)=\frac{1}{21411840}\sigma_7(n)-\frac{1}{21411840}\sigma_7\left(\frac{n}{2}\right)-\frac{219}{7137280}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{219}{7137280}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{219}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3504}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{76427711}{25116480}a_1(n)$$
$$-\frac{773183}{18468}a_1\left(\frac{n}{2}\right)-\frac{1035447}{103360}a_1\left(\frac{n}{3}\right)+\frac{36065152}{130815}a_1\left(\frac{n}{4}\right)+\frac{10527}{76}a_1\left(\frac{n}{6}\right)+\frac{20941632}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{416821}{3365280}\Delta_{3,8}(n)-\frac{28040579}{560880}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{131698787}{105165}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{166710464}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{53909}{18468}a_4(n)+\frac{178124}{4617}a_4\left(\frac{n}{2}\right)+\frac{111872}{81}a_4\left(\frac{n}{4}\right)-\frac{11}{4}a_2(n)-\frac{8991}{76}a_2\left(\frac{n}{3}\right)$$
$$+\frac{19}{4}a_3(n)+\frac{7623}{76}a_3\left(\frac{n}{3}\right)+\frac{11645}{38}a_5(n)-\frac{275520}{19}a_5\left(\frac{n}{2}\right)-\frac{69}{4}a_6(n)$$
$$-\frac{9088}{19}a_6\left(\frac{n}{2}\right)-\frac{36200}{57}a_7(n)-\frac{5440}{19}a_8(n)+\frac{29120}{19}a_9(n),$$

$$N\left(1,2^3,3^3,6^9;n\right)=\frac{1}{10705920}\sigma_7(n)-\frac{1}{10705920}\sigma_7\left(\frac{n}{2}\right)-\frac{219}{3568640}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{219}{3568640}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{219}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3504}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{48947041}{12558240}a_1(n)$$
$$-\frac{1530623}{46170}a_1\left(\frac{n}{2}\right)+\frac{647043}{51680}a_1\left(\frac{n}{3}\right)+\frac{29563808}{130815}a_1\left(\frac{n}{4}\right)+\frac{124899}{190}a_1\left(\frac{n}{6}\right)+\frac{28290528}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{129737}{841320}\Delta_{3,8}(n)-\frac{1978996}{35055}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{18091228}{105165}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{129667456}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{18707}{4617}a_4(n)+\frac{105392}{4617}a_4\left(\frac{n}{2}\right)+\frac{27136}{81}a_4\left(\frac{n}{4}\right)-\frac{7}{2}a_2(n)-\frac{4581}{38}a_2\left(\frac{n}{3}\right)$$
$$+\frac{11}{2}a_3(n)+\frac{2529}{38}a_3\left(\frac{n}{3}\right)+\frac{14477}{19}a_5(n)-\frac{70016}{19}a_5\left(\frac{n}{2}\right)-\frac{39}{2}a_6(n)$$
$$-\frac{1184}{19}a_6\left(\frac{n}{2}\right)-\frac{37568}{57}a_7(n)+\frac{4288}{19}a_8(n)+\frac{23040}{19}a_9(n),$$

$$N\left(1,2^3,3^5,6^7;n\right)=\frac{1}{5352960}\sigma_7(n)-\frac{1}{5352960}\sigma_7\left(\frac{n}{2}\right)-\frac{219}{1784320}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{219}{1784320}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{219}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3504}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{709357}{139536}a_1(n)$$
$$-\frac{116534}{7695}a_1\left(\frac{n}{2}\right)+\frac{223983}{5168}a_1\left(\frac{n}{3}\right)+\frac{3339424}{26163}a_1\left(\frac{n}{4}\right)+\frac{130086}{95}a_1\left(\frac{n}{6}\right)+\frac{8215776}{323}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1665}{3116}\Delta_{3,8}(n)-\frac{2382854}{35055}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{30845482}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{11609600}{7011}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{2882}{513}a_4(n)-\frac{824}{1539}a_4\left(\frac{n}{2}\right)-\frac{124928}{81}a_4\left(\frac{n}{4}\right)-5a_2(n)-\frac{2871}{19}a_2\left(\frac{n}{3}\right)+7a_3(n)$$
$$+\frac{1161}{19}a_3\left(\frac{n}{3}\right)+\frac{27130}{19}a_5(n)+\frac{297728}{19}a_5\left(\frac{n}{2}\right)-23a_6(n)+\frac{12832}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{11568}{19}a_7(n)+\frac{21952}{19}a_8(n)+\frac{8384}{19}a_9(n),$$

$$N\left(1,2^3,3^7,6^5;n\right)=\frac{1}{2676480}\sigma_7(n)-\frac{1}{2676480}\sigma_7\left(\frac{n}{2}\right)-\frac{219}{892160}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{219}{892160}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{219}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3504}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{21920611}{3139560}a_1(n)$$
$$+\frac{102754}{4617}a_1\left(\frac{n}{2}\right)+\frac{1162653}{12920}a_1\left(\frac{n}{3}\right)-\frac{8790368}{130815}a_1\left(\frac{n}{4}\right)+\frac{48894}{19}a_1\left(\frac{n}{6}\right)+\frac{67527072}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{466729}{420660}\Delta_{3,8}(n)-\frac{716801}{7790}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{758110888}{105165}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{82280896}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{37358}{4617}a_4(n)-\frac{177184}{4617}a_4\left(\frac{n}{2}\right)-\frac{411904}{81}a_4\left(\frac{n}{4}\right)-8a_2(n)-\frac{4626}{19}a_2\left(\frac{n}{3}\right)$$
$$+10a_3(n)+\frac{2232}{19}a_3\left(\frac{n}{3}\right)+\frac{47244}{19}a_5(n)+\frac{987136}{19}a_5\left(\frac{n}{2}\right)-30a_6(n)$$
$$+\frac{39200}{19}a_6\left(\frac{n}{2}\right)-\frac{23168}{57}a_7(n)+\frac{55616}{19}a_8(n)-\frac{23680}{19}a_9(n),$$

$$N\left(1,2^3,3^9,6^3;n\right)=\frac{1}{1338240}\sigma_7(n)-\frac{1}{1338240}\sigma_7\left(\frac{n}{2}\right)-\frac{219}{446080}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{219}{446080}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{219}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3504}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{8062919}{784890}a_1(n)$$
$$+\frac{462686}{4617}a_1\left(\frac{n}{2}\right)+\frac{272571}{1615}a_1\left(\frac{n}{3}\right)-\frac{2259872}{4845}a_1\left(\frac{n}{4}\right)+\frac{92010}{19}a_1\left(\frac{n}{6}\right)+\frac{121990176}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{875279}{420660}\Delta_{3,8}(n)-\frac{9835249}{70110}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{1690524524}{105165}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{122361536}{11685}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{57034}{4617}a_4(n)-\frac{494960}{4617}a_4\left(\frac{n}{2}\right)-12032a_4\left(\frac{n}{4}\right)-14a_2(n)-\frac{8712}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$+\frac{5634}{19}a_3\left(\frac{n}{3}\right)+\frac{82336}{19}a_5(n)+\frac{2332544}{19}a_5\left(\frac{n}{2}\right)-44a_6(n)+\frac{90912}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{6752}{57}a_7(n)+\frac{121920}{19}a_8(n)-\frac{91840}{19}a_9(n),$$

$$N\left(1,2^3,3^{11},6;n\right)=\frac{1}{669120}\sigma_7(n)-\frac{1}{669120}\sigma_7\left(\frac{n}{2}\right)-\frac{219}{223040}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{219}{223040}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{219}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3504}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{6337912}{392445}a_1(n)$$
$$+\frac{6051688}{23085}a_1\left(\frac{n}{2}\right)+\frac{508371}{1615}a_1\left(\frac{n}{3}\right)-\frac{11386528}{8721}a_1\left(\frac{n}{4}\right)+\frac{888756}{95}a_1\left(\frac{n}{6}\right)+\frac{46913760}{323}a_1\left(\frac{n}{12}\right)$$
$$-\frac{816157}{210330}\Delta_{3,8}(n)-\frac{8281841}{35055}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{3534320108}{105165}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{63950912}{2337}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{92476}{4617}a_4(n)-\frac{1099760}{4617}a_4\left(\frac{n}{2}\right)-\frac{699136}{27}a_4\left(\frac{n}{4}\right)-26a_2(n)-\frac{17406}{19}a_2\left(\frac{n}{3}\right)$$
$$+28a_3(n)+\frac{13644}{19}a_3\left(\frac{n}{3}\right)+\frac{146032}{19}a_5(n)+\frac{5004864}{19}a_5\left(\frac{n}{2}\right)-72a_6(n)$$
$$+\frac{194016}{19}a_6\left(\frac{n}{2}\right)+\frac{78080}{57}a_7(n)+\frac{254208}{19}a_8(n)-\frac{236032}{19}a_9(n),$$

$$N\left(1,2^5,3,6^9;n\right)=\frac{13}{107059200}\sigma_7(n)-\frac{13}{107059200}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{35686400}\sigma_7\left(\frac{n}{3}\right)-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1089}{35686400}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{930617}{734400}a_1(n)$$
$$-\frac{101227}{1620}a_1\left(\frac{n}{2}\right)-\frac{1474281}{27200}a_1\left(\frac{n}{3}\right)+\frac{13629632}{34425}a_1\left(\frac{n}{4}\right)-\frac{16047}{20}a_1\left(\frac{n}{6}\right)+\frac{2414592}{425}a_1\left(\frac{n}{12}\right)$$
$$+\frac{65827}{98400}\Delta_{3,8}(n)-\frac{4069037}{147600}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{14171533}{3075}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{67518784}{9225}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{323}{540}a_4(n)+\frac{5420}{81}a_4\left(\frac{n}{2}\right)+\frac{1591552}{405}a_4\left(\frac{n}{4}\right)-\frac{3}{4}a_2(n)-\frac{405}{4}a_2\left(\frac{n}{3}\right)+\frac{11}{4}a_3(n)$$
$$+\frac{621}{4}a_3\left(\frac{n}{3}\right)-\frac{1209}{2}a_5(n)-41280a_5\left(\frac{n}{2}\right)-\frac{45}{4}a_6(n)-1472a_6\left(\frac{n}{2}\right)-616a_7(n)$$
$$-1472a_8(n)+2368a_9(n),$$

$$N\left(1,2^5,3^3,6^7;n\right)=\sigma_7\left(n\right)-\frac{13}{53529600}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{17843200}\sigma_7\left(\frac{n}{3}\right)$$
$$-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)-\frac{1089}{17843200}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)$$
$$-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{14660221}{20930400}a_1\left(n\right)$$
$$-\frac{1110329}{15390}a_1\left(\frac{n}{2}\right)-\frac{26966349}{258400}a_1\left(\frac{n}{3}\right)+\frac{33471712}{72675}a_1\left(\frac{n}{4}\right)$$
$$-\frac{356409}{190}a_1\left(\frac{n}{6}\right)-\frac{7856352}{8075}a_1\left(\frac{n}{12}\right)+\frac{903031}{701100}\Delta_{3,8}\left(n\right)$$
$$-\frac{2784353}{233700}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1240047556}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{513576832}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{15302}{7695}a_4\left(n\right)+\frac{144368}{1539}a_4\left(\frac{n}{2}\right)+\frac{255488}{45}a_4\left(\frac{n}{4}\right)+\frac{1}{2}a_2\left(n\right)$$
$$-\frac{5265}{38}a_2\left(\frac{n}{3}\right)+\frac{3}{2}a_3\left(n\right)+\frac{11421}{38}a_3\left(\frac{n}{3}\right)-\frac{29451}{19}a_5\left(n\right)$$
$$-\frac{1132800}{19}a_5\left(\frac{n}{2}\right)-\frac{11}{2}a_6\left(n\right)-\frac{41312}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{8064}{19}a_7\left(n\right)-\frac{44352}{19}a_8\left(n\right)+\frac{49792}{19}a_9\left(n\right),$$

$$N\left(1,2^5,3^5,6^5;n\right)=\frac{13}{26764800}\sigma_7\left(n\right)-\frac{13}{26764800}\sigma_7\left(\frac{n}{2}\right)$$
$$+\frac{1089}{8921600}\sigma_7\left(\frac{n}{3}\right)-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)-\frac{1089}{8921600}\sigma_7\left(\frac{n}{6}\right)$$
$$+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)$$
$$+\frac{3886589}{1162800}a_1\left(n\right)-\frac{743798}{7695}a_1\left(\frac{n}{2}\right)-\frac{21525669}{129200}a_1\left(\frac{n}{3}\right)$$
$$+\frac{398828128}{654075}a_1\left(\frac{n}{4}\right)-\frac{305658}{95}a_1\left(\frac{n}{6}\right)-\frac{106168032}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{120131}{58425}\Delta_{3,8}\left(n\right)+\frac{7642681}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{661236142}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{2099275136}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)-\frac{4616}{855}a_4\left(n\right)+\frac{192712}{1539}a_4\left(\frac{n}{2}\right)$$
$$+\frac{3594752}{405}a_4\left(\frac{n}{4}\right)+3a_2\left(n\right)-\frac{2295}{19}a_2\left(\frac{n}{3}\right)-a_3\left(n\right)+\frac{7425}{19}a_3\left(\frac{n}{3}\right)$$
$$-\frac{52854}{19}a_5\left(n\right)-\frac{1765248}{19}a_5\left(\frac{n}{2}\right)+5a_6\left(n\right)-\frac{65184}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{6960}{19}a_7\left(n\right)-\frac{74304}{19}a_8\left(n\right)+\frac{69568}{19}a_9\left(n\right),$$

$$N\left(1,2^5,3^7,6^3;n\right)=\frac{13}{13382400}\sigma_7\left(n\right)-\frac{13}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{4460800}\sigma_7\left(\frac{n}{3}\right)-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1089}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{38969711}{5232600}a_1\left(n\right)$$
$$-\frac{1151386}{7695}a_1\left(\frac{n}{2}\right)-\frac{16236459}{64600}a_1\left(\frac{n}{3}\right)+\frac{594178528}{654075}a_1\left(\frac{n}{4}\right)-\frac{505386}{95}a_1\left(\frac{n}{6}\right)-\frac{315472032}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{2174459}{701100}\Delta_{3,8}\left(n\right)+\frac{32259157}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3315338816}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3194860736}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{81178}{7695}a_4\left(n\right)+\frac{255488}{1539}a_4\left(\frac{n}{2}\right)+\frac{5979392}{405}a_4\left(\frac{n}{4}\right)+8a_2\left(n\right)+\frac{270}{19}a_2\left(\frac{n}{3}\right)-6a_3\left(n\right)$$
$$+\frac{6912}{19}a_3\left(\frac{n}{3}\right)-\frac{86484}{19}a_5\left(n\right)-\frac{2918016}{19}a_5\left(\frac{n}{2}\right)+26a_6\left(n\right)-\frac{108960}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{10304}{19}a_7\left(n\right)-\frac{130240}{19}a_8\left(n\right)+\frac{116992}{19}a_9\left(n\right),$$

$$N\left(1,2^5,3^9,6;n\right)=\sigma_7\left(n\right)-\frac{13}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1089}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{18671533}{1308150}a_1\left(n\right)$$
$$-\frac{2072086}{7695}a_1\left(\frac{n}{2}\right)-\frac{3101526}{8075}a_1\left(\frac{n}{3}\right)+\frac{337131296}{218025}a_1\left(\frac{n}{4}\right)-\frac{885726}{95}a_1\left(\frac{n}{6}\right)-\frac{756797472}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{3322483}{701100}\Delta_{3,8}\left(n\right)+\frac{27336373}{116850}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{5896404436}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1830837952}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{146306}{7695}a_4\left(n\right)+\frac{358736}{1539}a_4\left(\frac{n}{2}\right)+\frac{3560704}{135}a_4\left(\frac{n}{4}\right)+18a_2\left(n\right)+\frac{7344}{19}a_2\left(\frac{n}{3}\right)-16a_3\left(n\right)$$
$$+\frac{1890}{19}a_3\left(\frac{n}{3}\right)-\frac{139488}{19}a_5\left(n\right)-\frac{5175552}{19}a_5\left(\frac{n}{2}\right)+68a_6\left(n\right)-\frac{195488}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{24544}{19}a_7\left(n\right)-\frac{241088}{19}a_8\left(n\right)+\frac{225600}{19}a_9\left(n\right),$$

$$N\left(1,2^7,3,6^7;n\right)=\frac{1}{2611200}\sigma_7\left(n\right)-\frac{1}{2611200}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{870400}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{870400}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{26650837}{4651200}a_1\left(n\right)$$
$$-\frac{422639}{10260}a_1\left(\frac{n}{2}\right)+\frac{28740177}{516800}a_1\left(\frac{n}{3}\right)+\frac{47870848}{218025}a_1\left(\frac{n}{4}\right)+\frac{347463}{380}a_1\left(\frac{n}{6}\right)+\frac{136102464}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{10433}{15200}\Delta_{3,8}\left(n\right)-\frac{1726417}{22800}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{565303}{475}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{4867136}{1425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{21943}{3420}a_4\left(n\right)+\frac{12316}{513}a_4\left(\frac{n}{2}\right)-\frac{49408}{135}a_4\left(\frac{n}{4}\right)-\frac{15}{4}a_2\left(n\right)-\frac{4131}{76}a_2\left(\frac{n}{3}\right)$$
$$+\frac{23}{4}a_3\left(n\right)-\frac{8181}{76}a_3\left(\frac{n}{3}\right)+\frac{56673}{38}a_5\left(n\right)+\frac{80064}{19}a_5\left(\frac{n}{2}\right)-\frac{105}{4}a_6\left(n\right)$$
$$+\frac{3712}{19}a_6\left(\frac{n}{2}\right)-\frac{17496}{19}a_7\left(n\right)+\frac{12224}{19}a_8\left(n\right)+\frac{27840}{19}a_9\left(n\right),$$

$$N\left(1,2^7,3^3,6^5;n\right)=\frac{1}{1305600}\sigma_7(n)-\frac{1}{1305600}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{435200}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{435200}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{226286603}{20930400}a_1(n)$$
$$-\frac{12797}{342}a_1\left(\frac{n}{2}\right)+\frac{49457907}{258400}a_1\left(\frac{n}{3}\right)+\frac{85331104}{654075}a_1\left(\frac{n}{4}\right)+\frac{129699}{38}a_1\left(\frac{n}{6}\right)+\frac{191353824}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{80801}{34200}\Delta_{3,8}(n)-\frac{875719}{8550}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{26064172}{4275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{5024128}{4275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{101371}{7695}a_4(n)-\frac{7568}{171}a_4\left(\frac{n}{2}\right)-\frac{1467904}{405}a_4\left(\frac{n}{4}\right)-\frac{11}{2}a_2(n)+\frac{5319}{38}a_2\left(\frac{n}{3}\right)$$
$$+\frac{15}{2}a_3(n)-\frac{23787}{38}a_3\left(\frac{n}{3}\right)+\frac{75249}{19}a_5(n)+\frac{746880}{19}a_5\left(\frac{n}{2}\right)-\frac{75}{2}a_6(n)$$
$$+\frac{28896}{19}a_6\left(\frac{n}{2}\right)-\frac{32000}{19}a_7(n)+\frac{41664}{19}a_8(n)+\frac{35840}{19}a_9(n),$$

$$N(1,2^7,3^5,6^3;n)=\frac{1}{652800}\sigma_7(n)-\frac{1}{652800}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{217600}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{217600}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{178254803}{10465200}a_1(n)$$
$$-\frac{13798}{855}a_1\left(\frac{n}{2}\right)+\frac{44041707}{129200}a_1\left(\frac{n}{3}\right)-\frac{42759136}{654075}a_1\left(\frac{n}{4}\right)+\frac{576918}{95}a_1\left(\frac{n}{6}\right)+\frac{301317984}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{71951}{17100}\Delta_{3,8}(n)-\frac{729679}{4275}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{57412142}{4275}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{14052352}{4275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{163442}{7695}a_4(n)-\frac{17560}{171}a_4\left(\frac{n}{2}\right)-\frac{3620864}{405}a_4\left(\frac{n}{4}\right)-9a_2(n)+\frac{4509}{19}a_2\left(\frac{n}{3}\right)$$
$$+11a_3(n)-\frac{19899}{19}a_3\left(\frac{n}{3}\right)+\frac{127458}{19}a_5(n)+\frac{1820928}{19}a_5\left(\frac{n}{2}\right)-59a_6(n)$$
$$+\frac{68512}{19}a_6\left(\frac{n}{2}\right)-\frac{43120}{19}a_7(n)+\frac{89792}{19}a_8(n)+\frac{23488}{19}a_9(n),$$

$$N\left(1,2^7,3^7,6;n\right)=\frac{1}{326400}\sigma_7(n)-\frac{1}{326400}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{108800}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{108800}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{136362553}{5232600}a_1(n)$$
$$+\frac{14210}{513}a_1\left(\frac{n}{2}\right)+\frac{32941557}{64600}a_1\left(\frac{n}{3}\right)-\frac{231124576}{654075}a_1\left(\frac{n}{4}\right)+\frac{178974}{19}a_1\left(\frac{n}{6}\right)+\frac{537354144}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{107627}{17100}\Delta_{3,8}(n)-\frac{2692001}{8550}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{104633432}{4275}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{42576832}{4275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{248954}{7695}a_4(n)-\frac{74528}{513}a_4\left(\frac{n}{2}\right)-\frac{6965504}{405}a_4\left(\frac{n}{4}\right)-16a_2(n)+\frac{2646}{19}a_2\left(\frac{n}{3}\right)$$
$$+18a_3(n)-\frac{24192}{19}a_3\left(\frac{n}{3}\right)+\frac{191772}{19}a_5(n)+\frac{3475200}{19}a_5\left(\frac{n}{2}\right)-102a_6(n)$$
$$+\frac{129952}{19}a_6\left(\frac{n}{2}\right)-\frac{52096}{19}a_7(n)+\frac{168256}{19}a_8(n)-\frac{15488}{19}a_9(n),$$

$$N\left(1,2^9,3,6^5;n\right)=\frac{121}{107059200}\sigma_7(n)-\frac{121}{107059200}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{35686400}\sigma_7\left(\frac{n}{3}\right)$$
$$-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)-\frac{1053}{35686400}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)$$
$$+\frac{2420547}{516800}a_1(n)-\frac{101747}{2052}a_1\left(\frac{n}{2}\right)-\frac{110128383}{516800}a_1\left(\frac{n}{3}\right)+\frac{93447872}{218025}a_1\left(\frac{n}{4}\right)-\frac{254853}{76}a_1\left(\frac{n}{6}\right)$$
$$+\frac{63127296}{8075}a_1\left(\frac{n}{12}\right)+\frac{4918261}{1869600}\Delta_{3,8}(n)+\frac{10977943}{934800}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{549806939}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{504268864}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)-\frac{8339}{1140}a_4(n)+\frac{68540}{513}a_4\left(\frac{n}{2}\right)+\frac{947968}{135}a_4\left(\frac{n}{4}\right)+\frac{1}{4}a_2(n)$$
$$-\frac{30699}{76}a_2\left(\frac{n}{3}\right)+\frac{7}{4}a_3(n)+\frac{67635}{76}a_3\left(\frac{n}{3}\right)-\frac{126927}{38}a_5(n)-\frac{1444032}{19}a_5\left(\frac{n}{2}\right)$$
$$+\frac{7}{4}a_6(n)-\frac{51264}{19}a_6\left(\frac{n}{2}\right)+\frac{10536}{19}a_7(n)-\frac{51264}{19}a_8(n)+\frac{18624}{19}a_9(n),$$

$$N\left(1,2^9,3^3,6^3;n\right)=\frac{121}{53529600}\sigma_7(n)-\frac{121}{53529600}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{17843200}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{17843200}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{374620577}{20930400}a_1(n)$$
$$-\frac{124711}{5130}a_1\left(\frac{n}{2}\right)-\frac{152510913}{258400}a_1\left(\frac{n}{3}\right)+\frac{323594336}{654075}a_1\left(\frac{n}{4}\right)-\frac{1828773}{190}a_1\left(\frac{n}{6}\right)+\frac{65306016}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{1277093}{175275}\Delta_{3,8}(n)+\frac{31311067}{701100}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3480236252}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1978133632}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{193804}{7695}a_4(n)+\frac{165616}{513}a_4\left(\frac{n}{2}\right)+\frac{5430784}{405}a_4\left(\frac{n}{4}\right)+\frac{5}{2}a_2(n)-\frac{43389}{38}a_2\left(\frac{n}{3}\right)$$
$$-\frac{1}{2}a_3(n)+\frac{98793}{38}a_3\left(\frac{n}{3}\right)-\frac{191583}{19}a_5(n)-\frac{2798592}{19}a_5\left(\frac{n}{2}\right)+\frac{41}{2}a_6(n)$$
$$-\frac{101344}{19}a_6\left(\frac{n}{2}\right)+\frac{59840}{19}a_7(n)-\frac{106816}{19}a_8(n)-\frac{39296}{19}a_9(n),$$

$$N\left(1,2^9,3^5,6;n\right)=\frac{121}{26764800}\sigma_7(n)-\frac{121}{26764800}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{8921600}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{8921600}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{348118937}{10465200}a_1(n)$$
$$+\frac{9934}{2565}a_1\left(\frac{n}{2}\right)-\frac{126054153}{129200}a_1\left(\frac{n}{3}\right)+\frac{361337056}{654075}a_1\left(\frac{n}{4}\right)-\frac{1412298}{95}a_1\left(\frac{n}{6}\right)+\frac{44351136}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{4222157}{350550}\Delta_{3,8}(n)+\frac{55114027}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{5650411762}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2498367872}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{348668}{7695}a_4(n)+\frac{235768}{513}a_4\left(\frac{n}{2}\right)+\frac{8743424}{405}a_4\left(\frac{n}{4}\right)+7a_2(n)-\frac{32859}{19}a_2\left(\frac{n}{3}\right)$$
$$-5a_3(n)+\frac{79029}{19}a_3\left(\frac{n}{3}\right)-\frac{324414}{19}a_5(n)-\frac{4531584}{19}a_5\left(\frac{n}{2}\right)+57a_6(n)$$
$$-\frac{162080}{19}a_6\left(\frac{n}{2}\right)+\frac{109072}{19}a_7(n)-\frac{178496}{19}a_8(n)-\frac{86848}{19}a_9(n),$$

$$N\left(1,2^{11},3,6^3;n\right)=\frac{73}{21411840}\sigma_7(n)-\frac{73}{21411840}\sigma_7\left(\frac{n}{2}\right)-\frac{243}{7137280}\sigma_7\left(\frac{n}{3}\right)+\frac{73}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{243}{7137280}\sigma_7\left(\frac{n}{6}\right)-\frac{1168}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3888}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{189044797}{8372160}a_1(n)$$
$$-\frac{377993}{3420}a_1\left(\frac{n}{2}\right)+\frac{56204433}{103360}a_1\left(\frac{n}{3}\right)+\frac{8630144}{26163}a_1\left(\frac{n}{4}\right)+\frac{3051603}{380}a_1\left(\frac{n}{6}\right)+\frac{2018880}{323}a_1\left(\frac{n}{12}\right)$$
$$-\frac{7530433}{1121760}\Delta_{3,8}(n)-\frac{53148667}{560880}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{414610967}{35055}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{25619392}{7011}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{180319}{6156}a_4(n)+-\frac{34748}{171}a_4\left(\frac{n}{2}\right)-\frac{508672}{81}a_4\left(\frac{n}{4}\right)-\frac{19}{4}a_2(n)+\frac{76761}{76}a_2\left(\frac{n}{3}\right)$$
$$+\frac{27}{4}a_3(n)-\frac{187569}{76}a_3\left(\frac{n}{3}\right)+\frac{384741}{38}a_5(n)+\frac{1384896}{19}a_5\left(\frac{n}{2}\right)-\frac{173}{4}a_6(n)$$
$$+\frac{50304}{19}a_6\left(\frac{n}{2}\right)-\frac{88120}{19}a_7(n)+\frac{63680}{19}a_8(n)+\frac{134080}{19}a_9(n),$$

$$N\left(1,2^{11},3^3,6;n\right)=\frac{73}{10705920}\sigma_7(n)-\frac{73}{10705920}\sigma_7\left(\frac{n}{2}\right)-\frac{243}{3568640}\sigma_7\left(\frac{n}{3}\right)+\frac{73}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{243}{3568640}\sigma_7\left(\frac{n}{6}\right)-\frac{1168}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3888}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{245957363}{4186080}a_1(n)$$
$$-\frac{23035}{114}a_1\left(\frac{n}{2}\right)+\frac{85846347}{51680}a_1\left(\frac{n}{3}\right)+\frac{21952672}{130815}a_1\left(\frac{n}{4}\right)+\frac{960831}{38}a_1\left(\frac{n}{6}\right)-\frac{28109088}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{5751031}{280440}\Delta_{3,8}(n)-\frac{3662827}{35055}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{1403022116}{35055}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{110448256}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{121981}{1539}a_4(n)-\frac{15152}{19}a_4\left(\frac{n}{2}\right)-\frac{1873408}{81}a_4\left(\frac{n}{4}\right)-\frac{15}{2}a_2(n)+\frac{131571}{38}a_2\left(\frac{n}{3}\right)$$
$$+\frac{19}{2}a_3(n)-\frac{297783}{38}a_3\left(\frac{n}{3}\right)+\frac{566901}{19}a_5(n)+\frac{5008512}{19}a_5\left(\frac{n}{2}\right)-\frac{143}{2}a_6(n)$$
$$+\frac{181856}{19}a_6\left(\frac{n}{2}\right)-\frac{236224}{19}a_7(n)+\frac{201920}{19}a_8(n)+\frac{328192}{19}a_9(n),$$

$$N\left(1,2^{13},3,6;n\right)=\frac{1093}{107059200}\sigma_7(n)-\frac{1093}{107059200}\sigma_7\left(\frac{n}{2}\right)+\frac{729}{35686400}\sigma_7\left(\frac{n}{3}\right)-\frac{1093}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{729}{35686400}\sigma_7\left(\frac{n}{6}\right)+\frac{17488}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{11664}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{724141757}{13953600}a_1(n)$$
$$+\frac{1279069}{10260}a_1\left(\frac{n}{2}\right)-\frac{861519699}{516800}a_1\left(\frac{n}{3}\right)+\frac{64369856}{218025}a_1\left(\frac{n}{4}\right)-\frac{10361493}{380}a_1\left(\frac{n}{6}\right)+\frac{302980608}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{38477233}{1869600}\Delta_{3,8}(n)-\frac{66763541}{934800}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2394970367}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{634891072}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{743663}{10260}a_4(n)+\frac{496396}{513}a_4\left(\frac{n}{2}\right)+\frac{3230464}{135}a_4\left(\frac{n}{4}\right)+\frac{5}{4}a_2(n)-\frac{292167}{76}a_2\left(\frac{n}{3}\right)$$
$$+\frac{3}{4}a_3(n)+\frac{624591}{76}a_3\left(\frac{n}{3}\right)-\frac{1114371}{38}a_5(n)-\frac{5141952}{19}a_5\left(\frac{n}{2}\right)+\frac{91}{4}a_6(n)$$
$$-\frac{190272}{19}a_6\left(\frac{n}{2}\right)+\frac{222216}{19}a_7(n)-\frac{190272}{19}a_8(n)+-\frac{301632}{19}a_9(n),$$

$$N\left(1^2,6^{14};n\right)=\frac{1}{53529600}\sigma_7(n)-\frac{1}{53529600}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{17843200}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{17843200}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{94244213}{20930400}a_1(n)$$
$$-\frac{1723621}{15390}a_1\left(\frac{n}{2}\right)-\frac{17309103}{258400}a_1\left(\frac{n}{3}\right)+\frac{416839168}{654075}a_1\left(\frac{n}{4}\right)-\frac{92661}{190}a_1\left(\frac{n}{6}\right)+\frac{123748608}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{2319703}{2804400}\Delta_{3,8}(n)-\frac{44249777}{467400}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{118060434}{19475}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2388831616}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{56567}{15390}a_4(n)+\frac{176872}{1539}a_4\left(\frac{n}{2}\right)+\frac{2243072}{405}a_4\left(\frac{n}{4}\right)-\frac{7}{2}a_2(n)-\frac{7233}{38}a_2\left(\frac{n}{3}\right)+\frac{15}{2}a_3(n)$$
$$+\frac{7233}{38}a_3\left(\frac{n}{3}\right)-\frac{23893}{57}a_5(n)-\frac{3256192}{57}a_5\left(\frac{n}{2}\right)-\frac{65}{2}a_6(n)-\frac{38400}{19}a_6\left(\frac{n}{2}\right)-\frac{76688}{57}a_7(n)$$
$$-\frac{35968}{19}a_8(n)+\frac{79232}{19}a_9(n),$$

$$N\left(1^2,3^2,6^{12};n\right)=\frac{1}{26764800}\sigma_7(n)-\frac{1}{26764800}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{8921600}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{8921600}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{153792059}{31395600}a_1(n)$$
$$-\frac{85099}{855}a_1\left(\frac{n}{2}\right)-\frac{7136643}{129200}a_1\left(\frac{n}{3}\right)+\frac{428464448}{654075}a_1\left(\frac{n}{4}\right)-\frac{12351}{95}a_1\left(\frac{n}{6}\right)+\frac{144295488}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{2870179}{4206600}\Delta_{3,8}(n)-\frac{203632883}{2103300}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{833224756}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2034565376}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{97331}{23085}a_4(n)+\frac{16912}{171}a_4\left(\frac{n}{2}\right)+\frac{1825792}{405}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{3822}{19}a_2\left(\frac{n}{3}\right)+8a_3(n)$$
$$+\frac{3594}{19}a_3\left(\frac{n}{3}\right)-\frac{3062}{19}a_5(n)-\frac{2668160}{57}a_5\left(\frac{n}{2}\right)-33a_6(n)-\frac{30912}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{75616}{57}a_7(n)-\frac{29696}{19}a_8(n)+\frac{73984}{19}a_9(n),$$

$$N\left(1^2,3^4,6^{10};n\right)=\frac{1}{13382400}\sigma_7(n)-\frac{1}{13382400}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{4460800}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{4460800}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{80615219}{15697800}a_1(n)$$
$$-\frac{257936}{2565}a_1\left(\frac{n}{2}\right)-\frac{3225963}{64600}a_1\left(\frac{n}{3}\right)+\frac{430488128}{654075}a_1\left(\frac{n}{4}\right)-\frac{5448}{95}a_1\left(\frac{n}{6}\right)+\frac{141259968}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{1298239}{2103300}\Delta_{3,8}(n)-\frac{104642483}{1051650}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{269811092}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2039918336}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{104302}{23085}a_4(n)+\frac{50320}{513}a_4\left(\frac{n}{2}\right)+\frac{1795072}{405}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{3690}{19}a_2\left(\frac{n}{3}\right)+8a_3(n)$$
$$+\frac{3234}{19}a_3\left(\frac{n}{3}\right)-\frac{4420}{57}a_5(n)-\frac{2615552}{57}a_5\left(\frac{n}{2}\right)-34a_6(n)-\frac{30272}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{77920}{57}a_7(n)-\frac{29056}{19}a_8(n)+\frac{75136}{19}a_9(n),$$

$$N\left(1^2,3^6,6^8;n\right)=\frac{1}{6691200}\sigma_7(n)-\frac{1}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{2230400}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{42532669}{7848900}a_1(n)$$
$$-\frac{263156}{2565}a_1\left(\frac{n}{2}\right)+-\frac{1463913}{32300}a_1\left(\frac{n}{3}\right)+\frac{145113536}{218025}a_1\left(\frac{n}{4}\right)-\frac{588}{95}a_1\left(\frac{n}{6}\right)+\frac{137082048}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{294982}{525825}\Delta_{3,8}(n)-\frac{55481638}{525825}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{794388736}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{686261632}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{112144}{23085}a_4(n)+\frac{51712}{513}a_4\left(\frac{n}{2}\right)+\frac{592384}{135}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{3588}{19}a_2\left(\frac{n}{3}\right)+8a_3(n)$$
$$+\frac{2904}{19}a_3\left(\frac{n}{3}\right)-\frac{1112}{57}a_5(n)-\frac{860032}{19}a_5\left(\frac{n}{2}\right)-36a_6(n)-\frac{29888}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{26880}{19}a_7(n)-\frac{28672}{19}a_8(n)+\frac{76800}{19}a_9(n),$$

$$N\left(1^2,3^8,6^6;n\right)=\frac{1}{3345600}\sigma_7(n)-\frac{1}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{1115200}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{1264268}{218025}a_1(n)$$
$$-\frac{816196}{7695}a_1\left(\frac{n}{2}\right)-\frac{340149}{8075}a_1\left(\frac{n}{3}\right)+\frac{443021888}{654075}a_1\left(\frac{n}{4}\right)+\frac{3084}{95}a_1\left(\frac{n}{6}\right)+\frac{131761728}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{20369}{38950}\Delta_{3,8}(n)-\frac{20689507}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{87756104}{19475}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2091165056}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{13532}{2565}a_4(n)+\frac{168992}{1539}a_4\left(\frac{n}{2}\right)+\frac{1772032}{405}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{3516}{19}a_2\left(\frac{n}{3}\right)+8a_3(n)$$
$$+\frac{2604}{19}a_3\left(\frac{n}{3}\right)-\frac{896}{57}a_5(n)-\frac{2561792}{57}a_5\left(\frac{n}{2}\right)-40a_6(n)-\frac{29760}{19}a_6\left(\frac{n}{2}\right)-\frac{83776}{57}a_7(n)$$
$$-\frac{28544}{19}a_8(n)+\frac{78976}{19}a_9(n),$$

$$N\left(1^2,3^{10},6^4;n\right)=\frac{1}{1672800}\sigma_7(n)-\frac{1}{1672800}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{557600}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{557600}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{12474544}{1962225}a_1(n)$$
$$-\frac{171032}{1539}a_1\left(\frac{n}{2}\right)-\frac{335538}{8075}a_1\left(\frac{n}{3}\right)+\frac{450703168}{654075}a_1\left(\frac{n}{4}\right)+\frac{1488}{19}a_1\left(\frac{n}{6}\right)+\frac{126441408}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{272803}{525825}\Delta_{3,8}(n)-\frac{75469222}{525825}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{264160472}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2123545216}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{134776}{23085}a_4(n)+\frac{200480}{1539}a_4\left(\frac{n}{2}\right)+\frac{1766912}{405}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{3444}{19}a_2\left(\frac{n}{3}\right)+8a_3(n)$$
$$+\frac{2304}{19}a_3\left(\frac{n}{3}\right)-\frac{2304}{19}a_5(n)-\frac{2543488}{57}a_5\left(\frac{n}{2}\right)-48a_6(n)-\frac{29632}{19}a_6\left(\frac{n}{2}\right)-\frac{86912}{57}a_7(n)$$
$$-\frac{28416}{19}a_8(n)+\frac{81152}{19}a_9(n),$$

$$N\left(1^2,3^{12},6^2;n\right)=\frac{1}{836400}\sigma_7(n)-\frac{1}{836400}\sigma_7\left(\frac{n}{2}\right)-\frac{547}{278800}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{547}{278800}\sigma_7\left(\frac{n}{6}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{547}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17504}{17425}\sigma_7\left(\frac{n}{24}\right)$$
$$-\frac{14012138}{1962225}a_1(n)-\frac{181672}{1539}a_1\left(\frac{n}{2}\right)-\frac{454326}{8075}a_1\left(\frac{n}{3}\right)+\frac{450703168}{654075}a_1\left(\frac{n}{4}\right)$$
$$+\frac{576}{19}a_1\left(\frac{n}{6}\right)+\frac{126441408}{8075}a_1\left(\frac{n}{12}\right)+\frac{293456}{525825}\Delta_{3,8}(n)-\frac{102451844}{525825}\Delta_{3,8}\left(\frac{n}{2}\right)$$
$$-\frac{819902216}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2123545216}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{151952}{23085}a_4(n)$$
$$+\frac{268576}{1539}a_4\left(\frac{n}{2}\right)+\frac{1766912}{405}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{3444}{19}a_2\left(\frac{n}{3}\right)+8a_3(n)$$
$$+\frac{2304}{19}a_3\left(\frac{n}{3}\right)-\frac{29408}{57}a_5(n)-\frac{2543488}{57}a_5\left(\frac{n}{2}\right)-64a_6(n)$$
$$-\frac{29632}{19}a_6\left(\frac{n}{2}\right)-\frac{86912}{57}a_7(n)-\frac{28416}{19}a_8(n)+\frac{81152}{19}a_9(n),$$

$$N\left(1^2,3^{14};n\right)=\frac{1}{418200}\sigma_7(n)-\frac{547}{139400}\sigma_7\left(\frac{n}{3}\right)-\frac{32}{52275}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{17504}{17425}\sigma_7\left(\frac{n}{12}\right)-\frac{527024}{103275}a_1(n)-\frac{818048}{34425}a_1\left(\frac{n}{2}\right)-\frac{78048}{425}a_1\left(\frac{n}{3}\right)$$
$$+\frac{93312}{425}a_1\left(\frac{n}{6}\right)+\frac{34688}{27675}\Delta_{3,8}(n)-\frac{285424}{675}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{6682624}{9225}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$+\frac{9536}{1215}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{131072}{405}a_4(n)-\frac{9472}{3}a_3\left(\frac{n}{3}\right)-128a_5\left(\frac{n}{2}\right),$$

$$N\left(1^2,2^2,6^{12};n\right)=\frac{1}{26764800}\sigma_7(n)-\frac{1}{26764800}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{8921600}\sigma_7\left(\frac{n}{3}\right)$$
$$-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)-\frac{273}{8921600}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{153792059}{31395600}a_1(n)-\frac{2173793}{23085}a_1\left(\frac{n}{2}\right)-\frac{7142343}{129200}a_1\left(\frac{n}{3}\right)$$
$$+\frac{465687424}{654075}a_1\left(\frac{n}{4}\right)-\frac{7221}{95}a_1\left(\frac{n}{6}\right)+\frac{154681344}{8075}a_1\left(\frac{n}{12}\right)+\frac{2870179}{4206600}\Delta_{3,8}(n)$$
$$-\frac{7391929}{77900}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2395302404}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1827154688}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{97331}{23085}a_4(n)+\frac{441424}{4617}a_4\left(\frac{n}{2}\right)+\frac{1750016}{405}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{3879}{19}a_2\left(\frac{n}{3}\right)$$
$$+8a_3(n)+\frac{3879}{19}a_3\left(\frac{n}{3}\right)-\frac{3062}{19}a_5(n)-\frac{864256}{19}a_5\left(\frac{n}{2}\right)-33a_6(n)-\frac{29696}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{75616}{57}a_7(n)-\frac{29696}{19}a_8(n)+\frac{73984}{19}a_9(n),$$

$$N\left(1^2,2^2,3^2,6^{10};n\right)=\frac{1}{13382400}\sigma_7(n)-\frac{1}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{4460800}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{6995371}{1744200}a_1(n)$$
$$-\frac{856144}{7695}a_1\left(\frac{n}{2}\right)-\frac{4998303}{64600}a_1\left(\frac{n}{3}\right)+\frac{469430144}{654075}a_1\left(\frac{n}{4}\right)-\frac{71064}{95}a_1\left(\frac{n}{6}\right)+\frac{108756864}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{223151}{233700}\Delta_{3,8}(n)-\frac{29940601}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{382189016}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2269193728}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{7838}{2565}a_4(n)+\frac{178976}{1539}a_4\left(\frac{n}{2}\right)+\frac{2369536}{405}a_4\left(\frac{n}{4}\right)-3a_2(n)-\frac{3717}{19}a_2\left(\frac{n}{3}\right)+7a_3(n)$$
$$+\frac{4401}{19}a_3\left(\frac{n}{3}\right)-\frac{11716}{19}a_5(n)-\frac{1156352}{19}a_5\left(\frac{n}{2}\right)-30a_6(n)-\frac{40960}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{25024}{19}a_7(n)-\frac{40960}{19}a_8(n)+\frac{81920}{19}a_9(n),$$

$$N\left(1^2,2^2,3^4,6^8;n\right)=\frac{1}{6691200}\sigma_7(n)-\frac{1}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{24875789}{7848900}a_1(n)$$
$$-\frac{2825864}{23085}a_1\left(\frac{n}{2}\right)-\frac{3236253}{32300}a_1\left(\frac{n}{3}\right)+\frac{509903744}{654075}a_1\left(\frac{n}{4}\right)-\frac{120648}{95}a_1\left(\frac{n}{6}\right)+\frac{66651264}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{650042}{525825}\Delta_{3,8}(n)-\frac{13886026}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{4288948904}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2495907328}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{44624}{23085}a_4(n)+\frac{616480}{4617}a_4\left(\frac{n}{2}\right)+\frac{2861056}{405}a_4\left(\frac{n}{4}\right)-2a_2(n)-\frac{3528}{19}a_2\left(\frac{n}{3}\right)+6a_3(n)$$
$$+\frac{4896}{19}a_3\left(\frac{n}{3}\right)-\frac{20856}{19}a_5(n)-\frac{1394176}{19}a_5\left(\frac{n}{2}\right)-28a_6(n)-\frac{50048}{19}a_6\left(\frac{n}{2}\right)-\frac{74944}{57}a_7(n)$$
$$-\frac{52480}{19}a_8(n)+\frac{90368}{19}a_9(n),$$

$$N\left(1^2,2^2,3^6,6^6;n\right)=\frac{1}{3345600}\sigma_7(n)-\frac{1}{3345600}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{1115200}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{1115200}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{3672652}{1962225}a_1(n)$$
$$-\frac{3398428}{23085}a_1\left(\frac{n}{2}\right)-\frac{1081479}{8075}a_1\left(\frac{n}{3}\right)+\frac{595529344}{654075}a_1\left(\frac{n}{4}\right)-\frac{200796}{95}a_1\left(\frac{n}{6}\right)$$
$$-\frac{21476736}{8075}a_1\left(\frac{n}{12}\right)+\frac{1737323}{1051650}\Delta_{3,8}(n)-\frac{3817949}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{5906420224}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{2967177728}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{5068}{23085}a_4(n)+\frac{745472}{4617}a_4\left(\frac{n}{2}\right)+\frac{3823616}{405}a_4\left(\frac{n}{4}\right)-\frac{2520}{19}a_2\left(\frac{n}{3}\right)$$
$$+4a_3(n)+\frac{4572}{19}a_3\left(\frac{n}{3}\right)-\frac{35200}{19}a_5(n)-\frac{1856768}{19}a_5\left(\frac{n}{2}\right)-24a_6(n)-\frac{67712}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{81152}{57}a_7(n)-\frac{75008}{19}a_8(n)+\frac{111104}{19}a_9(n),$$

$$N\left(1^2,2^2,3^8,6^4;n\right)=\frac{1}{1672800}\sigma_7(n)-\frac{1}{1672800}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{557600}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{557600}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{691616}{1962225}a_1(n)$$
$$-\frac{4583032}{23085}a_1\left(\frac{n}{2}\right)-\frac{1528518}{8075}a_1\left(\frac{n}{3}\right)+\frac{255818368}{218025}a_1\left(\frac{n}{4}\right)-\frac{345624}{95}a_1\left(\frac{n}{6}\right)$$
$$-\frac{201845376}{8075}a_1\left(\frac{n}{12}\right)+\frac{1227283}{525825}\Delta_{3,8}(n)-\frac{6525734}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{9014649904}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{434057472}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)-\frac{62024}{23085}a_4(n)+\frac{976064}{4617}a_4\left(\frac{n}{2}\right)+\frac{1897472}{135}a_4\left(\frac{n}{4}\right)+4a_2(n)$$
$$+\frac{72}{19}a_2\left(\frac{n}{3}\right)+\frac{2664}{19}a_3\left(\frac{n}{3}\right)-\frac{59968}{19}a_5(n)-\frac{2750976}{19}a_5\left(\frac{n}{2}\right)-16a_6(n)$$
$$-\frac{102016}{19}a_6\left(\frac{n}{2}\right)-\frac{99200}{57}a_7(n)-\frac{119040}{19}a_8(n)+\frac{155392}{19}a_9(n),$$

$$N\left(1^2,2^2,3^{10},6^2;n\right)=\frac{1}{836400}\sigma_7(n)-\frac{1}{836400}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{278800}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{278800}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{2828554}{654075}a_1(n)$$
$$-\frac{786488}{2565}a_1\left(\frac{n}{2}\right)-\frac{2337426}{8075}a_1\left(\frac{n}{3}\right)+\frac{375237248}{218025}a_1\left(\frac{n}{4}\right)-\frac{631224}{95}a_1\left(\frac{n}{6}\right)-\frac{571787136}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{625352}{175275}\Delta_{3,8}(n)+\frac{3311632}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1689162416}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1949355776}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{60736}{7695}a_4(n)+\frac{157888}{513}a_4\left(\frac{n}{2}\right)+\frac{3146752}{135}a_4\left(\frac{n}{4}\right)+12a_2(n)+\frac{5796}{19}a_2\left(\frac{n}{3}\right)-8a_3(n)$$
$$-\frac{2376}{19}a_3\left(\frac{n}{3}\right)-\frac{105088}{19}a_5(n)+-\frac{4538624}{19}a_5\left(\frac{n}{2}\right)-\frac{170880}{19}a_6\left(\frac{n}{2}\right)-\frac{47872}{19}a_7(n)$$
$$-\frac{207360}{19}a_8(n)+\frac{249344}{19}a_9(n),$$

$$N\left(1^2,2^2,3^{12};n\right)=\frac{1}{418200}\sigma_7(n)-\frac{1}{418200}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{139400}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{139400}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{28625504}{1962225}a_1(n)$$
$$-\frac{9789472}{23085}a_1\left(\frac{n}{2}\right)-\frac{4299492}{8075}a_1\left(\frac{n}{3}\right)+\frac{17986944}{8075}a_1\left(\frac{n}{4}\right)-\frac{1125024}{95}a_1\left(\frac{n}{6}\right)-\frac{1496543616}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{3450352}{525825}\Delta_{3,8}(n)+\frac{86296}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{25061466064}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2627712256}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{395936}{23085}a_4(n)+\frac{2531648}{4617}a_4\left(\frac{n}{2}\right)+\frac{560128}{15}a_4\left(\frac{n}{4}\right)+32a_2(n)+\frac{21672}{19}a_2\left(\frac{n}{3}\right)$$
$$-32a_3(n)-\frac{17568}{19}a_3\left(\frac{n}{3}\right)-\frac{218944}{19}a_5(n)-\frac{7209728}{19}a_5\left(\frac{n}{2}\right)-\frac{277632}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{171776}{57}a_7(n)-\frac{357888}{19}a_8(n)+\frac{375296}{19}a_9(n),$$

$$N\left(1^2,2^4,6^{10};n\right)=\frac{7}{53529600}\sigma_7(n)-\frac{7}{53529600}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{17843200}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{17843200}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{108795931}{20930400}a_1(n)$$
$$-\frac{1565107}{15390}a_1\left(\frac{n}{2}\right)-\frac{10885761}{258400}a_1\left(\frac{n}{3}\right)+\frac{121714432}{218025}a_1\left(\frac{n}{4}\right)-\frac{91467}{190}a_1\left(\frac{n}{6}\right)+\frac{154123776}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{1459061}{2804400}\Delta_{3,8}(n)-\frac{42635899}{467400}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{787395782}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{703936384}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{71989}{15390}a_4(n)+\frac{153016}{1539}a_4\left(\frac{n}{2}\right)+\frac{578048}{135}a_4\left(\frac{n}{4}\right)-\frac{9}{2}a_2(n)-\frac{8667}{38}a_2\left(\frac{n}{3}\right)+\frac{17}{2}a_3(n)$$
$$+\frac{8667}{38}a_3\left(\frac{n}{3}\right)+\frac{2991}{19}a_5(n)-\frac{838272}{19}a_5\left(\frac{n}{2}\right)-\frac{63}{2}a_6(n)-\frac{29440}{19}a_6\left(\frac{n}{2}\right)-\frac{23952}{19}a_7(n)$$
$$-\frac{22144}{19}a_8(n)+\frac{66176}{19}a_9(n),$$

$$N\left(1^2,2^4,3^2,6^8;n\right)=\frac{7}{26764800}\sigma_7(n)-\frac{7}{26764800}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{8921600}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{8921600}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{77749511}{10465200}a_1(n)$$
$$-\frac{618169}{7695}a_1\left(\frac{n}{2}\right)+\frac{1651059}{129200}a_1\left(\frac{n}{3}\right)+\frac{341223616}{654075}a_1\left(\frac{n}{4}\right)+\frac{90531}{95}a_1\left(\frac{n}{6}\right)+\frac{235740096}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{220709}{1402200}\Delta_{3,8}(n)-\frac{78808147}{701100}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{186591212}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1540328192}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{58379}{7695}a_4(n)+\frac{95984}{1539}a_4\left(\frac{n}{2}\right)+\frac{717824}{405}a_4\left(\frac{n}{4}\right)-6a_2(n)-\frac{3888}{19}a_2\left(\frac{n}{3}\right)+10a_3(n)$$
$$+\frac{1836}{19}a_3\left(\frac{n}{3}\right)+\frac{22902}{19}a_5(n)-\frac{351360}{19}a_5\left(\frac{n}{2}\right)-39a_6(n)-\frac{10560}{19}a_6\left(\frac{n}{2}\right)-\frac{26848}{19}a_7(n)$$
$$-\frac{2048}{19}a_8(n)+\frac{57600}{19}a_9(n),$$

$$N\left(1^2,2^4,3^4,6^6;n\right)=\frac{7}{13382400}\sigma_7(n)-\frac{7}{13382400}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{4460800}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{4460800}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{51387271}{5232600}a_1(n)$$
$$-\frac{468224}{7695}a_1\left(\frac{n}{2}\right)+\frac{4784499}{64600}a_1\left(\frac{n}{3}\right)+\frac{29004224}{72675}a_1\left(\frac{n}{4}\right)+\frac{210456}{95}a_1\left(\frac{n}{6}\right)+\frac{312607296}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{640549}{701100}\Delta_{3,8}(n)-\frac{15592709}{116850}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{458100988}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{119775488}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{82598}{7695}a_4(n)+\frac{39760}{1539}a_4\left(\frac{n}{2}\right)-\frac{41984}{45}a_4\left(\frac{n}{4}\right)-8a_2(n)-\frac{3726}{19}a_2\left(\frac{n}{3}\right)+12a_3(n)$$
$$-\frac{378}{19}a_3\left(\frac{n}{3}\right)+\frac{46092}{19}a_5(n)+\frac{185856}{19}a_5\left(\frac{n}{2}\right)-46a_6(n)+\frac{9792}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{28896}{19}a_7(n)+\frac{23168}{19}a_8(n)+\frac{43648}{19}a_9(n),$$

$$N\left(1^2,2^4,3^6,6^4;n\right)=\frac{7}{6691200}\sigma_7(n)-\frac{7}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{2230400}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{1286743}{96900}a_1(n)$$
$$-\frac{26284}{1539}a_1\left(\frac{n}{2}\right)+\frac{4994109}{32300}a_1\left(\frac{n}{3}\right)+\frac{99034816}{654075}a_1\left(\frac{n}{4}\right)+\frac{77076}{19}a_1\left(\frac{n}{6}\right)+\frac{478092096}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{111439}{58425}\Delta_{3,8}(n)-\frac{31565692}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{529567136}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{167057792}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{4328}{285}a_4(n)-\frac{33152}{1539}a_4\left(\frac{n}{2}\right)-\frac{2377216}{405}a_4\left(\frac{n}{4}\right)-12a_2(n)-\frac{5292}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$-\frac{864}{19}a_3\left(\frac{n}{3}\right)+\frac{77928}{19}a_5(n)+\frac{1155456}{19}a_5\left(\frac{n}{2}\right)-60a_6(n)+\frac{46528}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{27136}{19}a_7(n)+\frac{69632}{19}a_8(n)+\frac{6656}{19}a_9(n),$$

$$N\left(1^2,2^4,3^8,6^2;n\right)=\frac{7}{3345600}\sigma_7(n)-\frac{7}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{1115200}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{651532}{34425}a_1(n)$$
$$+\frac{30428}{405}a_1\left(\frac{n}{2}\right)+\frac{115983}{425}a_1\left(\frac{n}{3}\right)-\frac{3890752}{11475}a_1\left(\frac{n}{4}\right)+\frac{36108}{5}a_1\left(\frac{n}{6}\right)+\frac{43308864}{425}a_1\left(\frac{n}{12}\right)$$
$$-\frac{62107}{18450}\Delta_{3,8}(n)-\frac{281839}{1025}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{193400312}{9225}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{9441408}{1025}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{9028}{405}a_4(n)-\frac{7648}{81}a_4\left(\frac{n}{2}\right)-\frac{2043392}{135}a_4\left(\frac{n}{4}\right)-20a_2(n)-540a_2\left(\frac{n}{3}\right)$$
$$+24a_3(n)+108a_3\left(\frac{n}{3}\right)+6720a_5(n)+155904a_5\left(\frac{n}{2}\right)-88a_6(n)$$
$$+6080a_6\left(\frac{n}{2}\right)-960a_7(n)+8320a_8(n)-3968a_9(n),$$

$$N\left(1^2,2^4,3^{10};n\right)=\frac{7}{1672800}\sigma_7(n)-\frac{7}{1672800}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{557600}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{557600}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{6190412}{218025}a_1(n)$$
$$+\frac{239272}{855}a_1\left(\frac{n}{2}\right)+\frac{3835134}{8075}a_1\left(\frac{n}{3}\right)-\frac{99923776}{72675}a_1\left(\frac{n}{4}\right)+\frac{1284768}{95}a_1\left(\frac{n}{6}\right)+\frac{1522898496}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{114077}{19475}\Delta_{3,8}(n)-\frac{9072342}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{2585843416}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{591722112}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{87848}{2565}a_4(n)-\frac{38432}{171}a_4\left(\frac{n}{2}\right)-\frac{1508864}{45}a_4\left(\frac{n}{4}\right)-36a_2(n)-\frac{21924}{19}a_2\left(\frac{n}{3}\right)$$
$$+40a_3(n)+\frac{11664}{19}a_3\left(\frac{n}{3}\right)+\frac{208128}{19}a_5(n)+\frac{6533760}{19}a_5\left(\frac{n}{2}\right)-144a_6(n)$$
$$+\frac{252864}{19}a_6\left(\frac{n}{2}\right)+\frac{8832}{19}a_7(n)+\frac{329472}{19}a_8(n)-\frac{255232}{19}a_9(n),$$

$$N\left(1^2,2^6,6^8;n\right)=\frac{1}{2676480}\sigma_7(n)-\frac{1}{2676480}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{892160}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{892160}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{61573}{12920}a_1(n)$$
$$-\frac{9552}{95}a_1\left(\frac{n}{2}\right)-\frac{691173}{12920}a_1\left(\frac{n}{3}\right)+\frac{10954112}{14535}a_1\left(\frac{n}{4}\right)+\frac{11178}{95}a_1\left(\frac{n}{6}\right)+\frac{36799488}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{10287}{15580}\Delta_{3,8}(n)-\frac{118219}{1558}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{65092856}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{132326912}{11685}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{78}{19}a_4(n)+\frac{1696}{19}a_4\left(\frac{n}{2}\right)+\frac{47104}{9}a_4\left(\frac{n}{4}\right)-3a_2(n)-\frac{3402}{19}a_2\left(\frac{n}{3}\right)+7a_3(n)$$
$$+\frac{3402}{19}a_3\left(\frac{n}{3}\right)-\frac{3060}{19}a_5(n)-\frac{1059840}{19}a_5\left(\frac{n}{2}\right)-30a_6(n)+-\frac{35840}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{26304}{19}a_7(n)-\frac{35840}{19}a_8(n)+\frac{81408}{19}a_9(n),$$

$$N\left(1^2,2^6,3^2,6^6;n\right)=\frac{1}{1338240}\sigma_7(n)-\frac{1}{1338240}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{446080}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{446080}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{5129}{11628}a_1(n)$$
$$-\frac{300662}{2565}a_1\left(\frac{n}{2}\right)-\frac{242703}{1292}a_1\left(\frac{n}{3}\right)+\frac{34596608}{43605}a_1\left(\frac{n}{4}\right)-\frac{281826}{95}a_1\left(\frac{n}{6}\right)+\frac{13181184}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{5419}{2337}\Delta_{3,8}(n)-\frac{495602}{11685}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{43485456}{3895}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{174772736}{11685}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{472}{171}a_4(n)+\frac{84544}{513}a_4\left(\frac{n}{2}\right)+\frac{243712}{27}a_4\left(\frac{n}{4}\right)-a_2(n)-\frac{6723}{19}a_2\left(\frac{n}{3}\right)+5a_3(n)$$
$$+\frac{12879}{19}a_3\left(\frac{n}{3}\right)-\frac{48960}{19}a_5(n)-\frac{1810944}{19}a_5\left(\frac{n}{2}\right)-16a_6(n)-\frac{65152}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{12288}{19}a_7(n)-\frac{67584}{19}a_8(n)+\frac{76800}{19}a_9(n),$$

$$N\left(1^2,2^6,3^4,6^4;n\right)=\frac{1}{669120}\sigma_7(n)-\frac{1}{669120}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{223040}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{223040}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{265528}{43605}a_1(n)$$
$$-\frac{69688}{513}a_1\left(\frac{n}{2}\right)+-\frac{538596}{1615}a_1\left(\frac{n}{3}\right)+\frac{42055936}{43605}a_1\left(\frac{n}{4}\right)-\frac{106920}{19}a_1\left(\frac{n}{6}\right)-\frac{5501952}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{96203}{23370}\Delta_{3,8}(n)+\frac{48679}{11685}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{207939152}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{220493312}{11685}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{5236}{513}a_4(n)+\frac{119872}{513}a_4\left(\frac{n}{2}\right)+\frac{370688}{27}a_4\left(\frac{n}{4}\right)+2a_2(n)-\frac{9396}{19}a_2\left(\frac{n}{3}\right)+2a_3(n)$$
$$+\frac{21708}{19}a_3\left(\frac{n}{3}\right)-\frac{100368}{19}a_5(n)-\frac{2762496}{19}a_5\left(\frac{n}{2}\right)-\frac{100608}{19}a_6\left(\frac{n}{2}\right)-\frac{384}{19}a_7(n)$$
$$-\frac{110336}{19}a_8(n)+\frac{84480}{19}a_9(n),$$

$$N\left(1^2,2^6,3^6,6^2;n\right)=\frac{1}{334560}\sigma_7(n)-\frac{1}{334560}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{111520}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{111520}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{1205677}{87210}a_1(n)$$
$$-\frac{153172}{855}a_1\left(\frac{n}{2}\right)-\frac{1619649}{3230}a_1\left(\frac{n}{3}\right)+\frac{55151104}{43605}a_1\left(\frac{n}{4}\right)-\frac{838188}{95}a_1\left(\frac{n}{6}\right)-\frac{47685888}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{144641}{23370}\Delta_{3,8}(n)+\frac{1281397}{11685}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{327361984}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{298908928}{11685}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{10268}{513}a_4(n)+\frac{50432}{171}a_4\left(\frac{n}{2}\right)+\frac{576512}{27}a_4\left(\frac{n}{4}\right)+8a_2(n)-\frac{9072}{19}a_2\left(\frac{n}{3}\right)-4a_3(n)$$
$$+\frac{27540}{19}a_3\left(\frac{n}{3}\right)-\frac{162288}{19}a_5(n)-\frac{4285440}{19}a_5\left(\frac{n}{2}\right)+32a_6(n)-\frac{157184}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{7680}{19}a_7(n)-\frac{181504}{19}a_8(n)+\frac{119808}{19}a_9(n),$$

$$N\left(1^2,2^6,3^8;n\right)=\frac{1}{167280}\sigma_7(n)-\frac{1}{167280}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{55760}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{55760}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{376976}{14535}a_1(n)$$
$$-\frac{743264}{2565}a_1\left(\frac{n}{2}\right)-\frac{1148256}{1615}a_1\left(\frac{n}{3}\right)+\frac{16063744}{8721}a_1\left(\frac{n}{4}\right)-\frac{1322352}{95}a_1\left(\frac{n}{6}\right)-\frac{27350784}{323}a_1\left(\frac{n}{12}\right)$$
$$+\frac{34178}{3895}\Delta_{3,8}(n)+\frac{765004}{2337}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{542720224}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{29861376}{779}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{5936}{171}a_4(n)+\frac{188800}{513}a_4\left(\frac{n}{2}\right)+\frac{956416}{27}a_4\left(\frac{n}{4}\right)+20a_2(n)-\frac{2592}{19}a_2\left(\frac{n}{3}\right)$$
$$-16a_3(n)+\frac{27216}{19}a_3\left(\frac{n}{3}\right)-\frac{248832}{19}a_5(n)-\frac{7077888}{19}a_5\left(\frac{n}{2}\right)+96a_6(n)$$
$$-\frac{262400}{19}a_6\left(\frac{n}{2}\right)+\frac{8448}{19}a_7(n)-\frac{315904}{19}a_8(n)+\frac{213504}{19}a_9(n),$$

$$N\left(1^2,2^8,6^6;n\right)=\frac{61}{53529600}\sigma_7(n)-\frac{61}{53529600}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{17843200}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{17843200}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{255121}{40800}a_1(n)$$
$$-\frac{26393}{270}a_1\left(\frac{n}{2}\right)-\frac{314577}{13600}a_1\left(\frac{n}{3}\right)+\frac{5325824}{11475}a_1\left(\frac{n}{4}\right)-\frac{13419}{10}a_1\left(\frac{n}{6}\right)+\frac{6296832}{425}a_1\left(\frac{n}{12}\right)$$
$$+\frac{14059}{49200}\Delta_{3,8}(n)-\frac{3072743}{24600}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{8486458}{3075}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{31138688}{3075}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{179}{30}a_4(n)+\frac{3272}{27}a_4\left(\frac{n}{2}\right)+\frac{361984}{135}a_4\left(\frac{n}{4}\right)-\frac{11}{2}a_2(n)-\frac{567}{2}a_2\left(\frac{n}{3}\right)+\frac{19}{2}a_3(n)$$
$$+\frac{567}{2}a_3\left(\frac{n}{3}\right)+567a_5(n)-26496a_5\left(\frac{n}{2}\right)-\frac{77}{2}a_6(n)-1024a_6\left(\frac{n}{2}\right)-1104a_7((n)$$
$$-384a_8(n)+2688a_9(n),$$

$$N\left(1^2,2^8,3^2,6^4;n\right)=\frac{61}{26764800}\sigma_7(n)-\frac{61}{26764800}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{8921600}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{8921600}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{208099573}{10465200}a_1(n)$$
$$-\frac{279413}{2565}a_1\left(\frac{n}{2}\right)+\frac{45905337}{129200}a_1\left(\frac{n}{3}\right)+\frac{299725888}{654075}a_1\left(\frac{n}{4}\right)+\frac{585621}{95}a_1\left(\frac{n}{6}\right)+\frac{240913728}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{6150187}{1402200}\Delta_{3,8}(n)-\frac{111166261}{701100}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{1456122524}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1105024256}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{186757}{7695}a_4(n)-\frac{45200}{513}a_4\left(\frac{n}{2}\right)-\frac{1635328}{405}a_4\left(\frac{n}{4}\right)-8a_2(n)+\frac{8046}{19}a_2\left(\frac{n}{3}\right)+12a_3(n)$$
$$-\frac{26514}{19}a_3\left(\frac{n}{3}\right)+\frac{138690}{19}a_5(n)+\frac{878208}{19}a_5(\left(\frac{n}{2}\right))-61a_6(n)+\frac{34368}{19}a_6\left(\frac{n}{2}\right)-\frac{70304}{19}a_7(n)$$
$$+\frac{50176}{19}a_8(n)+\frac{108800}{19}a_9(n),$$

$$N\left(1^2,2^8,3^4,6^2;n\right)=\frac{61}{13382400}\sigma_7(n)-\frac{61}{13382400}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{4460800}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{4460800}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{178701133}{5232600}a_1(n)$$
$$-\frac{286448}{2565}a_1\left(\frac{n}{2}\right)+\frac{48457377}{64600}a_1\left(\frac{n}{3}\right)+\frac{159265088}{654075}a_1\left(\frac{n}{4}\right)+\frac{1176696}{95}a_1\left(\frac{n}{6}\right)+\frac{290363328}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{6492127}{701100}\Delta_{3,8}(n)-\frac{83264941}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{3806791924}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{109478656}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{334034}{7695}a_4(n)-\frac{136880}{513}a_4\left(\frac{n}{2}\right)-\frac{5270528}{405}a_4\left(\frac{n}{4}\right)-12a_2(n)+\frac{20142}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$-\frac{57078}{19}a_3\left(\frac{n}{3}\right)+\frac{272196}{19}a_5(n)+\frac{2747136}{19}a_5\left(\frac{n}{2}\right)-90a_6(n)+\frac{102080}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{114592}{19}a_7(n)+\frac{127616}{19}a_8(n)+\frac{141184}{19}a_9(n),$$

$$N(\left(1^2,2^8,3^6;n\right)=\frac{61}{6691200}\sigma_7(n)-\frac{61}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{2230400}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{138641483}{2616300}a_1(n)$$
$$-\frac{120572}{855}a_1\left(\frac{n}{2}\right)+\frac{37020627}{32300}a_1\left(\frac{n}{3}\right)+\frac{117290048}{654075}a_1\left(\frac{n}{4}\right)+\frac{1664532}{95}a_1\left(\frac{n}{6}\right)+\frac{418442688}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{2479876}{175275}\Delta_{3,8}(n)-\frac{74696966}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{6475057984}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{523351424}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{516608}{7695}a_4(n)-\frac{64256}{171}a_4\left(\frac{n}{2}\right)-\frac{9456128}{405}a_4\left(\frac{n}{4}\right)-20a_2(n)+\frac{27756}{19}a_2\left(\frac{n}{3}\right)+24a_3(n)$$
$$-\frac{83160}{19}a_3\left(\frac{n}{3}\right)+\frac{422424}{19}a_5(n)+\frac{4911744}{19}a_5\left(\frac{n}{2}\right)-148a_6(n)+\frac{178240}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{167680}{19}a_7(n)+\frac{223232}{19}a_8(n)+\frac{176128}{19}a_9(n),$$

$$N\left(1^2,2^{10},6^4;n\right)=\frac{91}{26764800}\sigma_7(n)-\frac{91}{26764800}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{8921600}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{8921600}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{44628883}{10465200}a_1(n)$$
$$-\frac{262223}{2565}a_1\left(\frac{n}{2}\right)-\frac{6170373}{129200}a_1\left(\frac{n}{3}\right)+\frac{533271424}{654075}a_1\left(\frac{n}{4}\right)+\frac{149841}{95}a_1\left(\frac{n}{6}\right)+\frac{259052544}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{826523}{1402200}\Delta_{3,8}(n)-\frac{5443531}{701100}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1252291108}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2242527488}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{28267}{7695}a_4(n)+\frac{18160}{513}a_4\left(\frac{n}{2}\right)+\frac{2825216}{405}a_4\left(\frac{n}{4}\right)-2a_2(n)-\frac{1917}{19}a_2\left(\frac{n}{3}\right)+6a_3(n)$$
$$+\frac{1917}{19}a_3\left(\frac{n}{3}\right)+\frac{990}{19}a_5(n)-\frac{1440768}{19}a_5\left(\frac{n}{2}\right)-19a_6(n)-\frac{45056}{19}a_6\left(\frac{n}{2}\right)-\frac{28256}{19}a_7(n)$$
$$-\frac{45056}{19}a_8(n)+\frac{94976}{19}a_9(n),$$

$$N\left(1^2,2^{10},3^2,6^2;n\right)=\frac{91}{13382400}\sigma_7(n)-\frac{91}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{4460800}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{57512879}{1744200}a_1(n)$$
$$-\frac{1676}{285}a_1\left(\frac{n}{2}\right)-\frac{74494053}{64600}a_1\left(\frac{n}{3}\right)+\frac{161038208}{218025}a_1\left(\frac{n}{4}\right)-\frac{1748412}{95}a_1\left(\frac{n}{6}\right)+\frac{253666944}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{3327001}{233700}\Delta_{3,8}(n)-\frac{2488277}{116850}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1971171016}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1012445696}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{121102}{2565}a_4(n)+\frac{12640}{19}a_4\left(\frac{n}{2}\right)+\frac{2947072}{135}a_4\left(\frac{n}{4}\right)+a_2(n)-\frac{48033}{19}a_2\left(\frac{n}{3}\right)+3a_3(n)$$
$$+\frac{103437}{19}a_3\left(\frac{n}{3}\right)-\frac{373788}{19}a_5(n)-\frac{4605696}{19}a_5\left(\frac{n}{2}\right)+14a_6(n)-\frac{167168}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{126912}{19}a_7(n)-\frac{172032}{19}a_8(n)-\frac{122880}{19}a_9(n),$$

$$N\left(1^2,2^{10},3^4;n\right)=\frac{91}{6691200}\sigma_7(n)-\frac{91}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{184648247}{2616300}a_1(n)$$
$$+\frac{203992}{2565}a_1\left(\frac{n}{2}\right)-\frac{73978443}{32300}a_1\left(\frac{n}{3}\right)+\frac{685569664}{654075}a_1\left(\frac{n}{4}\right)-\frac{3241224}{95}a_1\left(\frac{n}{6}\right)+\frac{402701184}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{4955959}{175275}\Delta_{3,8}(n)+\frac{14601164}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{11383414888}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{4778413568}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{760712}{7695}a_4(n)+\frac{609376}{513}a_4\left(\frac{n}{2}\right)+\frac{16910336}{405}a_4\left(\frac{n}{4}\right)+6a_2(n)-\frac{91584}{19}a_2\left(\frac{n}{3}\right)-2a_3(n)$$
$$+\frac{202392}{19}a_3\left(\frac{n}{3}\right)-\frac{746856}{19}a_5(n)-\frac{8850432}{19}a_5\left(\frac{n}{2}\right)+60a_6(n)-\frac{316032}{19}a_6\left(\frac{n}{2}\right)+\frac{268096}{19}a_7(n)$$
$$-\frac{333056}{19}a_8(n)-\frac{292096}{19}a_9(n),$$

$$N\left(1^2,2^{12},6^2;n\right)=\frac{547}{53529600}\sigma_7(n)-\frac{547}{53529600}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{17843200}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{729}{17843200}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{6141173}{775200}a_1(n)-\frac{13513}{114}a_1\left(\frac{n}{2}\right)-\frac{4613301}{258400}a_1\left(\frac{n}{3}\right)$$
$$+\frac{38599424}{72675}a_1\left(\frac{n}{4}\right)-\frac{139131}{38}a_1\left(\frac{n}{6}\right)+\frac{103044096}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{206267}{934800}\Delta_{3,8}(n)-\frac{96400879}{467400}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{120679514}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{630523264}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{4387}{570}a_4(n)+\frac{11656}{57}a_4\left(\frac{n}{2}\right)+\frac{73216}{45}a_4\left(\frac{n}{4}\right)$$
$$-\frac{13}{2}a_2(n)-\frac{15471}{38}a_2\left(\frac{n}{3}\right)+\frac{21}{2}a_3(n)+\frac{15471}{38}a_3\left(\frac{n}{3}\right)+\frac{9963}{19}a_5(n)$$
$$-\frac{263808}{19}a_5\left(\frac{n}{2}\right)-\frac{107}{2}a_6(n)-\frac{16640}{19}a_6\left(\frac{n}{2}\right)-\frac{21072}{19}a_7(n)$$
$$+\frac{384}{19}a_8(n)+\frac{50304}{19}a_9(n),$$

$$N\left(1^2,2^{12},3^2;n\right)=\frac{547}{26764800}\sigma_7(n)-\frac{547}{26764800}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{8921600}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{729}{8921600}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{389757457}{3488400}a_1(n)-\frac{902119}{2565}a_1\left(\frac{n}{2}\right)+\frac{428453199}{129200}a_1\left(\frac{n}{3}\right)$$
$$+\frac{2559424}{72675}a_1\left(\frac{n}{4}\right)+\frac{5226903}{95}a_1\left(\frac{n}{6}\right)-\frac{254608704}{8075}a_1\left(\frac{n}{12}\right)-\frac{19135483}{467400}\Delta_{3,8}(n)$$
$$-\frac{1544509}{233700}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{4588704716}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{624929536}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{391573}{2565}a_4(n)-\frac{914032}{513}a_4\left(\frac{n}{2}\right)-\frac{1997824}{45}a_4\left(\frac{n}{4}\right)-10a_2(n)$$
$$+\frac{138348}{19}a_2\left(\frac{n}{3}\right)+14a_3(n)-\frac{304560}{19}a_3\left(\frac{n}{3}\right)+\frac{1124334}{19}a_5(n)$$
$$+\frac{9560448}{19}a_5\left(\frac{n}{2}\right)-99a_6(n)+\frac{357824}{19}a_6\left(\frac{n}{2}\right)-\frac{465504}{19}a_7(n)$$
$$+\frac{380928}{19}a_8(n)+\frac{653568}{19}a_9(n),$$

$$N\left(1^2,2^{14};n\right)=\frac{1}{32640}\sigma_7(n)-\frac{1}{32640}\sigma_7\left(\frac{n}{2}\right)-\frac{1}{255}\sigma_7\left(\frac{n}{4}\right)+\frac{256}{255}\sigma_7\left(\frac{n}{8}\right)$$
$$-\frac{1}{68}a_1(n)+2a_1\left(\frac{n}{2}\right)+\frac{1664}{17}a_1\left(\frac{n}{4}\right)-a_4\left(\frac{n}{4}\right)+5a_2\left(\frac{n}{3}\right),$$

$$N\left(1^3,2,3,6^{11};n\right)=\frac{1}{10705920}\sigma_7(n)-\frac{1}{10705920}\sigma_7\left(\frac{n}{2}\right)-\frac{219}{3568640}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{219}{3568640}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{219}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3504}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{96943141}{12558240}a_1(n)$$
$$-\frac{6711791}{46170}a_1\left(\frac{n}{2}\right)-\frac{3658377}{51680}a_1\left(\frac{n}{3}\right)+\frac{124113184}{130815}a_1\left(\frac{n}{4}\right)-\frac{44157}{190}a_1\left(\frac{n}{6}\right)+\frac{48638304}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{91946}{105165}\Delta_{3,8}(n)-\frac{6673567}{46740}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{695717132}{105165}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{587681408}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{31604}{4617}a_4(n)+\frac{668048}{4617}a_4\left(\frac{n}{2}\right)+\frac{513536}{81}a_4\left(\frac{n}{4}\right)-\frac{13}{2}a_2(n)-\frac{12087}{38}a_2\left(\frac{n}{3}\right)+\frac{25}{2}a_3(n)$$
$$+\frac{11403}{38}a_3\left(\frac{n}{3}\right)+\frac{597}{19}a_5(n)-\frac{1256576}{19}a_5\left(\frac{n}{2}\right)-\frac{99}{2}a_6(n)-\frac{43424}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{111680}{57}a_7(n)-\frac{37952}{19}a_8(n)+\frac{105088}{19}a_9(n),$$

$$N\left(1^3,2,3^3,6^9;n\right)=\frac{1}{5352960}\sigma_7(n)-\frac{1}{5352960}\sigma_7\left(\frac{n}{2}\right)-\frac{219}{1784320}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{219}{1784320}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{219}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3504}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{2791423}{330480}a_1(n)$$
$$-\frac{169016}{1215}a_1\left(\frac{n}{2}\right)-\frac{69051}{1360}a_1\left(\frac{n}{3}\right)+\frac{1254368}{1377}a_1\left(\frac{n}{4}\right)+\frac{1068}{5}a_1\left(\frac{n}{6}\right)+\frac{570528}{17}a_1\left(\frac{n}{12}\right)$$
$$+\frac{6947}{11070}\Delta_{3,8}(n)-\frac{12035}{82}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{30228766}{5535}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{5885824}{369}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{1900}{243}a_4(n)+\frac{31672}{243}a_4\left(\frac{n}{2}\right)+\frac{445952}{81}a_4\left(\frac{n}{4}\right)-7a_2(n)-315a_2\left(\frac{n}{3}\right)+13a_3(n)$$
$$+261a_3\left(\frac{n}{3}\right)+430a_5(n)-57472a_5\left(\frac{n}{2}\right)-51a_6(n)-1952a_6\left(\frac{n}{2}\right)-\frac{5968}{3}a_7(n)$$
$$-1600a_8(n)+5312a_9(n),$$

$$N\left(1^3,2,3^5,6^7;n\right)=\frac{1}{2676480}\sigma_7(n)-\frac{1}{2676480}\sigma_7\left(\frac{n}{2}\right)-\frac{219}{892160}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{219}{892160}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{219}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3504}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{29593187}{3139560}a_1(n)$$
$$-\frac{2943074}{23085}a_1\left(\frac{n}{2}\right)-\frac{332259}{12920}a_1\left(\frac{n}{3}\right)+\frac{110419616}{130815}a_1\left(\frac{n}{4}\right)+\frac{71322}{95}a_1\left(\frac{n}{6}\right)+\frac{62356896}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{134167}{420660}\Delta_{3,8}(n)-\frac{10959569}{70110}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{77041448}{21033}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{509829952}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{42046}{4617}a_4(n)+\frac{523552}{4617}a_4\left(\frac{n}{2}\right)+\frac{336640}{81}a_4\left(\frac{n}{4}\right)-8a_2(n)-\frac{6282}{19}a_2\left(\frac{n}{3}\right)+14a_3(n)$$
$$+\frac{4572}{19}a_3\left(\frac{n}{3}\right)+\frac{18076}{19}a_5(n)-\frac{825600}{19}a_5\left(\frac{n}{2}\right)-54a_6(n)-\frac{26976}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{112768}{57}a_7(n)-\frac{17856}{19}a_8(n)+\frac{91648}{19}a_9(n),$$

$$N\left(1^3,2,3^7,6^5;n\right)=\frac{1}{1338240}\sigma_7(n)-\frac{1}{1338240}\sigma_7\left(\frac{n}{2}\right)-\frac{219}{446080}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{219}{446080}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{219}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3504}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{285556}{26163}a_1(n)$$
$$-\frac{88802}{855}a_1\left(\frac{n}{2}\right)+\frac{6039}{646}a_1\left(\frac{n}{3}\right)+\frac{10432544}{14535}a_1\left(\frac{n}{4}\right)+\frac{151542}{95}a_1\left(\frac{n}{6}\right)+\frac{79394976}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{3155}{28044}\Delta_{3,8}(n)-\frac{12370771}{70110}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{403148}{779}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{46417088}{3895}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{16970}{1539}a_4(n)+\frac{15280}{171}a_4\left(\frac{n}{2}\right)+\frac{15616}{9}a_4\left(\frac{n}{4}\right)-10a_2(n)-\frac{7416}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$+\frac{5022}{19}a_3\left(\frac{n}{3}\right)+\frac{32560}{19}a_5(n)-\frac{352000}{19}a_5\left(\frac{n}{2}\right)-60a_6(n)-\frac{8928}{19}a_6\left(\frac{n}{2}\right)-\frac{35616}{19}a_7(n)$$
$$+\frac{5056}{19}a_8(n)+\frac{71360}{19}a_9(n),$$

$$N\left(1^3,2,3^9,6^3;n\right)=\frac{1}{669120}\sigma_7(n)-\frac{1}{669120}\sigma_7\left(\frac{n}{2}\right)-\frac{219}{223040}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{219}{223040}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{219}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3504}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{5260792}{392445}a_1(n)$$
$$-\frac{251200}{4617}a_1\left(\frac{n}{2}\right)+\frac{104451}{1615}a_1\left(\frac{n}{3}\right)+\frac{20123872}{43605}a_1\left(\frac{n}{4}\right)+\frac{59628}{19}a_1\left(\frac{n}{6}\right)+\frac{114793056}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{166717}{210330}\Delta_{3,8}(n)-\frac{2536699}{11685}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{570958844}{105165}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{25923648}{3895}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{65548}{4617}a_4(n)+\frac{226000}{4617}a_4\left(\frac{n}{2}\right)-\frac{78592}{27}a_4\left(\frac{n}{4}\right)-14a_2(n)-\frac{10170}{19}a_2\left(\frac{n}{3}\right)+20a_3(n)$$
$$+\frac{7092}{19}a_3\left(\frac{n}{3}\right)+\frac{56368}{19}a_5(n)+\frac{550976}{19}a_5\left(\frac{n}{2}\right)-72a_6(n)+\frac{25696}{19}a_6\left(\frac{n}{2}\right)-\frac{89344}{57}a_7(n)$$
$$+\frac{49408}{19}a_8(n)+\frac{27648}{19}a_9(n),$$

$$N\left(1^3,2,3^{11},6;n\right)=\frac{1}{334560}\sigma_7(n)-\frac{1}{334560}\sigma_7\left(\frac{n}{2}\right)-\frac{219}{111520}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{219}{111520}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{219}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3504}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{6950003}{392445}a_1(n)$$
$$+\frac{232924}{4617}a_1\left(\frac{n}{2}\right)+\frac{263829}{1615}a_1\left(\frac{n}{3}\right)-\frac{3494432}{43605}a_1\left(\frac{n}{4}\right)+\frac{117744}{19}a_1\left(\frac{n}{6}\right)+\frac{187586784}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{210874}{105165}\Delta_{3,8}(n)-\frac{10459438}{35055}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{1796353396}{105165}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{16805568}{3895}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{91016}{4617}a_4(n)-\frac{115600}{4617}a_4\left(\frac{n}{2}\right)-\frac{327424}{27}a_4\left(\frac{n}{4}\right)-22a_2(n)-\frac{16002}{19}a_2\left(\frac{n}{3}\right)+28a_3(n)$$
$$+\frac{12240}{19}a_3\left(\frac{n}{3}\right)+\frac{97200}{19}a_5(n)+\frac{2333120}{19}a_5\left(\frac{n}{2}\right)-96a_6(n)+\frac{94368}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{44480}{57}a_7(n)+\frac{136320}{19}a_8(n)-\frac{65920}{19}a_9(n),$$

$$N\left(1^3,2^3,3,6^9;n\right)=\frac{13}{53529600}\sigma_7(n)-\frac{13}{53529600}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{17843200}\sigma_7\left(\frac{n}{3}\right)-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1089}{17843200}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{128355679}{20930400}a_1(n)$$
$$-\frac{2553209}{15390}a_1\left(\frac{n}{2}\right)-\frac{28175049}{258400}a_1\left(\frac{n}{3}\right)+\frac{696635488}{654075}a_1\left(\frac{n}{4}\right)-\frac{212409}{190}a_1\left(\frac{n}{6}\right)+\frac{182010528}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{1887037}{1402200}\Delta_{3,8}(n)-\frac{21059221}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1704961316}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3369501056}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{36833}{7695}a_4(n)+\frac{260144}{1539}a_4\left(\frac{n}{2}\right)+\frac{3533312}{405}a_4\left(\frac{n}{4}\right)-\frac{9}{2}a_2(n)-\frac{11367}{38}a_2\left(\frac{n}{3}\right)+\frac{21}{2}a_3(n)$$
$$+\frac{13419}{38}a_3\left(\frac{n}{3}\right)-\frac{14547}{19}a_5(n)-\frac{1730304}{19}a_5\left(\frac{n}{2}\right)-\frac{87}{2}a_6(n)-\frac{61024}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{37184}{19}a_7(n)-\frac{59200}{19}a_8(n)+\frac{120832}{19}a_9(n),$$

$$N\left(1^3,2^3,3^3,6^7;n\right)=\frac{13}{26764800}\sigma_7(n)-\frac{13}{26764800}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{8921600}\sigma_7\left(\frac{n}{3}\right)-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1089}{8921600}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{43225799}{10465200}a_1(n)$$
$$-\frac{276140}{1539}a_1\left(\frac{n}{2}\right)-\frac{21081969}{129200}a_1\left(\frac{n}{3}\right)+\frac{751927648}{654075}a_1\left(\frac{n}{4}\right)-\frac{43200}{19}a_1\left(\frac{n}{6}\right)+\frac{117677088}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{1411847}{701100}\Delta_{3,8}(n)-\frac{18989932}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2200979726}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3695480576}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{16286}{7695}a_4(n)+\frac{313112}{1539}a_4\left(\frac{n}{2}\right)+\frac{4355072}{405}a_4\left(\frac{n}{4}\right)-3a_2(n)-\frac{6237}{19}a_2\left(\frac{n}{3}\right)+9a_3(n)$$
$$+\frac{9315}{19}a_3\left(\frac{n}{3}\right)-\frac{34566}{19}a_5(n)-\frac{2132736}{19}a_5\left(\frac{n}{2}\right)-39a_6(n)-\frac{76448}{19}a_6\left(\frac{n}{2}\right)-\frac{33936}{19}a_7(n)$$
$$-\frac{78272}{19}a_8(n)+\frac{128576}{19}a_9(n),$$

$$N\left(1^3,2^3,3^5,6^5;n\right)=\frac{13}{13382400}\sigma_7(n)-\frac{13}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{4460800}\sigma_7\left(\frac{n}{3}\right)-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1089}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{7213169}{5232600}a_1(n)$$
$$-\frac{1633118}{7695}a_1\left(\frac{n}{2}\right)-\frac{15036939}{64600}a_1\left(\frac{n}{3}\right)+\frac{875361248}{654075}a_1\left(\frac{n}{4}\right)-\frac{361638}{95}a_1\left(\frac{n}{6}\right)-\frac{5457312}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{2013739}{701100}\Delta_{3,8}(n)-\frac{27677923}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3079785616}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{4391037376}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{11498}{7695}a_4(n)+\frac{381376}{1539}a_4\left(\frac{n}{2}\right)+\frac{5892352}{405}a_4\left(\frac{n}{4}\right)-\frac{5562}{19}a_2\left(\frac{n}{3}\right)+6a_3(n)+\frac{10692}{19}a_3\left(\frac{n}{3}\right)$$
$$-\frac{61764}{19}a_5(n)+-\frac{2879616}{19}a_5\left(\frac{n}{2}\right)-30a_6(n)-\frac{104736}{19}a_6\left(\frac{n}{2}\right)-\frac{33856}{19}a_7(n)$$
$$-\frac{113856}{19}a_8(n)+\frac{154752}{19}a_9(n),$$

$$N\left(1^3,2^3,3^7,6^3;n\right)=\frac{13}{6691200}\sigma_7(n)-\frac{13}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1089}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{647588}{218025}a_1(n)$$
$$-\frac{719414}{2565}a_1\left(\frac{n}{2}\right)-\frac{5359257}{16150}a_1\left(\frac{n}{3}\right)+\frac{371838496}{218025}a_1\left(\frac{n}{4}\right)-\frac{594162}{95}a_1\left(\frac{n}{6}\right)-\frac{261811872}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{318917}{77900}\Delta_{3,8}(n)-\frac{687559}{38950}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{518717524}{19475}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1909295552}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{18122}{2565}a_4(n)+\frac{161008}{513}a_4\left(\frac{n}{2}\right)+\frac{2910464}{135}a_4\left(\frac{n}{4}\right)+6a_2(n)-\frac{2376}{19}a_2\left(\frac{n}{3}\right)+\frac{9558}{19}a_3\left(\frac{n}{3}\right)$$
$$-\frac{103152}{19}a_5(n)-\frac{4248192}{19}a_5\left(\frac{n}{2}\right)-12a_6(n)-\frac{156832}{19}a_6\left(\frac{n}{2}\right)-\frac{39072}{19}a_7(n)$$
$$-\frac{180544}{19}a_8(n)+\frac{213952}{19}a_9(n),$$

$$N\left(1^3,2^3,3^9,6;n\right)=\frac{13}{3345600}\sigma_7(n)-\frac{13}{3345600}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{1115200}\sigma_7\left(\frac{n}{3}\right)-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1089}{1115200}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{2260436}{218025}a_1(n)$$
$$-\frac{368648}{855}a_1\left(\frac{n}{2}\right)-\frac{3973077}{8075}a_1\left(\frac{n}{3}\right)+\frac{539444896}{218025}a_1\left(\frac{n}{4}\right)-\frac{1036692}{95}a_1\left(\frac{n}{6}\right)-\frac{792783072}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{709111}{116850}\Delta_{3,8}(n)+\frac{6213173}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2596256972}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2831500352}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{42164}{2565}a_4(n)+\frac{74128}{171}a_4\left(\frac{n}{2}\right)+\frac{4792064}{135}a_4\left(\frac{n}{4}\right)+18a_2(n)+\frac{5886}{19}a_2\left(\frac{n}{3}\right)-12a_3(n)$$
$$+\frac{3348}{19}a_3\left(\frac{n}{3}\right)-\frac{172752}{19}a_5(n)-\frac{6957120}{19}a_5\left(\frac{n}{2}\right)+24a_6(n)-\frac{260704}{19}a_6\left(\frac{n}{2}\right)-\frac{56576}{19}a_7(n)$$
$$-\frac{313600}{19}a_8(n)+\frac{345088}{19}a_9(n),$$

$$N\left(1^3,2^5,3,6^7;n\right)=\frac{1}{1305600}\sigma_7(n)-\frac{1}{1305600}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{435200}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{435200}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{78081661}{6976800}a_1(n)$$
$$-\frac{657283}{5130}a_1\left(\frac{n}{2}\right)+\frac{4711527}{258400}a_1\left(\frac{n}{3}\right)+\frac{19483232}{24225}a_1\left(\frac{n}{4}\right)+\frac{205551}{190}a_1\left(\frac{n}{6}\right)+\frac{328735584}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{427}{1900}\Delta_{3,8}(n)-\frac{980561}{5700}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3023636}{1425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{6470272}{475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{29282}{2565}a_4(n)+\frac{54256}{513}a_4\left(\frac{n}{2}\right)+\frac{45568}{15}a_4\left(\frac{n}{4}\right)-\frac{17}{2}a_2(n)-\frac{11259}{38}a_2\left(\frac{n}{3}\right)+\frac{29}{2}a_3(n)$$
$$+\frac{5103}{38}a_3\left(\frac{n}{3}\right)+\frac{33273}{19}a_5(n)-\frac{597888}{19}a_5\left(\frac{n}{2}\right)-\frac{119}{2}a_6(n)-\frac{18976}{19}a_6\left(\frac{n}{2}\right)-\frac{40704}{19}a_7(n)$$
$$-\frac{6208}{19}a_8(n)+\frac{90240}{19}a_9(n),$$

$$N\left(1^3,2^5,3^3,6^5;n\right)=\frac{1}{652800}\sigma_7(n)-\frac{1}{652800}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{217600}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{217600}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{57762581}{3488400}a_1(n)$$
$$-\frac{98488}{855}a_1\left(\frac{n}{2}\right)+\frac{21033567}{129200}a_1\left(\frac{n}{3}\right)+\frac{146865248}{218025}a_1\left(\frac{n}{4}\right)+\frac{361908}{95}a_1\left(\frac{n}{6}\right)+\frac{410400864}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{2863}{1425}\Delta_{3,8}(n)-\frac{569141}{2850}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{5379094}{1425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{14999936}{1425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{47624}{2565}a_4(n)+\frac{4568}{171}a_4\left(\frac{n}{2}\right)-\frac{132608}{135}a_4\left(\frac{n}{4}\right)-11a_2(n)-\frac{2349}{19}a_2\left(\frac{n}{3}\right)+17a_3(n)$$
$$-\frac{6885}{19}a_3\left(\frac{n}{3}\right)+\frac{84690}{19}a_5(n)+\frac{217728}{19}a_5\left(\frac{n}{2}\right)-71a_6(n)+\frac{11936}{19}a_6\left(\frac{n}{2}\right)-\frac{53904}{19}a_7(n)$$
$$+\frac{30784}{19}a_8(n)+\frac{90432}{19}a_9(n),$$

$$N\left(1^3,2^5,3^5,6^3;n\right)=\frac{1}{326400}\sigma_7(n)-\frac{1}{326400}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{108800}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{108800}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{40716851}{1744200}a_1(n)$$
$$-\frac{185906}{2565}a_1\left(\frac{n}{2}\right)+\frac{21313557}{64600}a_1\left(\frac{n}{3}\right)+\frac{82270688}{218025}a_1\left(\frac{n}{4}\right)+\frac{664362}{95}a_1\left(\frac{n}{6}\right)+\frac{589447584}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{23209}{5700}\Delta_{3,8}(n)-\frac{779027}{2850}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{18932504}{1425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{5742016}{1425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{70318}{2565}a_4(n)-\frac{27104}{513}a_4\left(\frac{n}{2}\right)-\frac{1081088}{135}a_4\left(\frac{n}{4}\right)-16a_2(n)-\frac{1458}{19}a_2\left(\frac{n}{3}\right)+22a_3(n)$$
$$-\frac{13932}{19}a_3\left(\frac{n}{3}\right)+\frac{145260}{19}a_5(n)+\frac{1622016}{19}a_5\left(\frac{n}{2}\right)-94a_6(n)+\frac{64288}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{61824}{19}a_7(n)+\frac{95296}{19}a_8(n)+\frac{59904}{19}a_9(n),$$

$$N\left(1^3,2^5,3^7,6;n\right)=\frac{1}{163200}\sigma_7(n)-\frac{1}{163200}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{54400}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{54400}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{7322044}{218025}a_1(n)$$
$$+\frac{28418}{2565}a_1\left(\frac{n}{2}\right)+\frac{8608491}{16150}a_1\left(\frac{n}{3}\right)+-\frac{8440544}{72675}a_1\left(\frac{n}{4}\right)+\frac{1072494}{95}a_1\left(\frac{n}{6}\right)+\frac{966635424}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{37493}{5700}\Delta_{3,8}(n)-\frac{406043}{950}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{40795564}{1425}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{9650624}{1425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{103006}{2565}a_4(n)-\frac{70192}{513}a_4\left(\frac{n}{2}\right)-\frac{883456}{45}a_4\left(\frac{n}{4}\right)-26a_2(n)-\frac{5184}{19}a_2\left(\frac{n}{3}\right)+32a_3(n)$$
$$-\frac{16362}{19}a_3\left(\frac{n}{3}\right)+\frac{227376}{19}a_5(n)+\frac{3923712}{19}a_5\left(\frac{n}{2}\right)-140a_6(n)+\frac{150688}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{65184}{19}a_7(n)+\frac{206016}{19}a_8(n)-\frac{14400}{19}a_9(n),$$

$$N\left(1^3,2^7,3,6^5;n\right)=\frac{121}{53529600}\sigma_7(n)-\frac{121}{53529600}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{17843200}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{17843200}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{906517}{20930400}a_1(n)$$
$$-\frac{829639}{5130}a_1\left(\frac{n}{2}\right)-\frac{68516973}{258400}a_1\left(\frac{n}{3}\right)+\frac{731344096}{654075}a_1\left(\frac{n}{4}\right)-\frac{742437}{190}a_1\left(\frac{n}{6}\right)+\frac{149810976}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{4589699}{1402200}\Delta_{3,8}(n)-\frac{22542629}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2666701132}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3682631552}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{25529}{7695}a_4(n)+\frac{116848}{513}a_4\left(\frac{n}{2}\right)+\frac{5026304}{405}a_4\left(\frac{n}{4}\right)-\frac{5}{2}a_2(n)-\frac{21411}{38}a_2\left(\frac{n}{3}\right)+\frac{17}{2}a_3(n)$$
$$+\frac{39879}{38}a_3\left(\frac{n}{3}\right)-\frac{65511}{19}a_5(n)-\frac{2500608}{19}a_5\left(\frac{n}{2}\right)-\frac{51}{2}a_6(n)-\frac{88800}{19}a_6\left(\frac{n}{2}\right)-\frac{16256}{19}a_7(n)$$
$$-\frac{89408}{19}a_8(n)+\frac{103424}{19}a_9(n),$$

$$N\left(1^3,2^7,3^3,6^3;n\right)=\frac{121}{26764800}\sigma_7(n)-\frac{121}{26764800}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{8921600}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{8921600}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{145001917}{10465200}a_1(n)$$
$$-\frac{43988}{285}a_1\left(\frac{n}{2}\right)-\frac{84765573}{129200}a_1\left(\frac{n}{3}\right)+\frac{843516896}{654075}a_1\left(\frac{n}{4}\right)-\frac{1006416}{95}a_1\left(\frac{n}{6}\right)+\frac{99382176}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{5678249}{701100}\Delta_{3,8}(n)-\frac{3457949}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{4832954582}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{4510634752}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{168958}{7695}a_4(n)+\frac{24488}{57}a_4\left(\frac{n}{2}\right)+\frac{8233984}{405}a_4\left(\frac{n}{4}\right)+a_2(n)-\frac{23841}{19}a_2\left(\frac{n}{3}\right)+5a_3(n)$$
$$+\frac{51543}{19}a_3\left(\frac{n}{3}\right)-\frac{200142}{19}a_5(n)-\frac{4151040}{19}a_5\left(\frac{n}{2}\right)-3a_6(n)-\frac{150304}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{30128}{19}a_7(n)-\frac{159424}{19}a_8(n)+\frac{62272}{19}a_9(n),$$

$$N\left(1^3,2^7,3^5,6;n\right)=\frac{121}{13382400}\sigma_7(n)-\frac{121}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{4460800}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{158241347}{5232600}a_1(n)$$
$$-\frac{429722}{2565}a_1\left(\frac{n}{2}\right)-\frac{69234543}{64600}a_1\left(\frac{n}{3}\right)+\frac{1048594016}{654075}a_1\left(\frac{n}{4}\right)-\frac{1606086}{95}a_1\left(\frac{n}{6}\right)-\frac{59395104}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{9275543}{701100}\Delta_{3,8}(n)+\frac{42438449}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{7734429872}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{5898035392}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{334546}{7695}a_4(n)+\frac{302272}{513}a_4\left(\frac{n}{2}\right)+\frac{12930304}{405}a_4\left(\frac{n}{4}\right)+8a_2(n)-\frac{32994}{19}a_2\left(\frac{n}{3}\right)-2a_3(n)$$
$$+\frac{79164}{19}a_3\left(\frac{n}{3}\right)-\frac{343188}{19}a_5(n)-\frac{6534528}{19}a_5\left(\frac{n}{2}\right)+42a_6(n)-\frac{236192}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{71360}{19}a_7(n)-\frac{262336}{19}a_8(n)+\frac{52864}{19}a_9(n),$$

$$N\left(1^3,2^9,3,6^3;n\right)=\frac{73}{10705920}\sigma_7(n)-\frac{73}{10705920}\sigma_7\left(\frac{n}{2}\right)-\frac{243}{3568640}\sigma_7\left(\frac{n}{3}\right)+\frac{73}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{243}{3568640}\sigma_7\left(\frac{n}{6}\right)-\frac{1168}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3888}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{122444543}{4186080}a_1(n)$$
$$-\frac{954511}{5130}a_1\left(\frac{n}{2}\right)+\frac{26975007}{51680}a_1\left(\frac{n}{3}\right)+\frac{107032096}{130815}a_1\left(\frac{n}{4}\right)+\frac{1653147}{190}a_1\left(\frac{n}{6}\right)+\frac{61017696}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{451759}{70110}\Delta_{3,8}(n)-\frac{30568369}{140220}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{361012364}{35055}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{419526272}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{54928}{1539}a_4(n)-\frac{63920}{513}a_4\left(\frac{n}{2}\right)-\frac{346624}{81}a_4\left(\frac{n}{4}\right)-\frac{21}{2}a_2(n)+\frac{26433}{38}a_2\left(\frac{n}{3}\right)+\frac{33}{2}a_3(n)$$
$$-\frac{81837}{38}a_3\left(\frac{n}{3}\right)+\frac{202941}{19}a_5(n)+\frac{974208}{19}a_5\left(\frac{n}{2}\right)-\frac{171}{2}a_6(n)+\frac{38240}{19}a_6\left(\frac{n}{2}\right)-\frac{109120}{19}a_7(n)$$
$$+\frac{58304}{19}a_8(n)+\frac{184960}{19}a_9(n),$$

$$N\left(1^3,2^9,3^3,6;n\right)=\frac{73}{5352960}\sigma_7(n)-\frac{73}{5352960}\sigma_7\left(\frac{n}{2}\right)-\frac{243}{1784320}\sigma_7\left(\frac{n}{3}\right)+\frac{73}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{243}{1784320}\sigma_7\left(\frac{n}{6}\right)-\frac{1168}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3888}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{138345527}{2093040}a_1(n)$$
$$-\frac{615784}{2565}a_1\left(\frac{n}{2}\right)+\frac{42849063}{25840}a_1\left(\frac{n}{3}\right)+\frac{56631584}{130815}a_1\left(\frac{n}{4}\right)+\frac{2570148}{95}a_1\left(\frac{n}{6}\right)+\frac{40493664}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1435247}{70110}\Delta_{3,8}(n)-\frac{18305761}{70110}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{293920682}{7011}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{30817408}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{133220}{1539}a_4(n)-\frac{374104}{513}a_4\left(\frac{n}{2}\right)-\frac{1942016}{81}a_4\left(\frac{n}{4}\right)-15a_2(n)+\frac{58023}{19}a_2\left(\frac{n}{3}\right)+21a_3(n)$$
$$-\frac{141129}{19}a_3\left(\frac{n}{3}\right)+\frac{582138}{19}a_5(n)+\frac{5145216}{19}a_5\left(\frac{n}{2}\right)-123a_6(n)+\frac{191008}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{250064}{19}a_7(n)+\frac{222016}{19}a_8(n)+\frac{345152}{19}a_9(n),$$

$$N\left(1^3,2^{11},3,6;n\right)=\frac{1093}{53529600}\sigma_7(n)-\frac{1093}{53529600}\sigma_7\left(\frac{n}{2}\right)+\frac{729}{17843200}\sigma_7\left(\frac{n}{3}\right)-\frac{1093}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{729}{17843200}\sigma_7\left(\frac{n}{6}\right)+\frac{17488}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{11664}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{339730787}{6976800}a_1(n)$$
$$+\frac{171397}{5130}a_1\left(\frac{n}{2}\right)-\frac{440015409}{258400}a_1\left(\frac{n}{3}\right)+\frac{178759456}{218025}a_1\left(\frac{n}{4}\right)-\frac{5349969}{190}a_1\left(\frac{n}{6}\right)+\frac{373115808}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{3275313}{155800}\Delta_{3,8}(n)-\frac{2057404}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{889254964}{19475}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{396119424}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{178849}{2565}a_4(n)+\frac{523088}{513}a_4\left(\frac{n}{2}\right)+\frac{3812864}{135}a_4\left(\frac{n}{4}\right)-\frac{1}{2}a_2(n)-\frac{148959}{38}a_2\left(\frac{n}{3}\right)+\frac{13}{2}a_3(n)$$
$$+\frac{315171}{38}a_3\left(\frac{n}{3}\right)-\frac{556443}{19}a_5(n)-\frac{5992704}{19}a_5\left(\frac{n}{2}\right)+\frac{17}{2}a_6(n)-\frac{221024}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{201024}{19}a_7(n)-\frac{224064}{19}a_8(n)-\frac{230400}{19}a_9(n),$$

$$N\left(1^4,6^{12};n\right)=\frac{1}{13382400}\sigma_7(n)-\frac{1}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{4460800}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{153792059}{15697800}a_1(n)$$
$$-\frac{4696882}{23085}a_1\left(\frac{n}{2}\right)-\frac{7142343}{64600}a_1\left(\frac{n}{3}\right)+\frac{864113024}{654075}a_1\left(\frac{n}{4}\right)-\frac{60954}{95}a_1\left(\frac{n}{6}\right)+\frac{316738944}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{2870179}{2103300}\Delta_{3,8}(n)-\frac{65343281}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{5453804824}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{4127615488}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{194662}{23085}a_4(n)+\frac{974048}{4617}a_4\left(\frac{n}{2}\right)+\frac{3905536}{405}a_4\left(\frac{n}{4}\right)-8a_2(n)-\frac{7758}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$+\frac{7758}{19}a_3\left(\frac{n}{3}\right)-\frac{6124}{19}a_5(n)-\frac{1918208}{19}a_5\left(\frac{n}{2}\right)-66a_6(n)-\frac{66688}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{151232}{57}a_7(n)-\frac{59392}{19}a_8(n)+\frac{147968}{19}a_9(n),$$

$$N\left(1^4,3^4,6^8;n\right)=\frac{1}{6691200}\sigma_7(n)-\frac{1}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{71664889}{7848900}a_1(n)$$
$$-\frac{4546024}{23085}a_1\left(\frac{n}{2}\right)-\frac{3822753}{32300}a_1\left(\frac{n}{3}\right)+\frac{841700224}{654075}a_1\left(\frac{n}{4}\right)-\frac{77928}{95}a_1\left(\frac{n}{6}\right)+\frac{325551744}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{767917}{525825}\Delta_{3,8}(n)-\frac{9900592}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{5367891784}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{4022655488}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{177064}{23085}a_4(n)+\frac{922784}{4617}a_4\left(\frac{n}{2}\right)+\frac{3823616}{405}a_4\left(\frac{n}{4}\right)-8a_2(n)-\frac{8406}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$+\frac{9090}{19}a_3\left(\frac{n}{3}\right)-\frac{7000}{19}a_5(n)-\frac{1883136}{19}a_5\left(\frac{n}{2}\right)-60a_6(n)-\frac{65408}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{141248}{57}a_7(n)-\frac{58112}{19}a_8(n)+\frac{140544}{19}a_9(n),$$

$$N\left(1^4,3^4,6^8;n\right)=\frac{1}{3345600}\sigma_7(n)-\frac{1}{3345600}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{1115200}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{1115200}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{3731371}{436050}a_1(n)$$
$$-\frac{97480}{513}a_1\left(\frac{n}{2}\right)-\frac{2060703}{16150}a_1\left(\frac{n}{3}\right)+\frac{823291264}{654075}a_1\left(\frac{n}{4}\right)-\frac{17928}{19}a_1\left(\frac{n}{6}\right)+\frac{334560384}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{91951}{58425}\Delta_{3,8}(n)-\frac{3074258}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1773707968}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3938739968}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{17912}{2565}a_4(n)+\frac{98560}{513}a_4\left(\frac{n}{2}\right)+\frac{3777536}{405}a_4\left(\frac{n}{4}\right)-8a_2(n)-\frac{9000}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$+\frac{10368}{19}a_3\left(\frac{n}{3}\right)-\frac{8848}{19}a_5(n)-\frac{1865984}{19}a_5\left(\frac{n}{2}\right)-56a_6(n)-\frac{64640}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{44032}{19}a_7(n)-\frac{57344}{19}a_8(n)+\frac{134144}{19}a_9(n),$$

$$N\left(1^4,3^6,6^6;n\right)=\frac{1}{1672800}\sigma_7(n)-\frac{1}{1672800}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{557600}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{557600}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{15292294}{1962225}a_1(n)$$
$$-\frac{4203448}{23085}a_1\left(\frac{n}{2}\right)-\frac{1083288}{8075}a_1\left(\frac{n}{3}\right)+\frac{808886144}{654075}a_1\left(\frac{n}{4}\right)-\frac{100536}{95}a_1\left(\frac{n}{6}\right)+\frac{343764864}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{869353}{525825}\Delta_{3,8}(n)-\frac{23197154}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{5300227024}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3875868928}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{141736}{23085}a_4(n)+\frac{797504}{4617}a_4\left(\frac{n}{2}\right)+\frac{3767296}{405}a_4\left(\frac{n}{4}\right)-8a_2(n)-\frac{9540}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$+\frac{11592}{19}a_3\left(\frac{n}{3}\right)-\frac{8704}{19}a_5(n)-\frac{1866752}{19}a_5\left(\frac{n}{2}\right)-48a_6(n)-\frac{64384}{19}a_6\left(\frac{n}{2}\right)-\frac{123776}{57}a_7(n)$$
$$-\frac{57088}{19}a_8(n)+\frac{128768}{19}a_9(n),$$

$$N\left(1^4,3^8,6^4;n\right)=\frac{1}{836400}\sigma_7(n)-\frac{1}{836400}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{278800}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{278800}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{12991628}{1962225}a_1(n)$$
$$-\frac{3938672}{23085}a_1\left(\frac{n}{2}\right)-\frac{1089456}{8075}a_1\left(\frac{n}{3}\right)+\frac{264827008}{218025}a_1\left(\frac{n}{4}\right)-\frac{110064}{95}a_1\left(\frac{n}{6}\right)+\frac{352969344}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{872786}{525825}\Delta_{3,8}(n)-\frac{14094508}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{5238759824}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{423666432}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{114512}{23085}a_4(n)+\frac{602176}{4617}a_4\left(\frac{n}{2}\right)+\frac{1252352}{135}a_4\left(\frac{n}{4}\right)-8a_2(n)-\frac{10080}{19}a_2\left(\frac{n}{3}\right)$$
$$+16a_3(n)+\frac{12816}{19}a_3\left(\frac{n}{3}\right)-\frac{4608}{19}a_5(n)-\frac{1867520}{19}a_5\left(\frac{n}{2}\right)-32a_6(n)-\frac{64128}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{115456}{57}a_7(n)-\frac{56832}{19}a_8(n)+\frac{123392}{19}a_9(n),$$

$$N\left(1^4,3^{10},6^2;n\right)=\frac{1}{418200}\sigma_7(n)-\frac{1}{418200}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{139400}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{273}{139400}\sigma_7\left(\frac{n}{6}\right)+\frac{64}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{273}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{9832916}{1962225}a_1(n)$$
$$-\frac{3652304}{23085}a_1\left(\frac{n}{2}\right)-\frac{757032}{8075}a_1\left(\frac{n}{3}\right)+\frac{264827008}{218025}a_1\left(\frac{n}{4}\right)-\frac{93648}{95}a_1\left(\frac{n}{6}\right)+\frac{352969344}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{836192}{525825}\Delta_{3,8}(n)+\frac{473336}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{5062269584}{525825}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{423666432}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{78944}{23085}a_4(n)+\frac{193600}{4617}a_4\left(\frac{n}{2}\right)+\frac{1252352}{135}a_4\left(\frac{n}{4}\right)-8a_2(n)-\frac{10080}{19}a_2\left(\frac{n}{3}\right)$$
$$+16a_3(n)+\frac{12816}{19}a_3\left(\frac{n}{3}\right)+\frac{11200}{19}a_5(n)-\frac{1867520}{19}a_5\left(\frac{n}{2}\right)-\frac{64128}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{115456}{57}a_7(n)-\frac{56832}{19}a_8(n)+\frac{123392}{19}a_9(n),$$

$$N\left(1^4,3^{12};n\right)=\frac{1}{209100}\sigma_7(n)-\frac{1}{104550}\sigma_7\left(\frac{n}{2}\right)+\frac{273}{69700}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{64}{52275}\sigma_7\left(\frac{n}{4}\right)-\frac{273}{34850}\sigma_7\left(\frac{n}{6}\right)+\frac{17472}{17425}\sigma_7\left(\frac{n}{12}\right)+\frac{93824}{34425}a_1(n)$$
$$+\frac{2093056}{34425}a_1\left(\frac{n}{2}\right)-\frac{3456}{425}a_1\left(\frac{n}{3}\right)+\frac{884736}{425}a_1\left(\frac{n}{6}\right)+\frac{25312}{9225}\Delta_{3,8}(n)$$
$$-\frac{30592}{1845}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{10006528}{9225}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{1024}{405}a_4(n)-\frac{16384}{405}a_4\left(\frac{n}{2}\right),$$

$$N\left(1^4,2^2,6^{10};n\right)=\frac{7}{26764800}\sigma_7(n)-\frac{7}{26764800}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{8921600}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{549}{8921600}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{108795931}{10465200}a_1(n)-\frac{1467371}{7695}a_1\left(\frac{n}{2}\right)-\frac{10885761}{129200}a_1\left(\frac{n}{3}\right)$$
$$+\frac{802187456}{654075}a_1\left(\frac{n}{4}\right)-\frac{61371}{95}a_1\left(\frac{n}{6}\right)+\frac{331897536}{8075}a_1\left(\frac{n}{12}\right)+\frac{1459061}{1402200}\Delta_{3,8}(n)$$
$$-\frac{125975777}{701100}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1467072052}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3791510272}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{71989}{7695}a_4(n)+\frac{288400}{1539}a_4\left(\frac{n}{2}\right)+\frac{3257344}{405}a_4\left(\frac{n}{4}\right)-9a_2(n)-\frac{8667}{19}a_2\left(\frac{n}{3}\right)$$
$$+17a_3(n)+\frac{8667}{19}a_3\left(\frac{n}{3}\right)+\frac{5982}{19}a_5(n)-\frac{1596288}{19}a_5\left(\frac{n}{2}\right)-63a_6(n)$$
$$-\frac{55232}{19}a_6\left(\frac{n}{2}\right)-\frac{47904}{19}a_7(n)-\frac{44288}{19}a_8(n)+\frac{132352}{19}a_9(n),$$

$$N\left(1^4,2^2,3^2,6^8;n\right)=\frac{7}{13382400}\sigma_7(n)-\frac{7}{13382400}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{4460800}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{549}{4460800}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{64982171}{5232600}a_1(n)-\frac{1386928}{7695}a_1\left(\frac{n}{2}\right)-\frac{2268801}{64600}a_1\left(\frac{n}{3}\right)$$
$$+\frac{28149568}{24225}a_1\left(\frac{n}{4}\right)+\frac{54792}{95}a_1\left(\frac{n}{6}\right)+\frac{401322816}{8075}a_1\left(\frac{n}{12}\right)+\frac{304501}{701100}\Delta_{3,8}(n)$$
$$-\frac{23174839}{116850}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1041029572}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1178854144}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{92218}{7695}a_4(n)+\frac{247376}{1539}a_4\left(\frac{n}{2}\right)+\frac{31744}{5}a_4\left(\frac{n}{4}\right)-10a_2(n)-\frac{7992}{19}a_2\left(\frac{n}{3}\right)$$
$$+18a_3(n)+\frac{5940}{19}a_3\left(\frac{n}{3}\right)+\frac{23244}{19}a_5(n)-\frac{1263360}{19}a_5\left(\frac{n}{2}\right)-70a_6(n)$$
$$-\frac{42176}{19}a_6\left(\frac{n}{2}\right)-\frac{51168}{19}a_7(n)-\frac{28800}{19}a_8(n)+\frac{128128}{19}a_9(n),$$

$$N\left(1^4,2^2,3^4,6^6;n\right)=\frac{7}{6691200}\sigma_7(n)-\frac{7}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{2230400}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{38619931}{2616300}a_1(n)$$
$$-\frac{136256}{855}a_1\left(\frac{n}{2}\right)+\frac{864639}{32300}a_1\left(\frac{n}{3}\right)+\frac{674608576}{654075}a_1\left(\frac{n}{4}\right)+\frac{175896}{95}a_1\left(\frac{n}{6}\right)+\frac{479854656}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{115339}{350550}\Delta_{3,8}(n)-\frac{37899577}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{379980832}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3048682112}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{116116}{7695}a_4(n)+\frac{20608}{171}a_4\left(\frac{n}{2}\right)+\frac{1447424}{405}a_4\left(\frac{n}{4}\right)-12a_2(n)-\frac{7884}{19}a_2\left(\frac{n}{3}\right)+20a_3(n)$$
$$+\frac{3780}{19}a_3\left(\frac{n}{3}\right)+\frac{47064}{19}a_5(n)-\frac{713088}{19}a_5\left(\frac{n}{2}\right)-76a_6(n)-\frac{21312}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{52736}{19}a_7(n)-\frac{3072}{19}a_8(n)+\frac{113152}{19}a_9(n),$$

$$N\left(1^4,2^2,3^6,6^4;n\right)=\frac{7}{3345600}\sigma_7(n)-\frac{7}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{1115200}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{11849218}{654075}a_1(n)$$
$$-\frac{291604}{2565}a_1\left(\frac{n}{2}\right)+\frac{877167}{8075}a_1\left(\frac{n}{3}\right)+\frac{507361216}{654075}a_1\left(\frac{n}{4}\right)+\frac{351828}{95}a_1\left(\frac{n}{6}\right)+\frac{647004096}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{469093}{350550}\Delta_{3,8}(n)-\frac{44967769}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{768440648}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2112228992}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{149692}{7695}a_4(n)+\frac{34208}{513}a_4\left(\frac{n}{2}\right)-\frac{580096}{405}a_4\left(\frac{n}{4}\right)-16a_2(n)-\frac{9504}{19}a_2\left(\frac{n}{3}\right)+24a_3(n)$$
$$+\frac{3348}{19}a_3\left(\frac{n}{3}\right)+\frac{79872}{19}a_5(n)+\frac{269568}{19}a_5\left(\frac{n}{2}\right)-88a_6(n)+\frac{15936}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{50496}{19}a_7(n)+\frac{43904}{19}a_8(n)+\frac{75136}{19}a_9(n),$$

$$N\left(1^4,2^2,3^8,6^2;n\right)=\frac{7}{1672800}\sigma_7(n)-\frac{7}{1672800}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{557600}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{557600}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{5146102}{218025}a_1(n)$$
$$-\frac{10384}{513}a_1\left(\frac{n}{2}\right)+\frac{1847664}{8075}a_1\left(\frac{n}{3}\right)+\frac{62184512}{218025}a_1\left(\frac{n}{4}\right)+\frac{129816}{19}a_1\left(\frac{n}{6}\right)+\frac{991780416}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{164701}{58425}\Delta_{3,8}(n)-\frac{6591842}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{318066952}{19475}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{110230144}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{67768}{2565}a_4(n)-\frac{9056}{513}a_4\left(\frac{n}{2}\right)-\frac{1444352}{135}a_4\left(\frac{n}{4}\right)-24a_2(n)-\frac{14472}{19}a_2\left(\frac{n}{3}\right)+32a_3(n)$$
$$+\frac{6264}{19}a_3\left(\frac{n}{3}\right)+\frac{131904}{19}a_5(n)+\frac{2076288}{19}a_5\left(\frac{n}{2}\right)-112a_6(n)+\frac{84928}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{41600}{19}a_7(n)+\frac{132352}{19}a_8(n)+-\frac{6912}{19}a_9(n),$$

$$N\left(1^4,2^2,3^{10};n\right)=\frac{7}{836400}\sigma_7(n)-\frac{7}{836400}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{278800}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{278800}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{19501742}{654075}a_1(n)$$
$$+\frac{2232184}{7695}a_1\left(\frac{n}{2}\right)+\frac{3097098}{8075}a_1\left(\frac{n}{3}\right)-\frac{99923776}{72675}a_1\left(\frac{n}{4}\right)+\frac{1314864}{95}a_1\left(\frac{n}{6}\right)+\frac{1522898496}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{827896}{175275}\Delta_{3,8}(n)-\frac{36740092}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{7768997128}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{591722112}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{296528}{7695}a_4(n)-\frac{180512}{1539}a_4\left(\frac{n}{2}\right)-\frac{1508864}{45}a_4\left(\frac{n}{4}\right)-36a_2(n)-\frac{21924}{19}a_2\left(\frac{n}{3}\right)+40a_3(n)$$
$$+\frac{11664}{19}a_3\left(\frac{n}{3}\right)+\frac{188064}{19}a_5(n)+\frac{6533760}{19}a_5\left(\frac{n}{2}\right)-192a_6(n)+\frac{252864}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{8832}{19}a_7(n)+\frac{329472}{19}a_8(n)-\frac{255232}{19}a_9(n),$$

$$N\left(1^4,2^4,6^8;n\right)=\frac{1}{1338240}\sigma_7(n)-\frac{1}{1338240}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{446080}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{446080}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{61573}{6460}a_1(n)$$
$$-\frac{562928}{2565}a_1\left(\frac{n}{2}\right)-\frac{691173}{6460}a_1\left(\frac{n}{3}\right)+\frac{61152512}{43605}a_1\left(\frac{n}{4}\right)-\frac{59724}{95}a_1\left(\frac{n}{6}\right)+\frac{61122816}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{10287}{7790}\Delta_{3,8}(n)-\frac{367121}{2337}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{46659184}{3895}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{294616064}{11685}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{156}{19}a_4(n)+\frac{103744}{513}a_4\left(\frac{n}{2}\right)+\frac{299008}{27}a_4\left(\frac{n}{4}\right)-6a_2(n)-\frac{6804}{19}a_2\left(\frac{n}{3}\right)+14a_3(n)$$
$$+\frac{6804}{19}a_3\left(\frac{n}{3}\right)-\frac{6120}{19}a_5(n)-\frac{2207232}{19}a_5\left(\frac{n}{2}\right)-60a_6(n)-\frac{76544}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{52608}{19}a_7(n)-\frac{71680}{19}a_8(n)+\frac{162816}{19}a_9(n),$$

$$N\left(1^4,2^4,3^2,6^6;n\right)=\frac{1}{669120}\sigma_7(n)-\frac{1}{669120}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{223040}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{223040}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{577628}{130815}a_1(n)$$
$$-\frac{592744}{2565}a_1\left(\frac{n}{2}\right)-\frac{392328}{1615}a_1\left(\frac{n}{3}\right)+\frac{195799808}{130815}a_1\left(\frac{n}{4}\right)-\frac{346392}{95}a_1\left(\frac{n}{6}\right)+\frac{36407808}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{210217}{70110}\Delta_{3,8}(n)-\frac{4585691}{35055}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{603167888}{35055}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{967123456}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{2180}{1539}a_4(n)+\frac{142784}{513}a_4\left(\frac{n}{2}\right)+\frac{1177600}{81}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{10098}{19}a_2\left(\frac{n}{3}\right)+12a_3(n)$$
$$+\frac{16254}{19}a_3\left(\frac{n}{3}\right)-\frac{52848}{19}a_5(n)-\frac{2899200}{19}a_5\left(\frac{n}{2}\right)-48a_6(n)-\frac{103680}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{38528}{19}a_7(n)-\frac{103680}{19}a_8(n)+\frac{158720}{19}a_9(n),$$

$$N\left(1^4,2^4,3^4,6^4;n\right)=\frac{1}{334560}\sigma_7(n)-\frac{1}{334560}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{111520}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{111520}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{207107}{130815}a_1(n)$$
$$-\frac{135944}{513}a_1\left(\frac{n}{2}\right)-\frac{648333}{1615}a_1\left(\frac{n}{3}\right)+\frac{45571328}{26163}a_1\left(\frac{n}{4}\right)-\frac{126936}{19}a_1\left(\frac{n}{6}\right)+\frac{1633536}{323}a_1\left(\frac{n}{12}\right)$$
$$+\frac{173686}{35055}\Delta_{3,8}(n)-\frac{2932084}{35055}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{177761600}{7011}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{231239680}{7011}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{10064}{1539}a_4(n)+\frac{187136}{513}a_4\left(\frac{n}{2}\right)+\frac{1654784}{81}a_4\left(\frac{n}{4}\right)-\frac{12096}{19}a_2\left(\frac{n}{3}\right)+8a_3(n)$$
$$+\frac{24408}{19}a_3\left(\frac{n}{3}\right)-\frac{110592}{19}a_5(n)-\frac{4079616}{19}a_5\left(\frac{n}{2}\right)-32a_6(n)-\frac{147968}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{28672}{19}a_7(n)-\frac{157696}{19}a_8(n)+\frac{179200}{19}a_9(n),$$

$$N\left(1^4,2^4,3^6,6^2;n\right)=\frac{1}{167280}\sigma_7(n)-\frac{1}{167280}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{55760}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{55760}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{261982}{26163}a_1(n)$$
$$-\frac{865664}{2565}a_1\left(\frac{n}{2}\right)-\frac{192258}{323}a_1\left(\frac{n}{3}\right)+\frac{286112512}{130815}a_1\left(\frac{n}{4}\right)-\frac{1005552}{95}a_1\left(\frac{n}{6}\right)-\frac{53169408}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{51500}{7011}\Delta_{3,8}(n)+\frac{794888}{35055}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1350603136}{35055}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1493057024}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{26720}{1539}a_4(n)+\frac{236032}{513}a_4\left(\frac{n}{2}\right)+\frac{2459648}{81}a_4\left(\frac{n}{4}\right)+8a_2(n)-\frac{10476}{19}a_2\left(\frac{n}{3}\right)+\frac{28944}{19}a_3\left(\frac{n}{3}\right)$$
$$-\frac{184896}{19}a_5(n)-\frac{6047232}{19}a_5\left(\frac{n}{2}\right)-\frac{221696}{19}a_6\left(\frac{n}{2}\right)-\frac{24832}{19}a_7(n)-\frac{250880}{19}a_8(n)$$
$$+\frac{239104}{19}a_9(n),$$

$$N\left(1^4,2^4,3^8;n\right)=\frac{1}{83640}\sigma_7(n)-\frac{1}{83640}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{27880}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{27880}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{38288}{1615}a_1(n)$$
$$-\frac{1294576}{2565}a_1\left(\frac{n}{2}\right)-\frac{1378512}{1615}a_1\left(\frac{n}{3}\right)+\frac{26804480}{8721}a_1\left(\frac{n}{4}\right)-\frac{1617408}{95}a_1\left(\frac{n}{6}\right)-\frac{36986112}{323}a_1\left(\frac{n}{12}\right)$$
$$+\frac{123068}{11685}\Delta_{3,8}(n)+\frac{2819912}{11685}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{737179616}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{143701504}{2337}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{1952}{57}a_4(n)+\frac{309632}{513}a_4\left(\frac{n}{2}\right)+\frac{1329152}{27}a_4\left(\frac{n}{4}\right)+24a_2(n)-\frac{1296}{19}a_2\left(\frac{n}{3}\right)-16a_3(n)$$
$$+\frac{25920}{19}a_3\left(\frac{n}{3}\right)-\frac{299520}{19}a_5(n)-\frac{9755136}{19}a_5\left(\frac{n}{2}\right)+64a_6(n)-\frac{362240}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{32256}{19}a_7(n)-\frac{435200}{19}a_8(n)+\frac{384000}{19}a_9(n),$$

$$N\left(1^4,2^6,6^6;n\right)=\frac{61}{26764800}\sigma_7(n)-\frac{61}{26764800}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{8921600}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{8921600}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{255121}{20400}a_1(n)$$
$$-\frac{22849}{135}a_1\left(\frac{n}{2}\right)-\frac{314577}{6800}a_1\left(\frac{n}{3}\right)+\frac{11968064}{11475}a_1\left(\frac{n}{4}\right)-\frac{4347}{5}a_1\left(\frac{n}{6}\right)+\frac{19369152}{425}a_1\left(\frac{n}{12}\right)$$
$$+\frac{14059}{24600}\Delta_{3,8}(n)-\frac{2905463}{12300}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{13772588}{3075}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{54938368}{3075}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{179}{15}a_4(n)+\frac{5360}{27}a_4\left(\frac{n}{2}\right)+\frac{646144}{135}a_4\left(\frac{n}{4}\right)-11a_2(n)-567a_2\left(\frac{n}{3}\right)+19a_3(n)+567a_3\left(\frac{n}{3}\right)$$
$$+1134a_5(n)-49536a_5\left(\frac{n}{2}\right)-77a_6(n)-1728a_6\left(\frac{n}{2}\right)-2208a_7(n)-768a_8(n)+5376a_9(n),$$

$$N\left(1^4,2^6,3^2,6^4;n\right)=\frac{61}{13382400}\sigma_7(n)-\frac{61}{13382400}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{4460800}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{4460800}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{137445193}{5232600}a_1(n)$$
$$-\frac{469328}{2565}a_1\left(\frac{n}{2}\right)+\frac{21862917}{64600}a_1\left(\frac{n}{3}\right)+\frac{631108928}{654075}a_1\left(\frac{n}{4}\right)+\frac{628056}{95}a_1\left(\frac{n}{6}\right)+\frac{494232768}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{2928817}{701100}\Delta_{3,8}(n)-\frac{92365711}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{1168963444}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2617812736}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{234254}{7695}a_4(n)-\frac{7856}{513}a_4\left(\frac{n}{2}\right)-\frac{785408}{405}a_4\left(\frac{n}{4}\right)-14a_2(n)+\frac{2484}{19}a_2\left(\frac{n}{3}\right)+22a_3(n)$$
$$-\frac{20952}{19}a_3\left(\frac{n}{3}\right)+\frac{152964}{19}a_5(n)+\frac{450048}{19}a_5\left(\frac{n}{2}\right)-98a_6(n)+\frac{21440}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{90784}{19}a_7(n)+\frac{46976}{19}a_8(n)+\frac{156544}{19}a_9(n),$$

$$N\left(1^4,2^6,3^4,6^2;n\right)=\frac{61}{6691200}\sigma_7(n)-\frac{61}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{2230400}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{108046753}{2616300}a_1(n)$$
$$-\frac{78400}{513}a_1\left(\frac{n}{2}\right)+\frac{24414957}{32300}a_1\left(\frac{n}{3}\right)+\frac{378127168}{654075}a_1\left(\frac{n}{4}\right)+\frac{259560}{19}a_1\left(\frac{n}{6}\right)+\frac{644246208}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{3270757}{350550}\Delta_{3,8}(n)-\frac{63062191}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{4082297984}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1026540416}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{389548}{7695}a_4(n)-\frac{111104}{513}a_4\left(\frac{n}{2}\right)-\frac{5467648}{405}a_4\left(\frac{n}{4}\right)-20a_2(n)+\frac{13068}{19}a_2\left(\frac{n}{3}\right)+28a_3(n)$$
$$-\frac{50004}{19}a_3\left(\frac{n}{3}\right)+\frac{295560}{19}a_5(n)+\frac{2815872}{19}a_5\left(\frac{n}{2}\right)-132a_6(n)+\frac{108352}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{129536}{19}a_7(n)+\frac{148480}{19}a_8(n)+\frac{160256}{19}a_9(n),$$

$$N\left(1^4,2^6,3^6;n\right)=\frac{61}{3345600}\sigma_7(n)-\frac{61}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{1115200}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{40312834}{654075}a_1(n)$$
$$-\frac{22804}{171}a_1\left(\frac{n}{2}\right)+\frac{9671121}{8075}a_1\left(\frac{n}{3}\right)+\frac{135677248}{654075}a_1\left(\frac{n}{4}\right)+\frac{383004}{19}a_1\left(\frac{n}{6}\right)+\frac{980013888}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{5182159}{350550}\Delta_{3,8}(n)-\frac{101675467}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{7659812024}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{651140224}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{587956}{7695}a_4(n)-\frac{60896}{171}a_4\left(\frac{n}{2}\right)-\frac{11365888}{405}a_4\left(\frac{n}{4}\right)-32a_2(n)+\frac{17928}{19}a_2\left(\frac{n}{3}\right)+40a_3(n)$$
$$-\frac{73332}{19}a_3\left(\frac{n}{3}\right)+\frac{462528}{19}a_5(n)+\frac{5777664}{19}a_5\left(\frac{n}{2}\right)-200a_6(n)+\frac{215488}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{172736}{19}a_7(n)+\frac{284800}{19}a_8(n)+\frac{142976}{19}a_9(n),$$

$$N\left(1^4,2^8,6^4;n\right)=\frac{91}{13382400}\sigma_7(n)-\frac{91}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{4460800}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{44628883}{5232600}a_1(n)$$
$$-\frac{200858}{855}a_1\left(\frac{n}{2}\right)-\frac{6170373}{64600}a_1\left(\frac{n}{3}\right)+\frac{986075264}{654075}a_1\left(\frac{n}{4}\right)+\frac{28818}{95}a_1\left(\frac{n}{6}\right)+\frac{274425984}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{826523}{701100}\Delta_{3,8}(n)-\frac{18343771}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2555107928}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{4839290368}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{56534}{7695}a_4(n)+\frac{22240}{171}a_4\left(\frac{n}{2}\right)+\frac{5564416}{405}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{3834}{19}a_2\left(\frac{n}{3}\right)+12a_3(n)$$
$$+\frac{3834}{19}a_3\left(\frac{n}{3}\right)+\frac{1980}{19}a_5(n)-\frac{2750208}{19}a_5\left(\frac{n}{2}\right)-38a_6(n)-\frac{92544}{19}a_6\left(\frac{n}{2}\right)-\frac{56512}{19}a_7(n)$$
$$-\frac{90112}{19}a_8(n)+\frac{189952}{19}a_9(n),$$

$$N\left(1^4,2^8,3^2,6^2;n\right)=\frac{91}{6691200}\sigma_7(n)-\frac{91}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{76578907}{2616300}a_1(n)$$
$$-\frac{118456}{855}a_1\left(\frac{n}{2}\right)-\frac{39152583}{32300}a_1\left(\frac{n}{3}\right)+\frac{1009706624}{654075}a_1\left(\frac{n}{4}\right)-\frac{1873224}{95}a_1\left(\frac{n}{6}\right)+\frac{276188544}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{2622854}{175275}\Delta_{3,8}(n)-\frac{11471966}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{7336728008}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{5612005888}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{340432}{7695}a_4(n)+\frac{130976}{171}a_4\left(\frac{n}{2}\right)+\frac{11769856}{405}a_4\left(\frac{n}{4}\right)-\frac{49518}{19}a_2\left(\frac{n}{3}\right)+8a_3(n)$$
$$+\frac{104922}{19}a_3\left(\frac{n}{3}\right)-\frac{380232}{19}a_5(n)-\frac{6019584}{19}a_5\left(\frac{n}{2}\right)-4a_6(n)-\frac{218752}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{97856}{19}a_7(n)-\frac{226048}{19}a_8(n)-\frac{19712}{19}a_9(n),$$

$$N\left(1^4,2^8,3^4;n\right)=\frac{91}{3345600}\sigma_7(n)-\frac{91}{3345600}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{1115200}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{1115200}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{29562839}{436050}a_1(n)$$
$$-\frac{103352}{855}a_1\left(\frac{n}{2}\right)-\frac{38636973}{16150}a_1\left(\frac{n}{3}\right)+\frac{483913088}{218025}a_1\left(\frac{n}{4}\right)-\frac{3543048}{95}a_1\left(\frac{n}{6}\right)+\frac{251904384}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{1725541}{58425}\Delta_{3,8}(n)+\frac{5193086}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{4604556736}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2863782656}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{249688}{2565}a_4(n)+\frac{224512}{171}a_4\left(\frac{n}{2}\right)+\frac{7263232}{135}a_4\left(\frac{n}{4}\right)+8a_2(n)-\frac{90072}{19}a_2\left(\frac{n}{3}\right)+\frac{200880}{19}a_3\left(\frac{n}{3}\right)$$
$$-\frac{759024}{19}a_5(n)-\frac{11185920}{19}a_5\left(\frac{n}{2}\right)+56a_6(n)-\frac{403328}{19}a_6\left(\frac{n}{2}\right)+\frac{224256}{19}a_7(n)$$
$$-\frac{430080}{19}a_8(n)-\frac{132096}{19}a_9(n),$$

$$N\left(1^4,2^{10},6^2;n\right)=\frac{547}{26764800}\sigma_7(n)-\frac{547}{26764800}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{8921600}\sigma_7\left(\frac{n}{3}\right)+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{729}{8921600}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{6141173}{387600}a_1(n)$$
$$-\frac{483293}{2565}a_1\left(\frac{n}{2}\right)-\frac{4613301}{129200}a_1\left(\frac{n}{3}\right)+\frac{246167872}{218025}a_1\left(\frac{n}{4}\right)-\frac{227799}{95}a_1\left(\frac{n}{6}\right)+\frac{476853696}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{206267}{467400}\Delta_{3,8}(n)-\frac{85370239}{233700}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{168841804}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1091166464}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{4387}{285}a_4(n)+\frac{154480}{513}a_4\left(\frac{n}{2}\right)+\frac{416768}{135}a_4\left(\frac{n}{4}\right)-13a_2(n)-\frac{15471}{19}a_2\left(\frac{n}{3}\right)+21a_3(n)$$
$$+\frac{15471}{19}a_3\left(\frac{n}{3}\right)+\frac{19926}{19}a_5(n)-\frac{593280}{19}a_5\left(\frac{n}{2}\right)-107a_6(n)-\frac{24768}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{42144}{19}a_7(n)+\frac{768}{19}a_8(n)+\frac{100608}{19}a_9(n),$$

$$N\left(1^4,2^{10},3^2;n\right)=\frac{547}{13382400}\sigma_7(n)-\frac{547}{13382400}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{4460800}\sigma_7\left(\frac{n}{3}\right)+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{729}{4460800}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{70134799}{581400}a_1(n)$$
$$-\frac{116048}{285}a_1\left(\frac{n}{2}\right)+\frac{213466779}{64600}a_1\left(\frac{n}{3}\right)+\frac{12248128}{24225}a_1\left(\frac{n}{4}\right)+\frac{5382504}{95}a_1\left(\frac{n}{6}\right)+\frac{65295936}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{9533693}{233700}\Delta_{3,8}(n)-\frac{21391379}{116850}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{4641668516}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{181893376}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{138002}{855}a_4(n)-\frac{96592}{57}a_4\left(\frac{n}{2}\right)-\frac{662528}{15}a_4\left(\frac{n}{4}\right)-18a_2(n)+\frac{129600}{19}a_2\left(\frac{n}{3}\right)+26a_3(n)$$
$$-\frac{295812}{19}a_3\left(\frac{n}{3}\right)+\frac{1145340}{19}a_5(n)+\frac{9508608}{19}a_5\left(\frac{n}{2}\right)-158a_6(n)+\frac{360512}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{486240}{19}a_7(n)+\frac{398208}{19}a_8(n)+\frac{684672}{19}a_9(n),$$

$$N\left(1^4,2^{12};n\right)=\frac{1}{16320}\sigma_7(n)-\frac{1}{16320}\sigma_7\left(\frac{n}{2}\right)-\frac{1}{255}\sigma_7\left(\frac{n}{4}\right)+\frac{256}{255}\sigma_7\left(\frac{n}{8}\right)$$
$$-\frac{1}{34}a_1(n)-12a_1\left(\frac{n}{2}\right)-\frac{512}{17}a_1\left(\frac{n}{4}\right)-2a_2(n)+10a_3(n),$$

$$N\left(1^5,2,3,6^9;n\right)=\frac{13}{26764800}\sigma_7(n)-\frac{13}{26764800}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{8921600}\sigma_7\left(\frac{n}{3}\right)$$
$$-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)-\frac{1089}{8921600}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{121539019}{10465200}a_1(n)-\frac{674714}{2565}a_1\left(\frac{n}{2}\right)-\frac{18379989}{129200}a_1\left(\frac{n}{3}\right)$$
$$+\frac{1097063008}{654075}a_1\left(\frac{n}{4}\right)-\frac{142002}{95}a_1\left(\frac{n}{6}\right)+\frac{372073248}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{307708}{175275}\Delta_{3,8}(n)-\frac{71743979}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2468626906}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{5269172096}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{75856}{7695}a_4(n)+\frac{135256}{513}a_4\left(\frac{n}{2}\right)$$
$$+\frac{5222912}{405}a_4\left(\frac{n}{4}\right)-9a_2(n)-\frac{9963}{19}a_2\left(\frac{n}{3}\right)+19a_3(n)$$
$$+\frac{10989}{19}a_3\left(\frac{n}{3}\right)-\frac{8310}{19}a_5(n)-\frac{2567040}{19}a_5\left(\frac{n}{2}\right)-75a_6(n)$$
$$-\frac{89760}{19}a_6\left(\frac{n}{2}\right)-\frac{61616}{19}a_7(n)-\frac{79424}{19}a_8(n)+\frac{186816}{19}a_9(n),$$

$$N\left(1^5,2,3^3,6^7;n\right)=\frac{13}{13382400}\sigma_7(n)-\frac{13}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{4460800}\sigma_7\left(\frac{n}{3}\right)$$
$$-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)-\frac{1089}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{17033683}{1744200}a_1(n)-\frac{136846}{513}a_1\left(\frac{n}{2}\right)-\frac{12276819}{64600}a_1\left(\frac{n}{3}\right)$$
$$+\frac{13806048}{8075}a_1\left(\frac{n}{4}\right)-\frac{45738}{19}a_1\left(\frac{n}{6}\right)+\frac{343333728}{8075}a_1\left(\frac{n}{12}\right)+\frac{547973}{233700}\Delta_{3,8}(n)$$
$$-\frac{22452301}{116850}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{933861952}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{601838784}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{19034}{2565}a_4(n)+\frac{146944}{513}a_4\left(\frac{n}{2}\right)+\frac{70912}{5}a_4\left(\frac{n}{4}\right)-8a_2(n)$$
$$-\frac{10962}{19}a_2\left(\frac{n}{3}\right)+18a_3(n)+\frac{14040}{19}a_3\left(\frac{n}{3}\right)-\frac{24756}{19}a_5(n)$$
$$-\frac{2828928}{19}a_5\left(\frac{n}{2}\right)-70a_6(n)-\frac{99744}{19}a_6\left(\frac{n}{2}\right)-\frac{56384}{19}a_7(n)$$
$$-\frac{91840}{19}a_8(n)+\frac{186112}{19}a_9(n),$$

$$N\left(1^5,2,3^5,6^5;n\right)=\frac{13}{6691200}\sigma_7(n)-\frac{13}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1089}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{9593687}{1308150}a_1(n)$$
$$-\frac{26886}{95}a_1\left(\frac{n}{2}\right)-\frac{1995336}{8075}a_1\left(\frac{n}{3}\right)+\frac{1186431328}{654075}a_1\left(\frac{n}{4}\right)-\frac{337806}{95}a_1\left(\frac{n}{6}\right)+\frac{270579168}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{2136763}{701100}\Delta_{3,8}(n)-\frac{56274041}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3398146516}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{5819779136}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{32974}{7695}a_4(n)+\frac{17648}{57}a_4\left(\frac{n}{2}\right)+\frac{6770432}{405}a_4\left(\frac{n}{4}\right)-6a_2(n)-\frac{11016}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$+\frac{16146}{19}a_3\left(\frac{n}{3}\right)-\frac{45216}{19}a_5(n)-\frac{3333888}{19}a_5\left(\frac{n}{2}\right)-60a_6(n)-\frac{118688}{19}a_6\left(\frac{n}{2}\right)-\frac{53472}{19}a_7(n)$$
$$-\frac{115648}{19}a_8(n)+\frac{198464}{19}a_9(n),$$

$$N\left(1^5,2,3^7,6^3;n\right)=\frac{13}{3345600}\sigma_7(n)-\frac{13}{3345600}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{1115200}\sigma_7\left(\frac{n}{3}\right)-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1089}{1115200}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{2355172}{654075}a_1(n)$$
$$-\frac{2455216}{7695}a_1\left(\frac{n}{2}\right)-\frac{2589957}{8075}a_1\left(\frac{n}{3}\right)+\frac{441742496}{218025}a_1\left(\frac{n}{4}\right)-\frac{499356}{95}a_1\left(\frac{n}{6}\right)+\frac{111997728}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{1386053}{350550}\Delta_{3,8}(n)-\frac{5509547}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{4443036436}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{735137984}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{2732}{7695}a_4(n)+\frac{514256}{1539}a_4\left(\frac{n}{2}\right)+\frac{2877184}{135}a_4\left(\frac{n}{4}\right)-2a_2(n)-\frac{9342}{19}a_2\left(\frac{n}{3}\right)+12a_3(n)$$
$$+\frac{16524}{19}a_3\left(\frac{n}{3}\right)-\frac{73296}{19}a_5(n)-\frac{4238400}{19}a_5\left(\frac{n}{2}\right)-40a_6(n)-\frac{152800}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{53760}{19}a_7(n)-\frac{159488}{19}a_8(n)+\frac{231424}{19}a_9(n),$$

$$N\left(1^5,2,3^9,6;n\right)=\frac{13}{1672800}\sigma_7(n)-\frac{13}{1672800}\sigma_7\left(\frac{n}{2}\right)+\frac{1089}{557600}\sigma_7\left(\frac{n}{3}\right)-\frac{13}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1089}{557600}\sigma_7\left(\frac{n}{6}\right)+\frac{208}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1089}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{17424}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{1733081}{654075}a_1(n)$$
$$-\frac{3142276}{7695}a_1\left(\frac{n}{2}\right)-\frac{3462489}{8075}a_1\left(\frac{n}{3}\right)+\frac{182375392}{72675}a_1\left(\frac{n}{4}\right)-\frac{803376}{95}a_1\left(\frac{n}{6}\right)-\frac{231995232}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{925828}{175275}\Delta_{3,8}(n)+\frac{2357566}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{6533293516}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{931360704}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{61064}{7695}a_4(n)+\frac{576176}{1539}a_4\left(\frac{n}{2}\right)+\frac{1380608}{45}a_4\left(\frac{n}{4}\right)+6a_2(n)-\frac{4158}{19}a_2\left(\frac{n}{3}\right)+4a_3(n)$$
$$+\frac{13392}{19}a_3\left(\frac{n}{3}\right)-\frac{117360}{19}a_5(n)-\frac{6068160}{19}a_5\left(\frac{n}{2}\right)-\frac{222624}{19}a_6\left(\frac{n}{2}\right)-\frac{62144}{19}a_7(n)$$
$$-\frac{249984}{19}a_8(n)+\frac{312704}{19}a_9(n),$$

$$N\left(1^5,2^3,3,6^7;n\right)=\frac{1}{652800}\sigma_7(n)-\frac{1}{652800}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{217600}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{217600}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{58786321}{3488400}a_1(n)$$
$$-\frac{564322}{2565}a_1\left(\frac{n}{2}\right)-\frac{1172853}{129200}a_1\left(\frac{n}{3}\right)+\frac{100838176}{72675}a_1\left(\frac{n}{4}\right)+\frac{84294}{95}a_1\left(\frac{n}{6}\right)+\frac{537892704}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{643}{5700}\Delta_{3,8}(n)-\frac{121931}{475}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{8331206}{1425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{34026496}{1425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{42934}{2565}a_4(n)+\frac{98360}{513}a_4\left(\frac{n}{2}\right)+\frac{303104}{45}a_4\left(\frac{n}{4}\right)-13a_2(n)-\frac{10287}{19}a_2\left(\frac{n}{3}\right)+23a_3(n)$$
$$+\frac{7209}{19}a_3\left(\frac{n}{3}\right)+\frac{42210}{19}a_5(n)-\frac{1343232}{19}a_5\left(\frac{n}{2}\right)-91a_6(n)-\frac{44128}{19}a_6\left(\frac{n}{2}\right)-\frac{63600}{19}a_7(n)$$
$$-\frac{22848}{19}a_8(n)+\frac{151488}{19}a_9(n),$$

$$N\left(1^5,2^3,3^3,6^5;n\right)=\frac{1}{326400}\sigma_7(n)-\frac{1}{326400}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{108800}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{108800}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{13011737}{581400}a_1(n)$$
$$-\frac{102838}{513}a_1\left(\frac{n}{2}\right)+\frac{9140877}{64600}a_1\left(\frac{n}{3}\right)+\frac{266403808}{218025}a_1\left(\frac{n}{4}\right)+\frac{71334}{19}a_1\left(\frac{n}{6}\right)+\frac{635274144}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{9949}{5700}\Delta_{3,8}(n)-\frac{268629}{950}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{346648}{475}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{28632256}{1425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{20626}{855}a_4(n)+\frac{52960}{513}a_4\left(\frac{n}{2}\right)+\frac{296192}{135}a_4\left(\frac{n}{4}\right)-16a_2(n)-\frac{7290}{19}a_2\left(\frac{n}{3}\right)+26a_3(n)$$
$$-\frac{1944}{19}a_3\left(\frac{n}{3}\right)+\frac{97020}{19}a_5(n)-\frac{426240}{19}a_5\left(\frac{n}{2}\right)-102a_6(n)-\frac{9312}{19}a_6\left(\frac{n}{2}\right)-\frac{75648}{19}a_7(n)$$
$$+\frac{19264}{19}a_8(n)+\frac{146304}{19}a_9(n),$$

$$N\left(1^5,2^3,3^5,6^3;n\right)=\frac{1}{163200}\sigma_7(n)-\frac{1}{163200}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{54400}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{54400}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{1425227}{48450}a_1(n)$$
$$-\frac{24046}{171}a_1\left(\frac{n}{2}\right)+\frac{2597913}{8075}a_1\left(\frac{n}{3}\right)+\frac{20375392}{24225}a_1\left(\frac{n}{4}\right)+\frac{139266}{19}a_1\left(\frac{n}{6}\right)+\frac{864700704}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{7541}{1900}\Delta_{3,8}(n)-\frac{1008899}{2850}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{5624868}{475}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{16997696}{1425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{9514}{285}a_4(n)+\frac{496}{171}a_4\left(\frac{n}{2}\right)-\frac{30464}{5}a_4\left(\frac{n}{4}\right)-22a_2(n)-\frac{7128}{19}a_2\left(\frac{n}{3}\right)+32a_3(n)$$
$$-\frac{8262}{19}a_3\left(\frac{n}{3}\right)+\frac{163872}{19}a_5(n)+\frac{1219968}{19}a_5\left(\frac{n}{2}\right)-124a_6(n)+\frac{52384}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{80736}{19}a_7(n)+\frac{95552}{19}a_8(n)+\frac{101952}{19}a_9(n),$$

$$N(1^5,2^3,3^7,6;n)=\frac{1}{81600}\sigma_7(n)-\frac{1}{81600}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{27200}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{27200}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{8770928}{218025}a_1(n)$$
$$-\frac{76552}{2565}a_1\left(\frac{n}{2}\right)+\frac{4440771}{8075}a_1\left(\frac{n}{3}\right)+\frac{44582368}{218025}a_1\left(\frac{n}{4}\right)+\frac{1164564}{95}a_1\left(\frac{n}{6}\right)+\frac{1340445024}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{19333}{2850}\Delta_{3,8}(n)-\frac{715339}{1425}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{42681964}{1425}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{809408}{475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{120572}{2565}a_4(n)-\frac{60592}{513}a_4\left(\frac{n}{2}\right)-\frac{2683648}{135}a_4\left(\frac{n}{4}\right)-34a_2(n)-\frac{12150}{19}a_2\left(\frac{n}{3}\right)+44a_3(n)$$
$$-\frac{9396}{19}a_3\left(\frac{n}{3}\right)+\frac{259056}{19}a_5(n)+\frac{3933504}{19}a_5\left(\frac{n}{2}\right)-168a_6(n)+\frac{154720}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{79872}{19}a_7(n)+\frac{227072}{19}a_8(n)+\frac{3072}{19}a_9(n),$$

$$N\left(1^5,2^5,3,6^5;n\right)=\frac{121}{26764800}\sigma_7(n)-\frac{121}{26764800}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{8921600}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{8921600}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{52092343}{10465200}a_1(n)$$
$$-\frac{721418}{2565}a_1\left(\frac{n}{2}\right)-\frac{40092633}{129200}a_1\left(\frac{n}{3}\right)+\frac{1193265376}{654075}a_1\left(\frac{n}{4}\right)-\frac{459954}{95}a_1\left(\frac{n}{6}\right)+\frac{247633056}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{1342727}{350550}\Delta_{3,8}(n)-\frac{49507313}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3774051682}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{5915760512}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{8812}{7695}a_4(n)+\frac{173368}{513}a_4\left(\frac{n}{2}\right)+\frac{7361024}{405}a_4\left(\frac{n}{4}\right)-5a_2(n)-\frac{13743}{19}a_2\left(\frac{n}{3}\right)+15a_3(n)$$
$$+\frac{22977}{19}a_3\left(\frac{n}{3}\right)-\frac{65214}{19}a_5(n)-\frac{3637632}{19}a_5\left(\frac{n}{2}\right)-55a_6(n)-\frac{129312}{19}a_6\left(\frac{n}{2}\right)-\frac{42608}{19}a_7(n)$$
$$-\frac{126272}{19}a_8(n)+\frac{188096}{19}a_9(n),$$

$$N\left(1^5,2^5,3,6^5;n\right)=\frac{121}{13382400}\sigma_7(n)-\frac{121}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{4460800}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{49731707}{5232600}a_1(n)$$
$$-\frac{757478}{2565}a_1\left(\frac{n}{2}\right)-\frac{46449783}{64600}a_1\left(\frac{n}{3}\right)+\frac{1378649696}{654075}a_1\left(\frac{n}{4}\right)-\frac{1146114}{95}a_1\left(\frac{n}{6}\right)+\frac{133898976}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{6222683}{701100}\Delta_{3,8}(n)-\frac{30945811}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{6336018272}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{7135356352}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{141466}{7695}a_4(n)+\frac{287104}{513}a_4\left(\frac{n}{2}\right)+\frac{11286784}{405}a_4\left(\frac{n}{4}\right)-\frac{25866}{19}a_2\left(\frac{n}{3}\right)+10a_3(n)+\frac{53568}{19}a_3\left(\frac{n}{3}\right)$$
$$-\frac{208836}{19}a_5(n)-\frac{5631360}{19}a_5\left(\frac{n}{2}\right)-30a_6(n)-\frac{204064}{19}a_6\left(\frac{n}{2}\right)+\frac{704}{19}a_7(n)-\frac{213184}{19}a_8(n)$$
$$+\frac{166144}{19}a_9(n),$$

$$N\left(1^5,2^5,3^5,6;n\right)=\frac{121}{6691200}\sigma_7(n)-\frac{121}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{1857299}{68850}a_1(n)$$
$$-\frac{16058}{45}a_1\left(\frac{n}{2}\right)-\frac{498978}{425}a_1\left(\frac{n}{3}\right)+\frac{92084384}{34425}a_1\left(\frac{n}{4}\right)-\frac{98082}{5}a_1\left(\frac{n}{6}\right)-\frac{9264096}{425}a_1\left(\frac{n}{12}\right)$$
$$+\frac{534749}{36900}\Delta_{3,8}(n)+\frac{1296017}{18450}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{529705868}{9225}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{494723008}{9225}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{16798}{405}a_4(n)+\frac{6832}{9}a_4\left(\frac{n}{2}\right)+\frac{17515264}{405}a_4\left(\frac{n}{4}\right)+10a_2(n)-1728a_2\left(\frac{n}{3}\right)+4158a_3\left(\frac{n}{3}\right)$$
$$-19296a_5(n)-460032a_5\left(\frac{n}{2}\right)+20a_6(n)-16736a_6\left(\frac{n}{2}\right)+1760a_7(n)$$
$$-18496a_8(n)+10432a_9(n),$$

$$N\left(1^5,2^7,3,6^3;n\right)=\frac{73}{5352960}\sigma_7(n)-\frac{73}{5352960}\sigma_7\left(\frac{n}{2}\right)-\frac{243}{1784320}\sigma_7\left(\frac{n}{3}\right)+\frac{73}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{243}{1784320}\sigma_7\left(\frac{n}{6}\right)-\frac{1168}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3888}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{25506937}{697680}a_1(n)$$
$$-\frac{221798}{855}a_1\left(\frac{n}{2}\right)+\frac{13425939}{25840}a_1\left(\frac{n}{3}\right)+\frac{11372000}{8721}a_1\left(\frac{n}{4}\right)+\frac{880038}{95}a_1\left(\frac{n}{6}\right)+\frac{23899104}{323}a_1\left(\frac{n}{12}\right)$$
$$-\frac{299779}{46740}\Delta_{3,8}(n)-\frac{779056}{2337}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{108804346}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{47081984}{2337}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{22042}{513}a_4(n)-\frac{8504}{171}a_4\left(\frac{n}{2}\right)-\frac{71680}{27}a_4\left(\frac{n}{4}\right)-17a_2(n)+\frac{6885}{19}a_2\left(\frac{n}{3}\right)+27a_3(n)$$
$$-\frac{34587}{19}a_3\left(\frac{n}{3}\right)+\frac{222858}{19}a_5(n)+\frac{633600}{19}a_5\left(\frac{n}{2}\right)-127a_6(n)+\frac{28960}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{128688}{19}a_7(n)+\frac{62400}{19}a_8(n)+\frac{229056}{19}a_9(n),$$

$$N\left(1^5,2^7,3^3,6;n\right)=\frac{73}{2676480}\sigma_7(n)-\frac{73}{2676480}\sigma_7\left(\frac{n}{2}\right)-\frac{243}{892160}\sigma_7\left(\frac{n}{3}\right)+\frac{73}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{243}{892160}\sigma_7\left(\frac{n}{6}\right)-\frac{1168}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3888}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{15576509}{209304}a_1(n)$$
$$-\frac{682526}{2565}a_1\left(\frac{n}{2}\right)+\frac{4343769}{2584}a_1\left(\frac{n}{3}\right)+\frac{17680672}{26163}a_1\left(\frac{n}{4}\right)+\frac{2738142}{95}a_1\left(\frac{n}{6}\right)+\frac{24613920}{323}a_1\left(\frac{n}{12}\right)$$
$$-\frac{581963}{28044}\Delta_{3,8}(n)-\frac{28730461}{70110}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{1588937272}{35055}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{30001472}{7011}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{146450}{1539}a_4(n)-\frac{347936}{513}a_4\left(\frac{n}{2}\right)-\frac{2099456}{81}a_4\left(\frac{n}{4}\right)-24a_2(n)+\frac{49518}{19}a_2\left(\frac{n}{3}\right)+34a_3(n)$$
$$-\frac{132624}{19}a_3\left(\frac{n}{3}\right)+\frac{612108}{19}a_5(n)+\frac{5494272}{19}a_5\left(\frac{n}{2}\right)-174a_6(n)+\frac{208416}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{262016}{19}a_7(n)+\frac{258880}{19}a_8(n)+\frac{348032}{19}a_9(n),$$

$$N\left(1^5,2^9,3,6;n\right)=\frac{1093}{26764800}\sigma_7(n)-\frac{1093}{26764800}\sigma_7\left(\frac{n}{2}\right)+\frac{729}{8921600}\sigma_7\left(\frac{n}{3}\right)-\frac{1093}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{729}{8921600}\sigma_7\left(\frac{n}{6}\right)+\frac{17488}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{11664}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{8440933}{183600}a_1(n)$$
$$-\frac{9694}{135}a_1\left(\frac{n}{2}\right)-\frac{11843631}{6800}a_1\left(\frac{n}{3}\right)+\frac{16465504}{11475}a_1\left(\frac{n}{4}\right)-\frac{146502}{5}a_1\left(\frac{n}{6}\right)+\frac{21663072}{425}a_1\left(\frac{n}{12}\right)$$
$$+\frac{66119}{3075}\Delta_{3,8}(n)-\frac{801727}{6150}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{160212218}{3075}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{97176448}{3075}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{9112}{135}a_4(n)+\frac{29576}{27}a_4\left(\frac{n}{2}\right)+\frac{4580864}{135}a_4\left(\frac{n}{4}\right)-a_2(n)-3969a_2\left(\frac{n}{3}\right)+11a_3(n)$$
$$+8343a_3\left(\frac{n}{3}\right)-29538a_5(n)-374400a_5\left(\frac{n}{2}\right)-3a_6(n)-13792a_6\left(\frac{n}{2}\right)$$
$$+9456a_7(n)-14016a_8(n)-7872a_9(n),$$

$$N\left(1^6,6^{10};n\right)=\frac{7}{13382400}\sigma_7(n)-\frac{7}{13382400}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{4460800}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{4460800}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{84566171}{5232600}a_1(n)$$
$$-\frac{164912}{513}a_1\left(\frac{n}{2}\right)-\frac{8144001}{64600}a_1\left(\frac{n}{3}\right)+\frac{1308738496}{654075}a_1\left(\frac{n}{4}\right)-\frac{34632}{19}a_1\left(\frac{n}{6}\right)+\frac{421690176}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{1091701}{701100}\Delta_{3,8}(n)-\frac{98746037}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2713504852}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{6243690752}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{112378}{7695}a_4(n)+\frac{169520}{513}a_4\left(\frac{n}{2}\right)+\frac{5848064}{405}a_4\left(\frac{n}{4}\right)-12a_2(n)-\frac{11610}{19}a_2\left(\frac{n}{3}\right)+24a_3(n)$$
$$+\frac{11610}{19}a_3\left(\frac{n}{3}\right)+\frac{4236}{19}a_5(n)-\frac{2854656}{19}a_5\left(\frac{n}{2}\right)-102a_6(n)-\frac{100288}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{79200}{19}a_7(n)-\frac{82048}{19}a_8(n)+\frac{224896}{19}a_9(n),$$

$$N\left(1^6,3^2,6^8;n\right)=\frac{7}{6691200}\sigma_7(n)-\frac{7}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{2230400}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{46483621}{2616300}a_1(n)$$
$$-\frac{829868}{2565}a_1\left(\frac{n}{2}\right)-\frac{2857851}{32300}a_1\left(\frac{n}{3}\right)+\frac{1299795136}{654075}a_1\left(\frac{n}{4}\right)-\frac{77364}{95}a_1\left(\frac{n}{6}\right)+\frac{481617216}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{191713}{175275}\Delta_{3,8}(n)-\frac{52202632}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2499103552}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{6169615232}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{128296}{7695}a_4(n)+\frac{163072}{513}a_4\left(\frac{n}{2}\right)+\frac{5517824}{405}a_4\left(\frac{n}{4}\right)-12a_2(n)-\frac{10476}{19}a_2\left(\frac{n}{3}\right)+24a_3(n)$$
$$+\frac{8424}{19}a_3\left(\frac{n}{3}\right)+\frac{16200}{19}a_5(n)-\frac{2698368}{19}a_5\left(\frac{n}{2}\right)-108a_6(n)-\frac{94016}{19}a_6\left(\frac{n}{2}\right)-\frac{83200}{19}a_7(n)$$
$$-\frac{75776}{19}a_8(n)+\frac{229376}{19}a_9(n),$$

$$N\left(1^6,3^4,6^6;n\right)=\frac{7}{3345600}\sigma_7(n)-\frac{7}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{1115200}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{12869728}{654075}a_1(n)$$
$$-\frac{2552108}{7695}a_1\left(\frac{n}{2}\right)-\frac{449343}{8075}a_1\left(\frac{n}{3}\right)+\frac{1286108096}{654075}a_1\left(\frac{n}{4}\right)-\frac{15228}{95}a_1\left(\frac{n}{6}\right)+\frac{471139776}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{241847}{350550}\Delta_{3,8}(n)-\frac{58754429}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2314588792}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{6078247552}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{146092}{7695}a_4(n)+\frac{503776}{1539}a_4\left(\frac{n}{2}\right)+\frac{5215744}{405}a_4\left(\frac{n}{4}\right)-12a_2(n)-\frac{8748}{19}a_2\left(\frac{n}{3}\right)+24a_3(n)$$
$$+\frac{4644}{19}a_3\left(\frac{n}{3}\right)+\frac{24768}{19}a_5(n)-\frac{2539776}{19}a_5\left(\frac{n}{2}\right)-120a_6(n)-\frac{88512}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{87616}{19}a_7(n)-\frac{70272}{19}a_8(n)+\frac{235392}{19}a_9(n),$$

$$N\left(1^6,3^6,6^4;n\right)=\frac{7}{1672800}\sigma_7(n)-\frac{7}{1672800}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{557600}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{557600}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{14488856}{654075}a_1(n)$$
$$-\frac{529960}{1539}a_1\left(\frac{n}{2}\right)-\frac{256086}{8075}a_1\left(\frac{n}{3}\right)+\frac{424140352}{218025}a_1\left(\frac{n}{4}\right)+\frac{7056}{19}a_1\left(\frac{n}{6}\right)+\frac{460662336}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{69647}{175275}\Delta_{3,8}(n)-\frac{24174826}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2152478072}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1995626624}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{167384}{7695}a_4(n)+\frac{573664}{1539}a_4\left(\frac{n}{2}\right)+\frac{1637888}{135}a_4\left(\frac{n}{4}\right)-12a_2(n)-\frac{7020}{19}a_2\left(\frac{n}{3}\right)+24a_3(n)$$
$$+\frac{864}{19}a_3\left(\frac{n}{3}\right)+\frac{26496}{19}a_5(n)-\frac{2381184}{19}a_5\left(\frac{n}{2}\right)-144a_6(n)-\frac{83008}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{92032}{19}a_7(n)-\frac{64768}{19}a_8(n)+\frac{241408}{19}a_9(n),$$

$$N\left(1^6,3^8,6^2;n\right)=\frac{7}{836400}\sigma_7(n)-\frac{7}{836400}\sigma_7\left(\frac{n}{2}\right)-\frac{549}{278800}\sigma_7\left(\frac{n}{3}\right)+\frac{7}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{549}{278800}\sigma_7\left(\frac{n}{6}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{549}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{17568}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{16388362}{654075}a_1(n)$$
$$-\frac{563096}{1539}a_1\left(\frac{n}{2}\right)-\frac{994122}{8075}a_1\left(\frac{n}{3}\right)+\frac{424140352}{218025}a_1\left(\frac{n}{4}\right)-\frac{6624}{19}a_1\left(\frac{n}{6}\right)+\frac{460662336}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{34744}{175275}\Delta_{3,8}(n)-\frac{33417452}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2232247672}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1995626624}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{191248}{7695}a_4(n)+\frac{768224}{1539}a_4\left(\frac{n}{2}\right)+\frac{1637888}{135}a_4\left(\frac{n}{4}\right)-12a_2(n)-\frac{7020}{19}a_2\left(\frac{n}{3}\right)+24a_3(n)$$
$$+\frac{864}{19}a_3\left(\frac{n}{3}\right)+\frac{6432}{19}a_5(n)-\frac{2381184}{19}a_5\left(\frac{n}{2}\right)-192a_6(n)-\frac{83008}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{92032}{19}a_7(n)-\frac{64768}{19}a_8(n)+\frac{241408}{19}a_9(n),$$

$$N\left(1^6,3^{10};n\right)=\frac{7}{418200}\sigma_7(n)-\frac{549}{139400}\sigma_7\left(\frac{n}{3}\right)-\frac{224}{52275}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{17568}{17425}\sigma_7\left(\frac{n}{12}\right)-\frac{633136}{34425}a_1(n)-\frac{2375296}{34425}a_1\left(\frac{n}{2}\right)-\frac{290016}{425}a_1\left(\frac{n}{3}\right)$$
$$-\frac{706176}{425}a_1\left(\frac{n}{4}\right)+\frac{16432}{9225}a_1\left(\frac{n}{12}\right)-\frac{31664}{25}\Delta_{3,8}(n)-\frac{20328448}{9225}\Delta_{3,8}\left(\frac{n}{2}\right)$$
$$+\frac{11584}{405}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{385024}{405}a_4(n)-8448a_3\left(\frac{n}{3}\right)-384a_5\left(\frac{n}{2}\right),$$

$$N\left(1^6,2^2,6^8;n\right)=\frac{1}{669120}\sigma_7(n)-\frac{1}{669120}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{223040}\sigma_7\left(\frac{n}{3}\right)$$
$$-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)-\frac{27}{223040}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{445357}{29070}a_1(n)-\frac{821264}{2565}a_1\left(\frac{n}{2}\right)-\frac{397413}{3230}a_1\left(\frac{n}{3}\right)$$
$$+\frac{17526016}{8721}a_1\left(\frac{n}{4}\right)-\frac{106272}{95}a_1\left(\frac{n}{6}\right)+\frac{19650816}{323}a_1\left(\frac{n}{12}\right)+\frac{17741}{11685}\Delta_{3,8}(n)$$
$$-\frac{2651458}{11685}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{188942704}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{84021248}{2337}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{2360}{171}a_4(n)+\frac{146368}{513}a_4\left(\frac{n}{2}\right)+\frac{409600}{27}a_4\left(\frac{n}{4}\right)-10a_2(n)-\frac{11016}{19}a_2\left(\frac{n}{3}\right)$$
$$+22a_3(n)+\frac{11016}{19}a_3\left(\frac{n}{3}\right)+\frac{6768}{19}a_5(n)-\frac{3027456}{19}a_5\left(\frac{n}{2}\right)-88a_6(n)$$
$$-\frac{104704}{19}a_6\left(\frac{n}{2}\right)-\frac{77184}{19}a_7(n)-\frac{90112}{19}a_8(n)+\frac{228864}{19}a_9(n),$$

$$N\left(1^6,2^2,3^2,6^6;n\right)=\frac{1}{334560}\sigma_7(n)-\frac{1}{334560}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{111520}\sigma_7\left(\frac{n}{3}\right)$$
$$-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)-\frac{27}{111520}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{905791}{87210}a_1(n)-\frac{56908}{171}a_1\left(\frac{n}{2}\right)-\frac{846693}{3230}a_1\left(\frac{n}{3}\right)$$
$$+\frac{18374656}{8721}a_1\left(\frac{n}{4}\right)-\frac{78516}{19}a_1\left(\frac{n}{6}\right)+\frac{14715648}{323}a_1\left(\frac{n}{12}\right)+\frac{25199}{7790}\Delta_{3,8}(n)$$
$$-\frac{2493719}{11685}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{16738208}{779}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{89720576}{2337}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{3668}{513}a_4(n)+\frac{63616}{171}a_4\left(\frac{n}{2}\right)+\frac{504832}{27}a_4\left(\frac{n}{4}\right)-8a_2(n)-\frac{14256}{19}a_2\left(\frac{n}{3}\right)$$
$$+20a_3(n)+\frac{20412}{19}a_3\left(\frac{n}{3}\right)-\frac{41616}{19}a_5(n)-\frac{3732480}{19}a_5\left(\frac{n}{2}\right)-80a_6(n)$$
$$-\frac{132352}{19}a_6\left(\frac{n}{2}\right)-\frac{62976}{19}a_7(n)-\frac{122624}{19}a_8(n)+\frac{225792}{19}a_9(n),$$

$$N\left(1^6,2^2,3^4,6^4;n\right)=\frac{1}{167280}\sigma_7(n)-\frac{1}{167280}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{55760}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{55760}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{191638}{43605}a_1(n)$$
$$-\frac{62896}{171}a_1\left(\frac{n}{2}\right)-\frac{680994}{1615}a_1\left(\frac{n}{3}\right)+\frac{20537600}{8721}a_1\left(\frac{n}{4}\right)-\frac{136512}{19}a_1\left(\frac{n}{6}\right)+\frac{9075456}{323}a_1\left(\frac{n}{12}\right)$$
$$+\frac{60796}{11685}\Delta_{3,8}(n)-\frac{1944664}{11685}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{23152576}{779}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{102473216}{2337}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{416}{513}a_4(n)+\frac{78592}{171}a_4\left(\frac{n}{2}\right)+\frac{665600}{27}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{16200}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$+\frac{28512}{19}a_3\left(\frac{n}{3}\right)-\frac{99648}{19}a_5(n)-\frac{4925952}{19}a_5\left(\frac{n}{2}\right)-64a_6(n)-\frac{177152}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{52992}{19}a_7(n)-\frac{177152}{19}a_8(n)+\frac{247296}{19}a_9(n),$$

$$N\left(1^6,2^2,3^2,6^6;n\right)=\frac{1}{83640}\sigma_7(n)-\frac{1}{83640}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{27880}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{27880}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{174766}{43605}a_1(n)$$
$$-\frac{1129384}{2565}a_1\left(\frac{n}{2}\right)-\frac{997542}{1615}a_1\left(\frac{n}{3}\right)+\frac{40702208}{14535}a_1\left(\frac{n}{4}\right)-\frac{1053432}{95}a_1\left(\frac{n}{6}\right)-\frac{15959808}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{89038}{11685}\Delta_{3,8}(n)-\frac{236292}{3895}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{501220352}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{624652288}{11685}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{5968}{513}a_4(n)+\frac{284672}{513}a_4\left(\frac{n}{2}\right)+\frac{311296}{9}a_4\left(\frac{n}{4}\right)+4a_2(n)-\frac{14580}{19}a_2\left(\frac{n}{3}\right)+8a_3(n)$$
$$+\frac{33048}{19}a_3\left(\frac{n}{3}\right)-\frac{173952}{19}a_5(n)-\frac{6893568}{19}a_5\left(\frac{n}{2}\right)-32a_6(n)-\frac{250880}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{49152}{19}a_7(n)-\frac{270336}{19}a_8(n)+\frac{307200}{19}a_9(n),$$

$$N\left(1^6,2^2,3^8;n\right)=\frac{1}{41820}\sigma_7(n)-\frac{1}{41820}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{13940}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{13940}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)+\frac{910124}{43605}a_1(n)$$
$$-\frac{429904}{855}a_1\left(\frac{n}{2}\right)-\frac{1497528}{1615}a_1\left(\frac{n}{3}\right)+\frac{26804480}{8721}a_1\left(\frac{n}{4}\right)-\frac{1584576}{95}a_1\left(\frac{n}{6}\right)-\frac{36986112}{323}a_1\left(\frac{n}{12}\right)$$
$$+\frac{44544}{3895}\Delta_{3,8}(n)+\frac{73904}{2337}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{737977312}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{143701504}{2337}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{14528}{513}a_4(n)+\frac{129152}{171}a_4\left(\frac{n}{2}\right)+\frac{1329152}{27}a_4\left(\frac{n}{4}\right)+24a_2(n)-\frac{1296}{19}a_2\left(\frac{n}{3}\right)-16a_3(n)$$
$$+\frac{25920}{19}a_3\left(\frac{n}{3}\right)-\frac{321408}{19}a_5(n)+-\frac{9755136}{19}a_5\left(\frac{n}{2}\right)-\frac{362240}{19}a_6\left(\frac{n}{2}\right)-\frac{32256}{19}a_7(n)$$
$$-\frac{435200}{19}a_8(n)+\frac{384000}{19}a_9(n),$$

$$N\left(1^6,2^4,6^6;n\right)=\frac{61}{13382400}\sigma_7(n)-\frac{61}{13382400}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{4460800}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{4460800}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{100712273}{5232600}a_1(n)$$
$$-\frac{128368}{513}a_1\left(\frac{n}{2}\right)-\frac{3284163}{64600}a_1\left(\frac{n}{3}\right)+\frac{1014607168}{654075}a_1\left(\frac{n}{4}\right)-\frac{13464}{19}a_1\left(\frac{n}{6}\right)+\frac{638371008}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{440563}{701100}\Delta_{3,8}(n)-\frac{117679931}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1157563516}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{4665372416}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{143254}{7695}a_4(n)+\frac{142480}{513}a_4\left(\frac{n}{2}\right)+\frac{2941952}{405}a_4\left(\frac{n}{4}\right)-16a_2(n)-\frac{16254}{19}a_2\left(\frac{n}{3}\right)+28a_3(n)$$
$$+\frac{16254}{19}a_3\left(\frac{n}{3}\right)+\frac{39492}{19}a_5(n)-\frac{1454592}{19}a_5\left(\frac{n}{2}\right)-114a_6(n)-\frac{48960}{19}a_6\left(\frac{n}{2}\right)-\frac{62240}{19}a_7(n)$$
$$-\frac{18560}{19}a_8(n)+\frac{151424}{19}a_9(n),$$

$$N\left(1^6,2^4,3^2,6^4;n\right)=\frac{61}{6691200}\sigma_7(n)-\frac{61}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{2230400}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{87035603}{2616300}a_1(n)$$
$$-\frac{218852}{855}a_1\left(\frac{n}{2}\right)+\frac{11188107}{32300}a_1\left(\frac{n}{3}\right)+\frac{934203968}{654075}a_1\left(\frac{n}{4}\right)+\frac{656892}{95}a_1\left(\frac{n}{6}\right)+\frac{774479808}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{749266}{175275}\Delta_{3,8}(n)-\frac{61804106}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{973651744}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3992972416}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{288848}{7695}a_4(n)+\frac{7552}{171}a_4\left(\frac{n}{2}\right)-\frac{86528}{405}a_4\left(\frac{n}{4}\right)-20a_2(n)-\frac{3348}{19}a_2\left(\frac{n}{3}\right)+32a_3(n)$$
$$-\frac{15120}{19}a_3\left(\frac{n}{3}\right)+\frac{177912}{19}a_5(n)+\frac{87168}{19}a_5\left(\frac{n}{2}\right)-132a_6(n)+\frac{11072}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{110080}{19}a_7(n)+\frac{51200}{19}a_8(n)+\frac{199168}{19}a_9(n),$$

$$N\left(1^6,2^4,3^4,6^2;n\right)=\frac{61}{3345600}\sigma_7(n)-\frac{61}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{1115200}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{31990484}{654075}a_1(n)$$
$$-\frac{490172}{2565}a_1\left(\frac{n}{2}\right)+\frac{6358671}{8075}a_1\left(\frac{n}{3}\right)+\frac{568701248}{654075}a_1\left(\frac{n}{4}\right)+\frac{1406844}{95}a_1\left(\frac{n}{6}\right)+\frac{1025057088}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{3406859}{350550}\Delta_{3,8}(n)-\frac{80141447}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{4453297144}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1805973376}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{451076}{7695}a_4(n)-\frac{96416}{513}a_4\left(\frac{n}{2}\right)-\frac{5815808}{405}a_4\left(\frac{n}{4}\right)-28a_2(n)+\frac{5724}{19}a_2\left(\frac{n}{3}\right)+40a_3(n)$$
$$-\frac{42660}{19}a_3\left(\frac{n}{3}\right)+\frac{330624}{19}a_5(n)+\frac{2949888}{19}a_5\left(\frac{n}{2}\right)-168a_6(n)+\frac{117184}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{143296}{19}a_7(n)+\frac{176768}{19}a_8(n)+\frac{174208}{19}a_9(n),$$

$$N\left(1^6,2^4,3^6;n\right)=\frac{61}{1672800}\sigma_7(n)-\frac{61}{1672800}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{557600}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{557600}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{15350356}{218025}a_1(n)$$
$$-\frac{63128}{513}a_1\left(\frac{n}{2}\right)+\frac{10315242}{8075}a_1\left(\frac{n}{3}\right)+\frac{17118272}{72675}a_1\left(\frac{n}{4}\right)+\frac{429408}{19}a_1\left(\frac{n}{6}\right)+\frac{1541585088}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{921053}{58425}\Delta_{3,8}(n)-\frac{40345078}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{2957443208}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{259643008}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{220984}{2565}a_4(n)-\frac{190240}{513}a_4\left(\frac{n}{2}\right)-\frac{1475072}{45}a_4\left(\frac{n}{4}\right)-44a_2(n)+\frac{8100}{19}a_2\left(\frac{n}{3}\right)+56a_3(n)$$
$$-\frac{63504}{19}a_3\left(\frac{n}{3}\right)+\frac{514944}{19}a_5(n)+\frac{6643584}{19}a_5\left(\frac{n}{2}\right)-240a_6(n)+\frac{252736}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{177792}{19}a_7(n)+\frac{346368}{19}a_8(n)+\frac{109824}{19}a_9(n),$$

$$N\left(1^6,2^6,6^4;n\right)=\frac{91}{6691200}\sigma_7(n)-\frac{91}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{35801123}{2616300}a_1(n)$$
$$-\frac{934928}{2565}a_1\left(\frac{n}{2}\right)-\frac{3979413}{32300}a_1\left(\frac{n}{3}\right)+\frac{1452566144}{654075}a_1\left(\frac{n}{4}\right)-\frac{105264}{95}a_1\left(\frac{n}{6}\right)+\frac{300276864}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{532963}{350550}\Delta_{3,8}(n)-\frac{17572151}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3722161448}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{7108630528}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{93548}{7695}a_4(n)+\frac{114784}{513}a_4\left(\frac{n}{2}\right)+\frac{8052736}{405}a_4\left(\frac{n}{4}\right)-6a_2(n)-\frac{5940}{19}a_2\left(\frac{n}{3}\right)+18a_3(n)$$
$$+\frac{5940}{19}a_3\left(\frac{n}{3}\right)+\frac{11160}{19}a_5(n)-\frac{3948288}{19}a_5\left(\frac{n}{2}\right)-60a_6(n)-\frac{135808}{19}a_6\left(\frac{n}{2}\right)-\frac{83392}{19}a_7(n)$$
$$-\frac{128512}{19}a_8(n)+\frac{281344}{19}a_9(n),$$

$$N\left(1^6,2^6,3^2,6^2;n\right)=\frac{91}{3345600}\sigma_7(n)-\frac{91}{3345600}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{1115200}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{1115200}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{16506461}{654075}a_1(n)$$
$$-\frac{726196}{2565}a_1\left(\frac{n}{2}\right)-\frac{10193184}{8075}a_1\left(\frac{n}{3}\right)+\frac{1540672384}{654075}a_1\left(\frac{n}{4}\right)-\frac{2039508}{95}a_1\left(\frac{n}{6}\right)+\frac{282847104}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{5462561}{350550}\Delta_{3,8}(n)-\frac{19168447}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{8903306848}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{8232017408}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{314204}{7695}a_4(n)+\frac{453248}{513}a_4\left(\frac{n}{2}\right)+\frac{14944256}{405}a_4\left(\frac{n}{4}\right)-\frac{50760}{19}a_2\left(\frac{n}{3}\right)+12a_3(n)$$
$$+\frac{106164}{19}a_3\left(\frac{n}{3}\right)-\frac{385920}{19}a_5(n)-\frac{7557888}{19}a_5\left(\frac{n}{2}\right)-24a_6(n)-\frac{275072}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{69376}{19}a_7(n)-\frac{282368}{19}a_8(n)+\frac{88064}{19}a_9(n),$$

$$N\left(1^6,2^6,3^4;n\right)=\frac{91}{1672800}\sigma_7(n)-\frac{91}{1672800}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{557600}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{557600}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{42606362}{654075}a_1(n)$$
$$-\frac{183224}{513}a_1\left(\frac{n}{2}\right)-\frac{20190528}{8075}a_1\left(\frac{n}{3}\right)+\frac{2273701504}{654075}a_1\left(\frac{n}{4}\right)-\frac{785880}{19}a_1\left(\frac{n}{6}\right)+\frac{48426624}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{5410081}{175275}\Delta_{3,8}(n)+\frac{15791306}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{16792084048}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{12745979648}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{738968}{7695}a_4(n)+\frac{763328}{513}a_4\left(\frac{n}{2}\right)+\frac{27616256}{405}a_4\left(\frac{n}{4}\right)+12a_2(n)-\frac{87696}{19}a_2\left(\frac{n}{3}\right)$$
$$+\frac{198504}{19}a_3\left(\frac{n}{3}\right)-\frac{779904}{19}a_5(n)-\frac{13992960}{19}a_5\left(\frac{n}{2}\right)+48a_6(n)-\frac{508544}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{178816}{19}a_7(n)-\frac{545024}{19}a_8(n)+\frac{44288}{19}a_9(n),$$

$$N\left(1^6,2^8,6^2;n\right)=\frac{547}{13382400}\sigma_7(n)-\frac{547}{13382400}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{4460800}\sigma_7\left(\frac{n}{3}\right)+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{729}{4460800}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{14234719}{581400}a_1(n)$$
$$-\frac{674032}{2565}a_1\left(\frac{n}{2}\right)-\frac{1675701}{64600}a_1\left(\frac{n}{3}\right)+\frac{358471232}{218025}a_1\left(\frac{n}{4}\right)-\frac{131976}{95}a_1\left(\frac{n}{6}\right)+\frac{883123776}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{75067}{233700}\Delta_{3,8}(n)-\frac{59378699}{116850}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{197732044}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1591510784}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{20642}{855}a_4(n)+\frac{199664}{513}a_4\left(\frac{n}{2}\right)+\frac{590848}{135}a_4\left(\frac{n}{4}\right)-20a_2(n)-\frac{23490}{19}a_2\left(\frac{n}{3}\right)$$
$$+32a_3(n)+\frac{23490}{19}a_3\left(\frac{n}{3}\right)+\frac{41148}{19}a_5(n)-\frac{887040}{19}a_5\left(\frac{n}{2}\right)-158a_6(n)-\frac{31424}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{61152}{19}a_7(n)+\frac{11136}{19}a_8(n)+\frac{145536}{19}a_9(n),$$

$$N\left(1^6,2^8,3^2;n\right)=\frac{547}{6691200}\sigma_7(n)+-\frac{547}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{2230400}\sigma_7\left(\frac{n}{3}\right)+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{729}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{114444667}{872100}a_1(n)$$
$$-\frac{1137964}{2565}a_1\left(\frac{n}{2}\right)+\frac{107442369}{32300}a_1\left(\frac{n}{3}\right)+\frac{60528064}{72675}a_1\left(\frac{n}{4}\right)+\frac{5555628}{95}a_1\left(\frac{n}{6}\right)+\frac{497710656}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{799733}{19475}\Delta_{3,8}(n)-\frac{7041148}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{1624609792}{19475}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{31095168}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{441832}{2565}a_4(n)-\frac{838144}{513}a_4\left(\frac{n}{2}\right)-\frac{2082304}{45}a_4\left(\frac{n}{4}\right)-28a_2(n)+\frac{119556}{19}a_2\left(\frac{n}{3}\right)+40a_3(n)$$
$$-\frac{285768}{19}a_3\left(\frac{n}{3}\right)+\frac{1188648}{19}a_5(n)+\frac{9901440}{19}a_5\left(\frac{n}{2}\right)-220a_6(n)+\frac{380352}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{504576}{19}a_7(n)+\frac{442368}{19}a_8(n)+\frac{691200}{19}a_9(n),$$

$$N\left(1^6,2^{10};n\right)=\frac{1}{8160}\sigma_7(n)-\frac{1}{8160}\sigma_7\left(\frac{n}{2}\right)-\frac{1}{255}\sigma_7\left(\frac{n}{4}\right)+\frac{256}{255}\sigma_7\left(\frac{n}{8}\right)$$
$$-\frac{1}{17}a_1(n)-16a_1\left(\frac{n}{2}\right)-\frac{512}{17}a_1\left(\frac{n}{4}\right)-2a_2(n)+14a_3(n),$$

$$N\left(1^7,2,3,6^7;n\right)=\frac{1}{326400}\sigma_7(n)-\frac{1}{326400}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{108800}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)+\frac{27}{108800}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{121702433}{5232600}a_1(n)-\frac{290078}{855}a_1\left(\frac{n}{2}\right)-\frac{1385523}{64600}a_1\left(\frac{n}{3}\right)$$
$$+\frac{1357834144}{654075}a_1\left(\frac{n}{4}\right)+\frac{2178}{95}a_1\left(\frac{n}{6}\right)+\frac{677967264}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{4553}{17100}\Delta_{3,8}(n)-\frac{2936581}{8550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{48002168}{4275}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{154623808}{4275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{176914}{7695}a_4(n)+\frac{51808}{171}a_4\left(\frac{n}{2}\right)$$
$$+\frac{4795136}{405}a_4\left(\frac{n}{4}\right)-16a_2(n)-\frac{13986}{19}a_2\left(\frac{n}{3}\right)+30a_3(n)$$
$$+\frac{10908}{19}a_3\left(\frac{n}{3}\right)+\frac{53388}{19}a_5(n)-\frac{2353152}{19}a_5\left(\frac{n}{2}\right)-126a_6(n)$$
$$-\frac{79584}{19}a_6\left(\frac{n}{2}\right)-\frac{91520}{19}a_7(n)-\frac{48576}{19}a_8(n)+\frac{230912}{19}a_9(n),$$

$$N\left(1^7,2,3^3,6^5;n\right)=\frac{1}{163200}\sigma_7(n)-\frac{1}{163200}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{54400}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)+\frac{27}{54400}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{18686492}{654075}a_1(n)-\frac{174182}{513}a_1\left(\frac{n}{2}\right)+\frac{1839771}{16150}a_1\left(\frac{n}{3}\right)$$
$$+\frac{1308667424}{654075}a_1\left(\frac{n}{4}\right)+\frac{46998}{19}a_1\left(\frac{n}{6}\right)+\frac{725360544}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{23999}{17100}\Delta_{3,8}(n)-\frac{3232787}{8550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{27577468}{4275}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{146111168}{4275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{230618}{7695}a_4(n)+\frac{124880}{513}a_4\left(\frac{n}{2}\right)$$
$$+\frac{3517696}{405}a_4\left(\frac{n}{4}\right)-18a_2(n)-\frac{10152}{19}a_2\left(\frac{n}{3}\right)+32a_3(n)$$
$$+\frac{918}{19}a_3\left(\frac{n}{3}\right)+\frac{100656}{19}a_5(n)-\frac{1704192}{19}a_5\left(\frac{n}{2}\right)-140a_6(n)$$
$$-\frac{55136}{19}a_6\left(\frac{n}{2}\right)-\frac{106144}{19}a_7(n)-\frac{19264}{19}a_8(n)+\frac{241600}{19}a_9(n),$$

$$N\left(1^7,2,3^5,6^3;n\right)=\frac{1}{81600}\sigma_7(n)-\frac{1}{81600}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{27200}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{27200}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{22949504}{654075}a_1(n)$$
$$-\frac{795472}{2565}a_1\left(\frac{n}{2}\right)+\frac{2139651}{8075}a_1\left(\frac{n}{3}\right)+\frac{1142497184}{654075}a_1\left(\frac{n}{4}\right)+\frac{512604}{95}a_1\left(\frac{n}{6}\right)$$
$$+\frac{862987104}{8075}a_1\left(\frac{n}{12}\right)-\frac{27919}{8550}\Delta_{3,8}(n)-\frac{2002177}{4275}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{7391732}{4275}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{122228288}{4275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{295076}{7695}a_4(n)+\frac{100112}{513}a_4\left(\frac{n}{2}\right)+\frac{1052416}{405}a_4\left(\frac{n}{4}\right)$$
$$-22a_2(n)-\frac{8370}{19}a_2\left(\frac{n}{3}\right)+36a_3(n)-\frac{7020}{19}a_3\left(\frac{n}{3}\right)+\frac{151344}{19}a_5(n)-\frac{482496}{19}a_5\left(\frac{n}{2}\right)$$
$$-168a_6(n)-\frac{10016}{19}a_6\left(\frac{n}{2}\right)-\frac{114688}{19}a_7(n)+\frac{35584}{19}a_8(n)+\frac{220672}{19}a_9(n),$$

$$N\left(1^7,2,3^7,6;n\right)=\frac{1}{40800}\sigma_7(n)-\frac{1}{40800}\sigma_7\left(\frac{n}{2}\right)-\frac{27}{13600}\sigma_7\left(\frac{n}{3}\right)+\frac{1}{20400}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{27}{13600}\sigma_7\left(\frac{n}{6}\right)-\frac{16}{1275}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6800}\sigma_7\left(\frac{n}{12}\right)+\frac{432}{425}\sigma_7\left(\frac{n}{24}\right)-\frac{3264617}{72675}a_1(n)$$
$$-\frac{681412}{2565}a_1\left(\frac{n}{2}\right)+\frac{3504357}{8075}a_1\left(\frac{n}{3}\right)+\frac{301154528}{218025}a_1\left(\frac{n}{4}\right)+\frac{841104}{95}a_1\left(\frac{n}{6}\right)$$
$$+\frac{1153319904}{8075}a_1\left(\frac{n}{12}\right)-\frac{7618}{1425}\Delta_{3,8}(n)-\frac{930778}{1425}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{19308244}{1425}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{29199296}{1425}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{42968}{855}a_4(n)+\frac{93104}{513}a_4\left(\frac{n}{2}\right)-\frac{866048}{135}a_4\left(\frac{n}{4}\right)-30a_2(n)$$
$$-\frac{9882}{19}a_2\left(\frac{n}{3}\right)+44a_3(n)-\frac{11664}{19}a_3\left(\frac{n}{3}\right)+\frac{214128}{19}a_5(n)+\frac{1305792}{19}a_5\left(\frac{n}{2}\right)$$
$$-224a_6(n)+\frac{56608}{19}a_6\left(\frac{n}{2}\right)-\frac{121920}{19}a_7(n)+\frac{120448}{19}a_8(n)+\frac{170112}{19}a_9(n),$$

$$N\left(1^7,2^3,3,6^5;n\right)=\frac{121}{13382400}\sigma_7(n)-\frac{121}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{4460800}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{3131047}{275400}a_1(n)$$
$$-\frac{52934}{135}a_1\left(\frac{n}{2}\right)-\frac{1072557}{3400}a_1\left(\frac{n}{3}\right)+\frac{84152864}{34425}a_1\left(\frac{n}{4}\right)-\frac{27882}{5}a_1\left(\frac{n}{6}\right)+\frac{20993184}{425}a_1\left(\frac{n}{12}\right)$$
$$+\frac{143657}{36900}\Delta_{3,8}(n)-\frac{3994729}{18450}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{240190928}{9225}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{413090368}{9225}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{3026}{405}a_4(n)+\frac{11584}{27}a_4\left(\frac{n}{2}\right)+\frac{9151744}{405}a_4\left(\frac{n}{4}\right)-8a_2(n)-918a_2\left(\frac{n}{3}\right)+22a_3(n)$$
$$+1404a_3\left(\frac{n}{3}\right)-2556a_5(n)-237696a_5\left(\frac{n}{2}\right)-86a_6(n)-8416a_6\left(\frac{n}{2}\right)$$
$$-3520a_7(n)-7744a_8(n)+13696a_9(n),$$

$$N\left(1^7,2^3,3^3,6^3;n\right)=\frac{121}{6691200}\sigma_7(n)-\frac{121}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{123062}{34425}a_1(n)$$
$$-\frac{57146}{135}a_1\left(\frac{n}{2}\right)-\frac{626931}{850}a_1\left(\frac{n}{3}\right)+\frac{97023904}{34425}a_1\left(\frac{n}{4}\right)-\frac{66078}{5}a_1\left(\frac{n}{6}\right)+\frac{12376224}{425}a_1\left(\frac{n}{12}\right)$$
$$+\frac{335899}{36900}\Delta_{3,8}(n)-\frac{2951993}{18450}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{391401388}{9225}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{493830848}{9225}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{5138}{405}a_4(n)+\frac{18064}{27}a_4\left(\frac{n}{2}\right)+\frac{13639424}{405}\Delta_{3,8}\left(\frac{n}{4}\right)-2a_2(n)-1512a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$+2970a_3\left(\frac{n}{3}\right)-10512a_5(n)-356736a_5\left(\frac{n}{2}\right)-60a_6(n)-12896a_6\left(\frac{n}{2}\right)-1376a_7(n)$$
$$-12992a_8(n)+123376a_9(n),$$

$$N\left(1^7,2^3,3^5,6;n\right)=\frac{121}{3345600}\sigma_7(n)-\frac{121}{3345600}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{1115200}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{1115200}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{14188196}{654075}a_1(n)$$
$$-\frac{89560}{171}a_1\left(\frac{n}{2}\right)-\frac{9879849}{8075}a_1\left(\frac{n}{3}\right)+\frac{2341964896}{654075}a_1\left(\frac{n}{4}\right)-\frac{412740}{19}a_1\left(\frac{n}{6}\right)-\frac{177731424}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{5293121}{350550}\Delta_{3,8}(n)+\frac{1155923}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{11797291252}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{12320380352}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{283244}{7695}a_4(n)+\frac{154576}{171}a_4\left(\frac{n}{2}\right)+\frac{21035264}{405}a_4\left(\frac{n}{4}\right)+10a_2(n)-\frac{34074}{19}a_2\left(\frac{n}{3}\right)+4a_3(n)$$
$$+\frac{80244}{19}a_3\left(\frac{n}{3}\right)-\frac{368208}{19}a_5(n)-\frac{10443072}{19}a_5\left(\frac{n}{2}\right)-8a_6(n)-\frac{380384}{19}a_6\left(\frac{n}{2}\right)-\frac{512}{19}a_7(n)$$
$$-\frac{411392}{19}a_8(n)+\frac{316928}{19}a_9(n),$$

$$N\left(1^7,2^5,3,6^3;n\right)=\frac{73}{2676480}\sigma_7(n)-\frac{73}{2676480}\sigma_7\left(\frac{n}{2}\right)-\frac{243}{892160}\sigma_7\left(\frac{n}{3}\right)+\frac{73}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{243}{892160}\sigma_7\left(\frac{n}{6}\right)-\frac{1168}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3888}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{9429853}{209304}a_1(n)$$
$$-\frac{278462}{855}a_1\left(\frac{n}{2}\right)+\frac{1440441}{2584}a_1\left(\frac{n}{3}\right)+\frac{223785376}{130815}a_1\left(\frac{n}{4}\right)+\frac{941202}{95}a_1\left(\frac{n}{6}\right)+\frac{185425056}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{192955}{28044}\Delta_{3,8}(n)-\frac{30421301}{70110}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{69539080}{7011}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{938645312}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{79906}{1539}a_4(n)-\frac{416}{171}a_4\left(\frac{n}{2}\right)-\frac{175360}{81}a_4\left(\frac{n}{4}\right)-24a_2(n)+\frac{54}{19}a_2\left(\frac{n}{3}\right)+38a_3(n)$$
$$-\frac{27756}{19}a_3\left(\frac{n}{3}\right)+\frac{260316}{19}a_5(n)+\frac{512256}{19}a_5\left(\frac{n}{2}\right)-166a_6(n)+\frac{28064}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{145792}{19}a_7(n)+\frac{80960}{19}a_8(n)+\frac{263680}{19}a_9(n),$$

$$N\left(1^7,2^5,3^3,6;n\right)=\frac{73}{1338240}\sigma_7(n)-\frac{73}{1338240}\sigma_7\left(\frac{n}{2}\right)-\frac{243}{446080}\sigma_7\left(\frac{n}{3}\right)+\frac{73}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{243}{446080}\sigma_7\left(\frac{n}{6}\right)-\frac{1168}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3888}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{3662272}{43605}a_1(n)$$
$$-\frac{47210}{171}a_1\left(\frac{n}{2}\right)+\frac{5646483}{3230}a_1\left(\frac{n}{3}\right)+\frac{35369824}{43605}a_1\left(\frac{n}{4}\right)+\frac{586062}{19}a_1\left(\frac{n}{6}\right)+\frac{218992032}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1008589}{46740}\Delta_{3,8}(n)-\frac{12542377}{23370}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{597244972}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{64579648}{11685}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{54142}{513}a_4(n)-\frac{114640}{171}a_4\left(\frac{n}{2}\right)-\frac{798976}{27}a_4\left(\frac{n}{4}\right)-34a_2(n)+\frac{40176}{19}a_2\left(\frac{n}{3}\right)+48a_3(n)$$
$$-\frac{123282}{19}a_3\left(\frac{n}{3}\right)+\frac{663984}{19}a_5(n)+\frac{6177024}{19}a_5\left(\frac{n}{2}\right)-220a_6(n)+\frac{238624}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{271392}{19}a_7(n)+\frac{315840}{19}a_8(n)+\frac{335040}{19}a_9(n),$$

$$N\left(1^7,2^7,3,6;n\right)=\frac{1093}{13382400}\sigma_7(n)-\frac{1093}{13382400}\sigma_7\left(\frac{n}{2}\right)+\frac{729}{4460800}\sigma_7\left(\frac{n}{3}\right)-\frac{1093}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{729}{4460800}\sigma_7\left(\frac{n}{6}\right)+\frac{17488}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{11664}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{25038359}{581400}a_1(n)$$
$$-\frac{31966}{171}a_1\left(\frac{n}{2}\right)-\frac{114249339}{64600}a_1\left(\frac{n}{3}\right)+\frac{149981152}{72675}a_1\left(\frac{n}{4}\right)-\frac{584550}{19}a_1\left(\frac{n}{6}\right)+\frac{417914208}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{5102413}{233700}\Delta_{3,8}(n)-\frac{17351981}{116850}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3466321072}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2526270272}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{55522}{855}a_4(n)+\frac{201664}{171}a_4\left(\frac{n}{2}\right)+\frac{1810688}{45}a_4\left(\frac{n}{4}\right)-\frac{75978}{19}a_2\left(\frac{n}{3}\right)+14a_3(n)+\frac{159084}{19}a_3\left(\frac{n}{3}\right)$$
$$-\frac{565380}{19}a_5(n)-\frac{8355456}{19}a_5\left(\frac{n}{2}\right)-14a_6(n)-\frac{307744}{19}a_6\left(\frac{n}{2}\right)+\frac{159168}{19}a_7(n)-\frac{312000}{19}a_8(n)$$
$$-\frac{61824}{19}a_9(n),$$

$$N(1^8,6^8;n)=\frac{1}{334560}\sigma_7(n)-\frac{1}{334560}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{111520}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{111520}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{336557}{14535}a_1(n)$$
$$-\frac{988048}{2565}a_1\left(\frac{n}{2}\right)-\frac{103653}{1615}a_1\left(\frac{n}{3}\right)+\frac{105769216}{43605}a_1\left(\frac{n}{4}\right)-\frac{95904}{95}a_1\left(\frac{n}{6}\right)+\frac{143140608}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{9242}{11685}\Delta_{3,8}(n)-\frac{3213556}{11685}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{12286592}{779}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{166772224}{3895}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{3824}{171}a_4(n)+\frac{151040}{513}a_4\left(\frac{n}{2}\right)+\frac{432128}{27}a_4\left(\frac{n}{4}\right)-16a_2(n)-\frac{16848}{19}a_2\left(\frac{n}{3}\right)+32a_3(n)$$
$$+\frac{16848}{19}a_3\left(\frac{n}{3}\right)+\frac{51552}{19}a_5(n)-\frac{3193344}{19}a_5\left(\frac{n}{2}\right)-112a_6(n)-\frac{107776}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{98304}{19}a_7(n)-\frac{73728}{19}a_8(n)+\frac{264192}{19}a_9(n),$$

$$N\left(1^8,3^2,6^6;n\right)=\frac{1}{167280}\sigma_7(n)-\frac{1}{167280}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{55760}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{55760}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{269092}{14535}a_1(n)$$
$$-\frac{319952}{855}a_1\left(\frac{n}{2}\right)-\frac{279828}{1615}a_1\left(\frac{n}{3}\right)+\frac{35993344}{14535}a_1\left(\frac{n}{4}\right)-\frac{321408}{95}a_1\left(\frac{n}{6}\right)+\frac{148075776}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{24962}{11685}\Delta_{3,8}(n)-\frac{2739244}{11685}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{14751840}{779}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{171852288}{3895}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{2800}{171}a_4(n)+\frac{56704}{171}a_4\left(\frac{n}{2}\right)+\frac{161792}{9}a_4\left(\frac{n}{4}\right)-16a_2(n)-\frac{22356}{19}a_2\left(\frac{n}{3}\right)+32a_3(n)$$
$$+\frac{28512}{19}a_3\left(\frac{n}{3}\right)+\frac{20736}{19}a_5(n)-\frac{3612672}{19}a_5\left(\frac{n}{2}\right)-96a_6(n)-\frac{123648}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{82176}{19}a_7(n)-\frac{89600}{19}a_8(n)+\frac{247296}{19}a_9(n),$$

$$N\left(1^8,3^4,6^4;n\right)=\frac{1}{83640}\sigma_7(n)-\frac{1}{83640}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{27880}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{27880}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{574424}{43605}a_1(n)$$
$$-\frac{101728}{285}a_1\left(\frac{n}{2}\right)-\frac{442152}{1615}a_1\left(\frac{n}{3}\right)+\frac{110190848}{43605}a_1\left(\frac{n}{4}\right)-\frac{489456}{95}a_1\left(\frac{n}{6}\right)+\frac{153010944}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{39428}{11685}\Delta_{3,8}(n)-\frac{529688}{3895}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{256287008}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{176932352}{3895}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{5024}{513}a_4(n)+\frac{6016}{19}a_4\left(\frac{n}{2}\right)+\frac{538624}{27}a_4\left(\frac{n}{4}\right)-16a_2(n)-\frac{27864}{19}a_2\left(\frac{n}{3}\right)+32a_3(n)$$
$$+\frac{40176}{19}a_3\left(\frac{n}{3}\right)-\frac{4608}{19}a_5(n)-\frac{4032000}{19}a_5\left(\frac{n}{2}\right)-64a_6(n)-\frac{139520}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{66048}{19}a_7(n)-\frac{105472}{19}a_8(n)+\frac{230400}{19}a_9(n),$$

$$N\left(1^8,3^6,6^2;n\right)=\frac{1}{41820}\sigma_7(n)-\frac{1}{41820}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{13940}\sigma_7\left(\frac{n}{3}\right)-\frac{1}{20910}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{13940}\sigma_7\left(\frac{n}{6}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{27}{6970}\sigma_7\left(\frac{n}{12}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{378952}{43605}a_1(n)$$
$$-\frac{843808}{2565}a_1\left(\frac{n}{2}\right)-\frac{107676}{1615}a_1\left(\frac{n}{3}\right)+\frac{110190848}{43605}a_1\left(\frac{n}{4}\right)-\frac{292464}{95}a_1\left(\frac{n}{6}\right)+\frac{153010944}{1615}a_1\left(\frac{n}{12}\right)$$
$$+\frac{56224}{11685}\Delta_{3,8}(n)+\frac{858896}{11685}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{249107744}{11685}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{176932352}{3895}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{1984}{513}a_4(n)+\frac{84608}{513}a_4\left(\frac{n}{2}\right)+\frac{538624}{27}a_4\left(\frac{n}{4}\right)-16a_2(n)-\frac{27864}{19}a_2\left(\frac{n}{3}\right)+32a_3(n)$$
$$+\frac{40176}{19}a_3\left(\frac{n}{3}\right)+\frac{17280}{19}a_5(n)-\frac{4032000}{19}a_5\left(\frac{n}{2}\right)-\frac{139520}{19}a_6\left(\frac{n}{2}\right)-\frac{66048}{19}a_7(n)$$
$$-\frac{105472}{19}a_8(n)+\frac{230400}{19}a_9(n),$$

$$N\left(1^8,3^8;n\right)=\frac{1}{20910}\sigma_7(n)-\frac{1}{10455}\sigma_7\left(\frac{n}{2}\right)+\frac{27}{6970}\sigma_7\left(\frac{n}{3}\right)+\frac{128}{10455}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{27}{3485}\sigma_7\left(\frac{n}{6}\right)+\frac{3456}{3485}\sigma_7\left(\frac{n}{12}\right)+\frac{1792}{255}a_1(n)+\frac{28672}{255}a_1\left(\frac{n}{2}\right)+\frac{48384}{85}a_1\left(\frac{n}{3}\right)$$
$$+\frac{774144}{85}a_1\left(\frac{n}{6}\right)+\frac{5504}{615}\Delta_{3,8}(n)-\frac{512}{615}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{1409024}{615}\Delta_{3,8}\left(\frac{n}{4}\right),$$

$$N\left(1^8,2^2,6^6;n\right)=\frac{61}{6691200}\sigma_7(n)-\frac{61}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{2230400}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{567}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{70547473}{2616300}a_1(n)-\frac{856904}{2565}a_1\left(\frac{n}{2}\right)-\frac{591363}{32300}a_1\left(\frac{n}{3}\right)$$
$$+\frac{1323512128}{654075}a_1\left(\frac{n}{4}\right)-\frac{55872}{95}a_1\left(\frac{n}{6}\right)+\frac{919205568}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{79763}{350550}\Delta_{3,8}(n)-\frac{73394191}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1376658496}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{6073751936}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{205708}{7695}a_4(n)+\frac{172288}{513}a_4\left(\frac{n}{2}\right)$$
$$+\frac{3717632}{405}a_4\left(\frac{n}{4}\right)-20a_2(n)-\frac{21924}{19}a_2\left(\frac{n}{3}\right)+36a_3(n)$$
$$+\frac{21924}{19}a_3\left(\frac{n}{3}\right)+\frac{71784}{19}a_5(n)-\frac{1856640}{19}a_5\left(\frac{n}{2}\right)-148a_6(n)$$
$$-\frac{60864}{19}a_6\left(\frac{n}{2}\right)-\frac{81152}{19}a_7(n)-\frac{15872}{19}a_8(n)+\frac{197120}{19}a_9(n),$$

$$N\left(1^8,2^2,3^2,6^4;n\right)=\frac{61}{3345600}\sigma_7(n)-\frac{61}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{1115200}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{567}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{1415906}{34425}a_1(n)-\frac{48164}{135}a_1\left(\frac{n}{2}\right)+\frac{159039}{425}a_1\left(\frac{n}{3}\right)$$
$$+\frac{68261312}{34425}a_1\left(\frac{n}{4}\right)+\frac{32868}{5}a_1\left(\frac{n}{6}\right)+\frac{51291072}{425}a_1\left(\frac{n}{12}\right)-\frac{85181}{18450}\Delta_{3,8}(n)$$
$$-\frac{4047713}{9225}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{27941896}{9225}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{298927744}{9225}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{18524}{405}a_4(n)+\frac{3232}{27}a_4\left(\frac{n}{2}\right)+\frac{1126912}{405}a_4\left(\frac{n}{4}\right)-24a_2(n)-432a_2\left(\frac{n}{3}\right)$$
$$+40a_3(n)-540a_3\left(\frac{n}{3}\right)+10944a_5(n)-26880a_5\left(\frac{n}{2}\right)-168a_6(n)$$
$$-448a_6\left(\frac{n}{2}\right)-6976a_7(n)+2432a_8(n)+13696a_9(n),$$

$$N\left(1^8,2^2,3^4,6^2;n\right)=\frac{61}{1672800}\sigma_7(n)-\frac{61}{1672800}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{557600}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{557600}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{37093598}{654075}a_1(n)$$
$$-\frac{16576}{57}a_1\left(\frac{n}{2}\right)+\frac{6549912}{8075}a_1\left(\frac{n}{3}\right)+\frac{931462208}{654075}a_1\left(\frac{n}{4}\right)+\frac{276120}{19}a_1\left(\frac{n}{6}\right)+\frac{1225107648}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1754149}{175275}\Delta_{3,8}(n)-\frac{97580774}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{3995678104}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3492628096}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{513272}{7695}a_4(n)-\frac{1888}{19}a_4\left(\frac{n}{2}\right)-\frac{4602368}{405}a_4\left(\frac{n}{4}\right)-32a_2(n)+\frac{864}{19}a_2\left(\frac{n}{3}\right)+48a_3(n)$$
$$-\frac{37800}{19}a_3\left(\frac{n}{3}\right)+\frac{356544}{19}a_5(n)+\frac{2352000}{19}a_5\left(\frac{n}{2}\right)-208a_6(n)+\frac{97600}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{165760}{19}a_7(n)+\frac{171776}{19}a_8(n)+\frac{235264}{19}a_9(n),$$

$$N\left(1^8,2^2,3^6;n\right)=\frac{61}{836400}\sigma_7(n)-\frac{61}{836400}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{278800}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{278800}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{16341662}{218025}a_1(n)$$
$$-\frac{356072}{2565}a_1\left(\frac{n}{2}\right)+\frac{10050534}{8075}a_1\left(\frac{n}{3}\right)+\frac{17118272}{72675}a_1\left(\frac{n}{4}\right)+\frac{2171664}{95}a_1\left(\frac{n}{6}\right)+\frac{1541585088}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{897056}{58425}\Delta_{3,8}(n)-\frac{54842116}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{2954451848}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{259643008}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{241808}{2565}a_4(n)-\frac{92960}{513}a_4\left(\frac{n}{2}\right)-\frac{1475072}{45}a_4\left(\frac{n}{4}\right)-44a_2(n)+\frac{8100}{19}a_2\left(\frac{n}{3}\right)+56a_3(n)$$
$$-\frac{63504}{19}a_3\left(\frac{n}{3}\right)+\frac{498528}{19}a_5(n)+\frac{6643584}{19}a_5\left(\frac{n}{2}\right)-320a_6(n)+\frac{252736}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{177792}{19}a_7(n)+\frac{346368}{19}a_8(n)+\frac{109824}{19}a_9(n),$$

$$N\left(1^8,2^4,6^4;n\right)=\frac{91}{3345600}\sigma_7(n)-\frac{91}{3345600}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{1115200}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{1115200}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{8991121}{436050}a_1(n)$$
$$-\frac{420592}{855}a_1\left(\frac{n}{2}\right)-\frac{1788453}{16150}a_1\left(\frac{n}{3}\right)+\frac{624003968}{218025}a_1\left(\frac{n}{4}\right)-\frac{228528}{95}a_1\left(\frac{n}{6}\right)+\frac{347082624}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{79801}{58425}\Delta_{3,8}(n)-\frac{9330754}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1535303296}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3042319616}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{49352}{2565}a_4(n)+\frac{52736}{171}a_4\left(\frac{n}{2}\right)+\frac{3361792}{135}a_4\left(\frac{n}{4}\right)-8a_2(n)-\frac{8424}{19}a_2\left(\frac{n}{3}\right)+24a_3(n)$$
$$+\frac{8424}{19}a_3\left(\frac{n}{3}\right)+\frac{36720}{19}a_5(n)-\frac{4923648}{19}a_5\left(\frac{n}{2}\right)-88a_6(n)-\frac{170624}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{107520}{19}a_7(n)-\frac{153600}{19}a_8(n)+\frac{365568}{19}a_9(n),$$

$$N\left(1^8,2^4,3^2,6^2;n\right)=\frac{91}{1672800}\sigma_7(n)-\frac{91}{1672800}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{557600}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{557600}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{12888152}{654075}a_1(n)$$
$$-\frac{1087832}{2565}a_1\left(\frac{n}{2}\right)-\frac{10271538}{8075}a_1\left(\frac{n}{3}\right)+\frac{2024593024}{654075}a_1\left(\frac{n}{4}\right)-\frac{2191896}{95}a_1\left(\frac{n}{6}\right)+\frac{310460544}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{2752051}{175275}\Delta_{3,8}(n)-\frac{27900754}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{10196115568}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{10601017088}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{272648}{7695}a_4(n)+\frac{507712}{513}a_4\left(\frac{n}{2}\right)+\frac{17662976}{405}a_4\left(\frac{n}{4}\right)-\frac{52380}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$+\frac{107784}{19}a_3\left(\frac{n}{3}\right)-\frac{377280}{19}a_5(n)-\frac{8873472}{19}a_5\left(\frac{n}{2}\right)-48a_6(n)-\frac{322944}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{43648}{19}a_7(n)-\frac{325376}{19}a_8(n)+\frac{188672}{19}a_9(n),$$

$$N\left(1^8,2^4,3^4;n\right)=\frac{91}{836400}\sigma_7(n)-\frac{91}{836400}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{278800}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{278800}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{39930844}{654075}a_1(n)$$
$$-\frac{1555168}{2565}a_1\left(\frac{n}{2}\right)-\frac{20790936}{8075}a_1\left(\frac{n}{3}\right)+\frac{3095663744}{654075}a_1\left(\frac{n}{4}\right)-\frac{4328064}{95}a_1\left(\frac{n}{6}\right)-\frac{155051136}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{5570522}{175275}\Delta_{3,8}(n)+\frac{13068652}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{19757597648}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{16900611328}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{714736}{7695}a_4(n)+\frac{861632}{513}a_4\left(\frac{n}{2}\right)+\frac{33442816}{405}a_4\left(\frac{n}{4}\right)+16a_2(n)-\frac{85320}{19}a_2\left(\frac{n}{3}\right)+\frac{196128}{19}a_3\left(\frac{n}{3}\right)$$
$$-\frac{792576}{19}a_5(n)-\frac{16800000}{19}a_5\left(\frac{n}{2}\right)+32a_6(n)-\frac{613760}{19}a_6\left(\frac{n}{2}\right)+\frac{133376}{19}a_7(n)$$
$$-\frac{659968}{19}a_8(n)+\frac{220672}{19}a_9(n),$$

$$N\left(1^8,2^6,6^2;n\right)=\frac{547}{6691200}\sigma_7(n)-\frac{547}{6691200}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{2230400}\sigma_7\left(\frac{n}{3}\right)+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{729}{2230400}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{10045919}{290700}a_1(n)$$
$$-\frac{836296}{2565}a_1\left(\frac{n}{2}\right)+\frac{1261899}{32300}a_1\left(\frac{n}{3}\right)+\frac{447252032}{218025}a_1\left(\frac{n}{4}\right)-\frac{16848}{95}a_1\left(\frac{n}{6}\right)+\frac{1320826176}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{18711}{38950}\Delta_{3,8}(n)-\frac{12219653}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{29382688}{19475}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{655449728}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{29924}{855}a_4(n)+\frac{222080}{513}a_4\left(\frac{n}{2}\right)+\frac{537088}{135}a_4\left(\frac{n}{4}\right)-28a_2(n)-\frac{32076}{19}a_2\left(\frac{n}{3}\right)+44a_3(n)$$
$$+\frac{32076}{19}a_3\left(\frac{n}{3}\right)+\frac{84888}{19}a_5(n)-\frac{846720}{19}a_5\left(\frac{n}{2}\right)-204a_6(n)-\frac{25408}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{76032}{19}a_7(n)+\frac{41472}{19}a_8(n)+\frac{179712}{19}a_9(n),$$

$$N\left(1^8,2^6,3^2;n\right)=\frac{547}{3345600}\sigma_7(n)-\frac{547}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{1115200}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{729}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{31348886}{218025}a_1(n)-\frac{1190372}{2565}a_1\left(\frac{n}{2}\right)+\frac{27469827}{8075}a_1\left(\frac{n}{3}\right)$$
$$+\frac{73910464}{72675}a_1\left(\frac{n}{4}\right)+\frac{5763204}{95}a_1\left(\frac{n}{6}\right)+\frac{1042635456}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{4907011}{116850}\Delta_{3,8}(n)-\frac{30718303}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{5292946136}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{200607104}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{476324}{2565}a_4(n)-\frac{830816}{513}a_4\left(\frac{n}{2}\right)$$
$$-\frac{2281984}{45}a_4\left(\frac{n}{4}\right)-40a_2(n)+\frac{108216}{19}a_2\left(\frac{n}{3}\right)+56a_3(n)$$
$$-\frac{274428}{19}a_3\left(\frac{n}{3}\right)+\frac{1261440}{19}a_5(n)+\frac{10738944}{19}a_5\left(\frac{n}{2}\right)-280a_6(n)$$
$$+\frac{417344}{19}a_6\left(\frac{n}{2}\right)-\frac{520512}{19}a_7(n)+\frac{513408}{19}a_8(n)+\frac{673152}{19}a_9(n),$$

$$N\left(1^8,2^8;n\right)=\frac{1}{4080}\sigma_7(n)-\frac{1}{4080}\sigma_7\left(\frac{n}{2}\right)-\frac{1}{255}\sigma_7\left(\frac{n}{4}\right)+\frac{256}{255}\sigma_7\left(\frac{n}{8}\right)$$
$$-\frac{2}{17}a_1(n)-16a_1\left(\frac{n}{2}\right)-\frac{512}{17}a_1\left(\frac{n}{4}\right)+16a_3(n),$$

$$N\left(1^9,2,3,6^5;n\right)=\frac{121}{6691200}\sigma_7(n)-\frac{121}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{2230400}\sigma_7\left(\frac{n}{3}\right)$$
$$-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)-\frac{1053}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{26532499}{1308150}a_1(n)-\frac{123434}{285}a_1\left(\frac{n}{2}\right)-\frac{1773972}{8075}a_1\left(\frac{n}{3}\right)$$
$$+\frac{1744119776}{654075}a_1\left(\frac{n}{4}\right)-\frac{453078}{95}a_1\left(\frac{n}{6}\right)+\frac{725237856}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{1899551}{701100}\Delta_{3,8}(n)-\frac{90439717}{350550}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3931178852}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{8399048512}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{135158}{7695}a_4(n)+\frac{22448}{57}a_4\left(\frac{n}{2}\right)+\frac{8483584}{405}a_4\left(\frac{n}{4}\right)$$
$$-14a_2(n)-\frac{24408}{19}a_2\left(\frac{n}{3}\right)+32a_3(n)+\frac{33642}{19}a_3\left(\frac{n}{3}\right)+\frac{15264}{19}a_5(n)$$
$$-\frac{4210944}{19}a_5\left(\frac{n}{2}\right)-108a_6(n)-\frac{144928}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{77920}{19}a_7(n)-\frac{110272}{19}a_8(n)+\frac{270400}{19}a_9(n),$$

$$N\left(1^9,2,3^3,6^3;n\right)=\frac{121}{3345600}\sigma_7(n)-\frac{121}{3345600}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{1115200}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{1115200}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{3563204}{654075}a_1(n)$$
$$-\frac{1143488}{2565}a_1\left(\frac{n}{2}\right)-\frac{4953249}{8075}a_1\left(\frac{n}{3}\right)+\frac{1976614496}{654075}a_1\left(\frac{n}{4}\right)-\frac{1144764}{95}a_1\left(\frac{n}{6}\right)+\frac{636962976}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{2652721}{350550}\Delta_{3,8}(n)-\frac{29311997}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{6529804772}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{9835452352}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{16444}{7695}a_4(n)+\frac{300208}{513}a_4\left(\frac{n}{2}\right)+\frac{12546304}{405}a_4\left(\frac{n}{4}\right)-10a_2(n)-\frac{37206}{19}a_2\left(\frac{n}{3}\right)+28a_3(n)$$
$$+\frac{64908}{19}a_3\left(\frac{n}{3}\right)-\frac{121680}{19}a_5(n)-\frac{6271296}{19}a_5\left(\frac{n}{2}\right)-72a_6(n)-\frac{221792}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{37120}{19}a_7(n)-\frac{196864}{19}a_8(n)+\frac{257536}{19}a_9(n),$$

$$N\left(1^9,2,3^5,6;n\right)=\frac{121}{1672800}\sigma_7(n)-\frac{121}{1672800}\sigma_7\left(\frac{n}{2}\right)+\frac{1053}{557600}\sigma_7\left(\frac{n}{3}\right)-\frac{121}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{1053}{557600}\sigma_7\left(\frac{n}{6}\right)+\frac{1936}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{1053}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{16848}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{2648399}{218025}a_1(n)$$
$$-\frac{1299868}{2565}a_1\left(\frac{n}{2}\right)-\frac{8455293}{8075}a_1\left(\frac{n}{3}\right)+\frac{266917984}{72675}a_1\left(\frac{n}{4}\right)-\frac{1869264}{95}a_1\left(\frac{n}{6}\right)+\frac{376789536}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{754612}{58425}\Delta_{3,8}(n)+\frac{3840422}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3393395764}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{4110799424}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{64376}{2565}a_4(n)+\frac{367952}{513}a_4\left(\frac{n}{2}\right)+\frac{2084096}{45}a_4\left(\frac{n}{4}\right)-2a_2(n)-\frac{45846}{19}a_2\left(\frac{n}{3}\right)+20a_3(n)$$
$$+\frac{92016}{19}a_3\left(\frac{n}{3}\right)-\frac{256176}{19}a_5(n)-\frac{9369792}{19}a_5\left(\frac{n}{2}\right)-\frac{335648}{19}a_6\left(\frac{n}{2}\right)-\frac{10176}{19}a_7(n)$$
$$-\frac{331392}{19}a_8(n)+\frac{290688}{19}a_9(n),$$

$$N\left(1^9,2^3,3,6^3;n\right)=\frac{73}{1338240}\sigma_7(n)-\frac{73}{1338240}\sigma_7\left(\frac{n}{2}\right)-\frac{243}{446080}\sigma_7\left(\frac{n}{3}\right)+\frac{73}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{243}{446080}\sigma_7\left(\frac{n}{6}\right)-\frac{1168}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3888}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{14377981}{261630}a_1(n)$$
$$-\frac{1022602}{2565}a_1\left(\frac{n}{2}\right)+\frac{1029087}{1615}a_1\left(\frac{n}{3}\right)+\frac{272238368}{130815}a_1\left(\frac{n}{4}\right)+\frac{990594}{95}a_1\left(\frac{n}{6}\right)+\frac{246390048}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1102621}{140220}\Delta_{3,8}(n)-\frac{7330709}{14022}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{402033028}{35055}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1146114496}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{96638}{1539}a_4(n)+\frac{12176}{513}a_4\left(\frac{n}{2}\right)-\frac{177920}{81}a_4\left(\frac{n}{4}\right)-30a_2(n)-\frac{6696}{19}a_2\left(\frac{n}{3}\right)+48a_3(n)$$
$$-\frac{21006}{19}a_3\left(\frac{n}{3}\right)+\frac{314784}{19}a_5(n)+\frac{502656}{19}a_5\left(\frac{n}{2}\right)-204a_6(n)+\frac{31264}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{159968}{19}a_7(n)+\frac{106048}{19}a_8(n)+\frac{299840}{19}a_9(n),$$

$$N\left(1^9,2^3,3^3,6;n\right)=\frac{73}{669120}\sigma_7(n)-\frac{73}{669120}\sigma_7\left(\frac{n}{2}\right)-\frac{243}{223040}\sigma_7\left(\frac{n}{3}\right)+\frac{73}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{243}{223040}\sigma_7\left(\frac{n}{6}\right)-\frac{1168}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3888}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{12354896}{130815}a_1(n)$$
$$-\frac{797176}{2565}a_1\left(\frac{n}{2}\right)+\frac{2970819}{1615}a_1\left(\frac{n}{3}\right)+\frac{132741536}{130815}a_1\left(\frac{n}{4}\right)+\frac{3065652}{95}a_1\left(\frac{n}{6}\right)+\frac{299354976}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{1591751}{70110}\Delta_{3,8}(n)-\frac{22717481}{35055}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{392241716}{7011}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{284272192}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{180212}{1539}a_4(n)-\frac{340720}{513}a_4\left(\frac{n}{2}\right)-\frac{2615552}{81}a_4\left(\frac{n}{4}\right)-42a_2(n)+\frac{31698}{19}a_2\left(\frac{n}{3}\right)+60a_3(n)$$
$$-\frac{114804}{19}a_3\left(\frac{n}{3}\right)+\frac{725616}{19}a_5(n)+\frac{6683712}{19}a_5\left(\frac{n}{2}\right)-264a_6(n)+\frac{261856}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{282368}{19}a_7(n)+\frac{365824}{19}a_8(n)+\frac{338432}{19}a_9(n),$$

$$N\left(1^9,2^5,3,6;n\right)=\frac{1093}{6691200}\sigma_7(n)-\frac{1093}{6691200}\sigma_7\left(\frac{n}{2}\right)+\frac{729}{2230400}\sigma_7\left(\frac{n}{3}\right)-\frac{1093}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{729}{2230400}\sigma_7\left(\frac{n}{6}\right)+\frac{17488}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{11664}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{17032631}{436050}a_1(n)$$
$$-\frac{779554}{2565}a_1\left(\frac{n}{2}\right)-\frac{14247846}{8075}a_1\left(\frac{n}{3}\right)+\frac{579121696}{218025}a_1\left(\frac{n}{4}\right)-\frac{3061422}{95}a_1\left(\frac{n}{6}\right)+\frac{399407328}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{5090281}{233700}\Delta_{3,8}(n)-\frac{19936878}{116850}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3842024572}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3164610752}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{156262}{2565}a_4(n)+\frac{645104}{513}a_4\left(\frac{n}{2}\right)+\frac{6212864}{135}a_4\left(\frac{n}{4}\right)+2a_2(n)-\frac{76464}{19}a_2\left(\frac{n}{3}\right)+16a_3(n)$$
$$+\frac{159570}{19}a_3\left(\frac{n}{3}\right)-\frac{560736}{19}a_5(n)-\frac{9485568}{19}a_5\left(\frac{n}{2}\right)-28a_6(n)-\frac{349344}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{141600}{19}a_7(n)-\frac{351168}{19}a_8(n)+\frac{27456}{19}a_9(n),$$

$$N\left(1^{10},6^6;n\right)=\frac{61}{3345600}\sigma_7(n)-\frac{61}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{567}{1115200}\sigma_7\left(\frac{n}{3}\right)+\frac{61}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{567}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{18144}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{23816204}{654075}a_1(n)$$
$$-\frac{1050332}{2565}a_1\left(\frac{n}{2}\right)+\frac{171351}{8075}a_1\left(\frac{n}{3}\right)+\frac{1396451648}{654075}a_1\left(\frac{n}{4}\right)-\frac{27396}{95}a_1\left(\frac{n}{6}\right)+\frac{1048557888}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{90779}{350550}\Delta_{3,8}(n)-\frac{98876807}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1125294056}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{6365435776}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{282116}{7695}a_4(n)+\frac{213472}{513}a_4\left(\frac{n}{2}\right)+\frac{3523072}{405}a_4\left(\frac{n}{4}\right)-20a_2(n)-\frac{24732}{19}a_2\left(\frac{n}{3}\right)+40a_3(n)$$
$$+\frac{24732}{19}a_3\left(\frac{n}{3}\right)+\frac{99072}{19}a_5(n)-\frac{1768704}{19}a_5\left(\frac{n}{2}\right)-200a_6(n)-\frac{56128}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{84160}{19}a_7(n)-\frac{1408}{19}a_8(n)+\frac{209536}{19}a_9(n),$$

$$N\left(1^{10},3^{2},6^{4};n\right)=\frac{61}{1672800}\sigma_{7}\left(n\right)-\frac{61}{1672800}\sigma_{7}\left(\frac{n}{2}\right)-\frac{567}{557600}\sigma_{7}\left(\frac{n}{3}\right)$$
$$+\frac{61}{418200}\sigma_{7}\left(\frac{n}{4}\right)+\frac{567}{557600}\sigma_{7}\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_{7}\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_{7}\left(\frac{n}{12}\right)$$
$$+\frac{18144}{17425}\sigma_{7}\left(\frac{n}{24}\right)-\frac{32787328}{654075}a_{1}\left(n\right)-\frac{1351304}{2565}a_{1}\left(\frac{n}{2}\right)+\frac{2784582}{8075}a_{1}\left(\frac{n}{3}\right)$$
$$+\frac{1708859968}{654075}a_{1}\left(\frac{n}{4}\right)+\frac{417168}{95}a_{1}\left(\frac{n}{6}\right)+\frac{908630208}{8075}a_{1}\left(\frac{n}{12}\right)$$
$$-\frac{745139}{175275}\Delta_{3,8}\left(n\right)-\frac{111705274}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{876486376}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{7764185216}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{418312}{7695}a_{4}\left(n\right)+\frac{175840}{513}a_{4}\left(\frac{n}{2}\right)$$
$$+\frac{4070912}{405}a_{4}\left(\frac{n}{4}\right)-20a_{2}\left(n\right)-\frac{6372}{19}a_{2}\left(\frac{n}{3}\right)+40a_{3}\left(n\right)-\frac{12096}{19}a_{3}\left(\frac{n}{3}\right)$$
$$+\frac{198144}{19}a_{5}\left(n\right)-\frac{1939584}{19}a_{5}\left(\frac{n}{2}\right)-240a_{6}\left(n\right)-\frac{57536}{19}a_{6}\left(\frac{n}{2}\right)$$
$$-\frac{153728}{19}a_{7}\left(n\right)-\frac{2816}{19}a_{8}\left(n\right)+\frac{360704}{19}a_{9}\left(n\right),$$

$$N\left(1^{10},3^{4},6^{2};n\right)=\frac{61}{836400}\sigma_{7}\left(n\right)-\frac{61}{836400}\sigma_{7}\left(\frac{n}{2}\right)-\frac{567}{278800}\sigma_{7}\left(\frac{n}{3}\right)$$
$$+\frac{61}{418200}\sigma_{7}\left(\frac{n}{4}\right)+\frac{567}{278800}\sigma_{7}\left(\frac{n}{6}\right)-\frac{1952}{52275}\sigma_{7}\left(\frac{n}{8}\right)-\frac{567}{139400}\sigma_{7}\left(\frac{n}{12}\right)$$
$$+\frac{18144}{17425}\sigma_{7}\left(\frac{n}{24}\right)-\frac{37040326}{654075}a_{1}\left(n\right)-\frac{156664}{2565}a_{1}\left(\frac{n}{2}\right)-\frac{1666206}{8075}a_{1}\left(\frac{n}{3}\right)$$
$$+\frac{1708859968}{654075}a_{1}\left(\frac{n}{4}\right)-\frac{50688}{95}a_{1}\left(\frac{n}{6}\right)+\frac{908630208}{8075}a_{1}\left(\frac{n}{12}\right)-\frac{1654688}{175275}\Delta_{3,8}\left(n\right)$$
$$-\frac{155476828}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1042506856}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{7764185216}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{508144}{7695}a_{4}\left(n\right)+\frac{27104}{57}a_{4}\left(\frac{n}{2}\right)+\frac{4070912}{405}a_{4}\left(\frac{n}{4}\right)-20a_{2}\left(n\right)-\frac{6372}{19}a_{2}\left(\frac{n}{3}\right)$$
$$+40a_{3}\left(n\right)-\frac{12096}{19}a_{3}\left(\frac{n}{3}\right)+\frac{181728}{19}a_{5}\left(n\right)-\frac{1939584}{19}a_{5}\left(\frac{n}{2}\right)-320a_{6}\left(n\right)$$
$$-\frac{57536}{19}a_{6}\left(\frac{n}{2}\right)-\frac{153728}{19}a_{7}\left(n\right)-\frac{2816}{19}a_{8}\left(n\right)+\frac{360704}{19}a_{9}\left(n\right),$$

$$N\left(1^{10},3^{6};n\right)=\frac{61}{418200}\sigma_{7}\left(n\right)-\frac{567}{139400}\sigma_{7}\left(\frac{n}{3}\right)-\frac{1952}{52275}\sigma_{7}\left(\frac{n}{4}\right)$$
$$+\frac{18144}{17425}\sigma_{7}\left(\frac{n}{12}\right)-\frac{509936}{11475}a_{1}\left(n\right)-\frac{2039936}{11475}a_{1}\left(\frac{n}{2}\right)-\frac{826848}{425}a_{1}\left(\frac{n}{3}\right)$$
$$-\frac{6334848}{425}a_{1}\left(\frac{n}{6}\right)-\frac{12256}{1025}\Delta_{3,8}\left(n\right)-\frac{50832}{25}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2656256}{1025}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$+\frac{10304}{135}a_{4}\left(n\right)+\frac{180224}{135}a_{4}\left(\frac{n}{2}\right)-6912a_{5}\left(n\right)-640a_{6}\left(n\right),$$

$$N\left(1^{10},2^2,6^4;n\right)=\frac{91}{1672800}\sigma_7(n)-\frac{91}{1672800}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{557600}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{557600}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{19823588}{654075}a_1(n)$$
$$-\frac{10584}{19}a_1\left(\frac{n}{2}\right)-\frac{48078}{8075}a_1\left(\frac{n}{3}\right)+\frac{2017890944}{654075}a_1\left(\frac{n}{4}\right)-\frac{39240}{19}a_1\left(\frac{n}{6}\right)+\frac{605787264}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{12431}{175275}\Delta_{3,8}(n)-\frac{35643194}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{4111033328}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{9710326528}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{232472}{7695}a_4(n)+\frac{16192}{57}a_4\left(\frac{n}{2}\right)+\frac{9696256}{405}a_4\left(\frac{n}{4}\right)-12a_2(n)-\frac{14040}{19}a_2\left(\frac{n}{3}\right)+32a_3(n)$$
$$+\frac{14040}{19}a_3\left(\frac{n}{3}\right)+\frac{107712}{19}a_5(n)-\frac{4747776}{19}a_5\left(\frac{n}{2}\right)-112a_6(n)-\frac{161152}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{113536}{19}a_7(n)-\frac{124672}{19}a_8(n)+\frac{390400}{19}a_9(n),$$

$$N\left(1^{10},2^2,3^2,6^2;n\right)=\frac{91}{836400}\sigma_7(n)-\frac{91}{836400}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{278800}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{278800}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{2429998}{218025}a_1(n)$$
$$-\frac{45256}{95}a_1\left(\frac{n}{2}\right)-\frac{9415386}{8075}a_1\left(\frac{n}{3}\right)+\frac{723490688}{218025}a_1\left(\frac{n}{4}\right)-\frac{2147256}{95}a_1\left(\frac{n}{6}\right)+\frac{569165184}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{840724}{58425}\Delta_{3,8}(n)-\frac{10538536}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{3238046416}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{3728128256}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{508144}{2565}a_4(n)+\frac{54080}{57}a_4\left(\frac{n}{2}\right)+\frac{5757952}{405}a_4\left(\frac{n}{4}\right)-4a_2(n)-\frac{57996}{19}a_2\left(\frac{n}{3}\right)+24a_3(n)$$
$$+\frac{113400}{19}a_3\left(\frac{n}{3}\right)-\frac{314496}{19}a_5(n)-\frac{8697600}{19}a_5\left(\frac{n}{2}\right)-64a_6(n)-\frac{313472}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{37632}{19}a_7(n)-\frac{296448}{19}a_8(n)+\frac{360704}{19}a_9(n),$$

$$N\left(1^{10},2^2,3^4;n\right)=\frac{91}{418200}\sigma_7(n)-\frac{91}{418200}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{139400}\sigma_7\left(\frac{n}{3}\right)-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{243}{139400}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{36848968}{654075}a_1(n)$$
$$-\frac{538048}{855}a_1\left(\frac{n}{2}\right)-\frac{20489292}{8075}a_1\left(\frac{n}{3}\right)+\frac{3095663744}{654075}a_1\left(\frac{n}{4}\right)-\frac{4377312}{95}a_1\left(\frac{n}{6}\right)-\frac{155051136}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{5488784}{175275}\Delta_{3,8}(n)-\frac{1614776}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{19605038288}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{16900611328}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{644512}{7695}a_4(n)+\frac{293696}{171}a_4\left(\frac{n}{2}\right)+\frac{33442816}{405}a_4\left(\frac{n}{4}\right)+16a_2(n)-\frac{85320}{19}a_2\left(\frac{n}{3}\right)$$
$$+\frac{196128}{19}a_3\left(\frac{n}{3}\right)-\frac{759744}{19}a_5(n)-\frac{16800000}{19}a_5\left(\frac{n}{2}\right)-\frac{613760}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{1333376}{19}a_7(n)-\frac{659968}{19}a_8(n)+\frac{220672}{19}a_9(n),$$

$$N\left(1^{10},2^4,6^2;n\right)=\frac{547}{3345600}\sigma_7\left(n\right)-\frac{547}{3345600}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{1115200}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{729}{1115200}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{3373492}{723675}a_1\left(n\right)-\frac{334684}{855}a_1\left(\frac{n}{2}\right)+\frac{1293057}{8075}a_1\left(\frac{n}{3}\right)$$
$$+\frac{173397184}{72675}a_1\left(\frac{n}{4}\right)+\frac{93204}{95}a_1\left(\frac{n}{6}\right)+\frac{1708883136}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{230551}{116850}\Delta_{3,8}\left(n\right)-\frac{42961123}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{120936416}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{2258033024}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{41308}{855}a_4\left(n\right)+\frac{75488}{171}a_4\left(\frac{n}{2}\right)$$
$$+\frac{114176}{45}a_4\left(\frac{n}{4}\right)-36a_2\left(n\right)-\frac{40500}{19}a_2\left(\frac{n}{3}\right)+56a_3\left(n\right)$$
$$+\frac{40500}{19}a_3\left(\frac{n}{3}\right)+\frac{150336}{19}a_5\left(n\right)-\frac{582912}{19}a_5\left(\frac{n}{2}\right)-248a_6\left(n\right)$$
$$-\frac{11200}{19}a_6\left(\frac{n}{2}\right)-\frac{85056}{19}a_7\left(n\right)+\frac{84864}{19}a_8\left(n\right)+\frac{216960}{19}a_9\left(n\right),$$

$$N\left(1^{10},2^4,3^2;n\right)=\frac{547}{1672800}\sigma_7\left(n\right)-\frac{547}{1672800}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{557600}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{729}{557600}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{34392092}{218025}a_1\left(n\right)-\frac{256840}{513}a_1\left(\frac{n}{2}\right)+\frac{28391094}{8075}a_1\left(\frac{n}{3}\right)$$
$$+\frac{87292864}{72675}a_1\left(\frac{n}{4}\right)+\frac{1188000}{95}a_1\left(\frac{n}{6}\right)+\frac{1587560256}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{2535571}{58425}\Delta_{3,8}\left(n\right)-\frac{38974346}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{5731226296}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{307928704}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{515528}{2565}a_4\left(n\right)-\frac{835040}{513}a_4\left(\frac{n}{2}\right)$$
$$-\frac{2481664}{45}a_4\left(\frac{n}{4}\right)-52a_2\left(n\right)+\frac{96876}{19}a_2\left(\frac{n}{3}\right)+72a_3\left(n\right)$$
$$-\frac{263088}{19}a_3\left(\frac{n}{3}\right)+\frac{1354752}{19}a_5\left(n\right)+\frac{11576448}{19}a_5\left(\frac{n}{2}\right)$$
$$-336a_6\left(n\right)+\frac{454336}{19}a_6\left(\frac{n}{2}\right)-\frac{536448}{19}a_7\left(n\right)$$
$$+\frac{584448}{19}a_8\left(n\right)+\frac{655104}{19}a_9\left(n\right),$$

$$N\left(1^{10},2^6;n\right)=\frac{1}{2040}\sigma_7\left(n\right)-\frac{1}{2040}\sigma_7\left(\frac{n}{2}\right)-\frac{1}{255}\sigma_7\left(\frac{n}{4}\right)+\frac{256}{255}\sigma_7\left(\frac{n}{8}\right)$$
$$-\frac{4}{17}a_1\left(n\right)-16a_1\left(\frac{n}{2}\right)-\frac{512}{17}a_1\left(\frac{n}{4}\right)+4a_2\left(n\right)+16a_3\left(n\right),$$

$$N\left(1^{11},2,3,6^3;n\right)=\frac{73}{669120}\sigma_7(n)-\frac{73}{669120}\sigma_7\left(\frac{n}{2}\right)-\frac{243}{223040}\sigma_7\left(\frac{n}{3}\right)+\frac{73}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{243}{223040}\sigma_7\left(\frac{n}{6}\right)-\frac{1168}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3888}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{1733968}{26163}a_1(n)$$
$$-\frac{1312544}{2565}a_1\left(\frac{n}{2}\right)+\frac{225495}{323}a_1\left(\frac{n}{3}\right)+\frac{60791584}{26163}a_1\left(\frac{n}{4}\right)+\frac{981468}{95}a_1\left(\frac{n}{6}\right)+\frac{53901792}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{120763}{14022}\Delta_{3,8}(n)-\frac{23961257}{35055}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{407513908}{35055}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{257785664}{7011}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{115172}{1539}a_4(n)+\frac{65488}{513}a_4\left(\frac{n}{2}\right)-\frac{114944}{81}a_4\left(\frac{n}{4}\right)-30a_2(n)-\frac{9450}{19}a_2\left(\frac{n}{3}\right)+52a_3(n)$$
$$-\frac{18252}{19}a_3\left(\frac{n}{3}\right)+\frac{354096}{19}a_5(n)+\frac{347712}{19}a_5\left(\frac{n}{2}\right)-264a_6(n)+\frac{26976}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{161024}{19}a_7(n)+\frac{113920}{19}a_8(n)+\frac{346112}{19}a_9(n),$$

$$N\left(1^{11},2,3^3,6;n\right)=\frac{73}{334560}\sigma_7(n)-\frac{73}{334560}\sigma_7\left(\frac{n}{2}\right)-\frac{243}{111520}\sigma_7\left(\frac{n}{3}\right)+\frac{73}{167280}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{243}{111520}\sigma_7\left(\frac{n}{6}\right)-\frac{1168}{10455}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{55760}\sigma_7\left(\frac{n}{12}\right)+\frac{3888}{3485}\sigma_7\left(\frac{n}{24}\right)-\frac{13727401}{130815}a_1(n)$$
$$-\frac{1239796}{2565}a_1\left(\frac{n}{2}\right)+\frac{2925549}{1615}a_1\left(\frac{n}{3}\right)+\frac{203091616}{130815}a_1\left(\frac{n}{4}\right)+\frac{2900592}{95}a_1\left(\frac{n}{6}\right)+\frac{288094176}{1615}a_1\left(\frac{n}{12}\right)$$
$$-\frac{783518}{35055}\Delta_{3,8}(n)-\frac{31490206}{35055}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{344985772}{7011}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{639194432}{35055}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{195736}{1539}a_4(n)-\frac{210832}{513}a_4\left(\frac{n}{2}\right)-\frac{2123008}{81}a_4\left(\frac{n}{4}\right)-38a_2(n)+\frac{33102}{19}a_2\left(\frac{n}{3}\right)+60a_3(n)$$
$$-\frac{116208}{19}a_3\left(\frac{n}{3}\right)+\frac{718128}{19}a_5(n)+\frac{5490624}{19}a_5\left(\frac{n}{2}\right)-352a_6(n)+\frac{220576}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{297280}{19}a_7(n)+\frac{325760}{19}a_8(n)+\frac{430720}{19}a_9(n),$$

$$N\left(1^{11},2^3,3,6;n\right)=\frac{1093}{3345600}\sigma_7(n)-\frac{1093}{3345600}\sigma_7\left(\frac{n}{2}\right)+\frac{729}{1115200}\sigma_7\left(\frac{n}{3}\right)+\frac{1093}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{729}{1115200}\sigma_7\left(\frac{n}{6}\right)+\frac{17488}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{11644}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{7141436}{218025}a_1(n)$$
$$-\frac{941816}{2565}a_1\left(\frac{n}{2}\right)-\frac{13585077}{8075}a_1\left(\frac{n}{3}\right)+\frac{631987616}{218025}a_1\left(\frac{n}{4}\right)-\frac{3070548}{95}a_1\left(\frac{n}{6}\right)+\frac{515001888}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{808837}{38950}\Delta_{3,8}(n)-\frac{3589729}{19475}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1277629924}{19475}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1134211264}{19475}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{137684}{2565}a_4(n)+\frac{640048}{513}a_4\left(\frac{n}{2}\right)+\frac{6317824}{135}a_4\left(\frac{n}{4}\right)+2a_2(n)-\frac{79218}{19}a_2\left(\frac{n}{3}\right)+20a_3(n)$$
$$+\frac{162324}{19}a_3\left(\frac{n}{3}\right)-\frac{521424}{19}a_5(n)-\frac{9640512}{19}a_5\left(\frac{n}{2}\right)-40a_6(n)-\frac{353632}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{140544}{19}a_7(n)-\frac{343296}{19}a_8(n)+\frac{73728}{19}a_9(n),$$

$$N\left(1^{12},6^4;n\right)=\frac{91}{836400}\sigma_7(n)-\frac{91}{836400}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{278800}\sigma_7\left(\frac{n}{3}\right)$$
$$-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)-\frac{243}{278800}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{28703596}{654075}a_1(n)-\frac{1073488}{2565}a_1\left(\frac{n}{2}\right)+\frac{2483424}{8075}a_1\left(\frac{n}{3}\right)$$
$$+\frac{1245280384}{654075}a_1\left(\frac{n}{4}\right)+\frac{427536}{95}a_1\left(\frac{n}{6}\right)+\frac{1293381504}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{666398}{175275}\Delta_{3,8}(n)-\frac{24418468}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{724178672}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{5468158208}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{366544}{7695}a_4(n)-\frac{43840}{513}a_4\left(\frac{n}{2}\right)$$
$$+\frac{1104896}{405}a_4\left(\frac{n}{4}\right)-24a_2(n)-\frac{30672}{19}a_2\left(\frac{n}{3}\right)+48a_3(n)$$
$$+\frac{30672}{19}a_3\left(\frac{n}{3}\right)+\frac{294912}{19}a_5(n)-\frac{595200}{19}a_5\left(\frac{n}{2}\right)-96a_6(n)$$
$$-\frac{13184}{19}a_6\left(\frac{n}{2}\right)-\frac{58112}{19}a_7(n)+\frac{67072}{19}a_8(n)+\frac{206336}{19}a_9(n),$$

$$N\left(1^{12},3^2,6^2;n\right)=\frac{91}{418200}\sigma_7(n)-\frac{91}{418200}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{139400}\sigma_7\left(\frac{n}{3}\right)$$
$$-\frac{91}{209100}\sigma_7\left(\frac{n}{4}\right)-\frac{243}{139400}\sigma_7\left(\frac{n}{6}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{243}{69700}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{15552}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{16455892}{654075}a_1(n)-\frac{856432}{2565}a_1\left(\frac{n}{2}\right)+\frac{14820048}{8075}a_1\left(\frac{n}{3}\right)$$
$$+\frac{1245280384}{654075}a_1\left(\frac{n}{4}\right)+\frac{1461744}{95}a_1\left(\frac{n}{6}\right)+\frac{1293381504}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{2336704}{175275}\Delta_{3,8}(n)+\frac{10816424}{175275}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{751100912}{175275}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{5468158208}{175275}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{90208}{7695}a_4(n)+\frac{14528}{513}a_4\left(\frac{n}{2}\right)+\frac{1104896}{405}a_4\left(\frac{n}{4}\right)$$
$$-24a_2(n)-\frac{30672}{19}a_2\left(\frac{n}{3}\right)+48a_3(n)+\frac{30672}{19}a_3\left(\frac{n}{3}\right)+\frac{196416}{19}a_5(n)$$
$$-\frac{595200}{19}a_5\left(\frac{n}{2}\right)-\frac{13184}{19}a_6\left(\frac{n}{2}\right)-\frac{58112}{19}a_7(n)+\frac{67072}{19}a_8(n)+\frac{206336}{19}a_9(n),$$

$$N\left(1^{12},3^4;n\right)=\frac{91}{209100}\sigma_7(n)-\frac{91}{104550}\sigma_7\left(\frac{n}{2}\right)+\frac{243}{69700}\sigma_7\left(\frac{n}{3}\right)+\frac{5824}{52275}\sigma_7\left(\frac{n}{4}\right)-\frac{243}{34850}\sigma_7\left(\frac{n}{6}\right)$$
$$+\frac{15552}{17425}\sigma_7\left(\frac{n}{12}\right)+\frac{44416}{3825}a_1(n)+\frac{118784}{3825}a_1\left(\frac{n}{2}\right)+\frac{1275264}{425}a_1\left(\frac{n}{3}\right)+\frac{11943936}{425}a_1\left(\frac{n}{6}\right)$$
$$+\frac{35808}{1025}\Delta_{3,8}(n)-\frac{1920}{41}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{5640192}{1025}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{1024}{45}a_4(n)+\frac{16384}{45}a_4\left(\frac{n}{2}\right),$$

$$N\left(1^{12},2^2,6^2;n\right)=\frac{547}{1672800}\sigma_7(n)-\frac{547}{1672800}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{557600}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{729}{557600}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{4337914}{72675}a_1(n)-\frac{1344688}{2565}a_1\left(\frac{n}{2}\right)+\frac{2296944}{8075}a_1\left(\frac{n}{3}\right)$$
$$+\frac{625923392}{218025}a_1\left(\frac{n}{4}\right)+\frac{99576}{95}a_1\left(\frac{n}{6}\right)+\frac{1940072256}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{204721}{58425}\Delta_{3,8}(n)-\frac{50435486}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{113806456}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{2734079104}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{53896}{855}a_4(n)+\frac{264992}{513}a_4\left(\frac{n}{2}\right)+\frac{552448}{135}a_4\left(\frac{n}{4}\right)$$
$$-40a_2(n)-\frac{46008}{19}a_2\left(\frac{n}{3}\right)+64a_3(n)+\frac{46008}{19}a_3\left(\frac{n}{3}\right)+\frac{212544}{19}a_5(n)$$
$$-\frac{892800}{19}a_5\left(\frac{n}{2}\right)-304a_6(n)-\frac{19776}{19}a_6\left(\frac{n}{2}\right)$$
$$-\frac{87168}{19}a_7(n)+\frac{100608}{19}a_8(n)+\frac{309504}{19}a_9(n),$$

$$N\left(1^{12},2^2,3^2;n\right)=\frac{547}{836400}\sigma_7(n)-\frac{547}{836400}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{278800}\sigma_7\left(\frac{n}{3}\right)$$
$$+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)+\frac{729}{278800}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)$$
$$+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{12235798}{72675}a_1(n)-\frac{495656}{855}a_1\left(\frac{n}{2}\right)+\frac{28200258}{8075}a_1\left(\frac{n}{3}\right)$$
$$+\frac{87292864}{72675}a_1\left(\frac{n}{4}\right)+\frac{5915376}{95}a_1\left(\frac{n}{6}\right)+\frac{1587560256}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{2518072}{58425}\Delta_{3,8}(n)-\frac{58601612}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)+\frac{5756652856}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)$$
$$-\frac{307928704}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)+\frac{183952}{855}a_4(n)-\frac{236192}{171}a_4\left(\frac{n}{2}\right)$$
$$-\frac{2481664}{45}a_4\left(\frac{n}{4}\right)-52a_2(n)+\frac{96876}{19}a_2\left(\frac{n}{3}\right)+72a_3(n)$$
$$-\frac{263088}{19}a_3\left(\frac{n}{3}\right)+\frac{1371168}{19}a_5(n)+\frac{11576448}{19}a_5\left(\frac{n}{2}\right)-448a_6(n)$$
$$+\frac{454336}{19}a_6\left(\frac{n}{2}\right)-\frac{536448}{19}a_7(n)+\frac{584448}{19}a_8(n)+\frac{655104}{19}a_9(n),$$

$$N\left(1^{12},2^4;n\right)=\frac{1}{1020}\sigma_7(n)-\frac{1}{1020}\sigma_7\left(\frac{n}{2}\right)-\frac{1}{255}\sigma_7\left(\frac{n}{4}\right)+\frac{256}{255}\sigma_7\left(\frac{n}{8}\right)$$
$$-\frac{8}{17}a_1(n)-16a_1\left(\frac{n}{2}\right)-\frac{512}{17}a_1\left(\frac{n}{4}\right)+8a_2(n)+16a_3(n),$$

$$N\left(1^{13},2,3,6;n\right)=\frac{1093}{1672800}\sigma_7(n)-\frac{1093}{1672800}\sigma_7\left(\frac{n}{2}\right)+\frac{729}{557600}\sigma_7\left(\frac{n}{3}\right)-\frac{1093}{836400}\sigma_7\left(\frac{n}{4}\right)$$
$$-\frac{729}{557600}\sigma_7\left(\frac{n}{6}\right)+\frac{17488}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{278800}\sigma_7\left(\frac{n}{12}\right)+\frac{11664}{17425}\sigma_7\left(\frac{n}{24}\right)+\frac{5030027}{218025}a_1(n)$$
$$-\frac{662156}{2565}a_1\left(\frac{n}{2}\right)-\frac{11089089}{8075}a_1\left(\frac{n}{3}\right)+\frac{491700896}{218025}a_1\left(\frac{n}{4}\right)-\frac{2587248}{95}a_1\left(\frac{n}{6}\right)+\frac{1146292128}{8075}a_1\left(\frac{n}{12}\right)$$
$$+\frac{990076}{58425}\Delta_{3,8}(n)-\frac{2021554}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{2640378532}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{2580114752}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$-\frac{103448}{2565}a_4(n)+\frac{453904}{513}a_4\left(\frac{n}{2}\right)+\frac{4274944}{135}a_4\left(\frac{n}{4}\right)-10a_2(n)-\frac{94446}{19}a_2\left(\frac{n}{3}\right)+36a_3(n)$$
$$+\frac{177552}{19}a_3\left(\frac{n}{3}\right)-\frac{358128}{19}a_5(n)-\frac{6681024}{19}a_5\left(\frac{n}{2}\right)-\frac{246944}{19}a_6\left(\frac{n}{2}\right)+\frac{181056}{19}a_7(n)$$
$$-\frac{191616}{19}a_8(n)-\frac{18048}{19}a_9(n),$$

$$N\left(1^{14},6^2;n\right)=\frac{547}{836400}\sigma_7(n)-\frac{547}{836400}\sigma_7\left(\frac{n}{2}\right)-\frac{729}{278800}\sigma_7\left(\frac{n}{3}\right)+\frac{547}{418200}\sigma_7\left(\frac{n}{4}\right)$$
$$+\frac{729}{278800}\sigma_7\left(\frac{n}{6}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{8}\right)-\frac{729}{139400}\sigma_7\left(\frac{n}{12}\right)+\frac{23328}{17425}\sigma_7\left(\frac{n}{24}\right)-\frac{266098}{72675}a_1(n)$$
$$-\frac{1689416}{2565}a_1\left(\frac{n}{2}\right)-\frac{60616242}{8075}a_1\left(\frac{n}{3}\right)+\frac{989968192}{218025}a_1\left(\frac{n}{4}\right)-\frac{8818848}{95}a_1\left(\frac{n}{6}\right)+\frac{2292584256}{8075}a_1\left(\frac{n}{12}\right)$$
$$-\frac{894472}{58425}\Delta_{3,8}(n)-\frac{77504252}{58425}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{5555962184}{58425}\Delta_{3,8}\left(\frac{n}{4}\right)-\frac{5160229504}{58425}\Delta_{3,8}\left(\frac{n}{8}\right)$$
$$+\frac{15952}{855}a_4(n)+\frac{1063456}{513}a_4\left(\frac{n}{2}\right)+\frac{8549888}{135}a_4\left(\frac{n}{4}\right)-28a_2(n)-\frac{188892}{19}a_2\left(\frac{n}{3}\right)+56a_3(n)$$
$$+\frac{355104}{19}a_3\left(\frac{n}{3}\right)-\frac{650592}{19}a_5(n)-\frac{13362048}{19}a_5\left(\frac{n}{2}\right)-448a_6(n)-\frac{493888}{19}a_6\left(\frac{n}{2}\right)$$
$$+\frac{362112}{19}a_7(n)-\frac{383232}{19}a_8(n)-\frac{36096}{19}a_9(n),$$

$$N\left(1^{14},3^2;n\right)=\frac{547}{418200}\sigma_7(n)-\frac{729}{139400}\sigma_7\left(\frac{n}{3}\right)-\frac{17504}{52275}\sigma_7\left(\frac{n}{4}\right)+\frac{23328}{17425}\sigma_7\left(\frac{n}{12}\right)$$
$$-\frac{1045712}{11475}a_1(n)-\frac{4395392}{11475}a_1\left(\frac{n}{2}\right)-\frac{2133216}{425}a_1\left(\frac{n}{3}\right)-\frac{14691456}{425}a_1\left(\frac{n}{6}\right)-\frac{47152}{1025}\Delta_{3,8}(n)$$
$$-\frac{64624}{25}\Delta_{3,8}\left(\frac{n}{2}\right)-\frac{1196032}{1025}\Delta_{3,8}\left(\frac{n}{4}\right)+\frac{22208}{135}a_4(n)+\frac{155648}{135}a_4\left(\frac{n}{2}\right)+6912a_5(n)$$
$$-896a_6(n),$$

$$N\left(1^{14},2^2;n\right)=\frac{1}{510}\sigma_7(n)-\frac{1}{510}\sigma_7\left(\frac{n}{2}\right)-\frac{1}{255}\sigma_7\left(\frac{n}{4}\right)+\frac{256}{255}\sigma_7\left(\frac{n}{8}\right)+\frac{52}{17}a_1(n)$$
$$+48a_1\left(\frac{n}{2}\right)-\frac{512}{17}a_1\left(\frac{n}{4}\right)+8a_2(n)+16a_3(n),$$

$$N\left(1^{16};n\right)=\frac{1}{255}\sigma_7(n)-\frac{2}{255}\sigma_7\left(\frac{n}{2}\right)+\frac{256}{255}\sigma_7\left(\frac{n}{4}\right)+\frac{512}{17}a_1(n)+\frac{8192}{17}a_1\left(\frac{n}{2}\right),$$

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