

# SUPPLEMENTARY MATERIAL

*An algorithm for determining torsion growth of elliptic curves*, arXiv: 1904.07071  
Enrique González–Jiménez and Filip Najman.

## TORSION GROWTH OF ELLIPTIC CURVE

- $\Phi_{\mathbb{Q}}(d)$  is the set of groups, up to isomorphism, that occur as torsion groups  $E(K)_{tors}$  of an elliptic curve  $E/\mathbb{Q}$  base change to a number field  $K$  of degree  $d$ .
- Given  $G \in \Phi(1)$ , let  $\Phi_{\mathbb{Q}}(d, G)$  the subset of  $\Phi_{\mathbb{Q}}(d)$  consisting of all torsion groups  $E(K)_{tors}$  of an elliptic curve  $E/\mathbb{Q}$  such that  $E(\mathbb{Q})_{tors} = G$  base change to a number field  $K$  of degree  $d$ .
- $\mathcal{H}_{\mathbb{Q}}(d, E)$  the set of torsion configurations of degree  $d$  of the elliptic curve  $E/\mathbb{Q}$ . That is, the multiset formed by  $E(\mathbb{Q})_{tors}$  together with the groups  $H$  such that there exists a number field  $K$  of degree dividing  $d$  such that  $E$  has primitive torsion growth over  $K$  and  $E(K)_{tors} = H$ .
- $\mathcal{H}_{\mathbb{Q}}(d)$  the set of  $\mathcal{H}_{\mathbb{Q}}(d, E)$  as  $E$  runs over all elliptic curves defined over  $\mathbb{Q}$  such that  $\mathcal{H}_{\mathbb{Q}}(d, E) \neq \{E(\mathbb{Q})_{tors}\}$ .
- $N_{\mathbb{Q}}(d)$  the maximum of  $N_{\mathbb{Q}}(S)$  for all  $S \in \mathcal{H}_{\mathbb{Q}}(d)$ , where  $N_{\mathbb{Q}}(S)$  denotes the minimum conductor  $N_{\mathbb{Q}}(E)$  such that  $\mathcal{H}_{\mathbb{Q}}(d, E) = S$ .
- $h_{\mathbb{Q}}(d)$  the maximum number of field extensions of degrees dividing  $d$  where there is primitive torsion growth. That is, the maximum of the cardinality of the sets  $S \in \mathcal{H}_{\mathbb{Q}}(d)$ .

## PRIMITIVE TORSION GROWTH

- $\Psi_{\mathbb{Q}}(d) \subseteq \Phi_{\mathbb{Q}}(d)$  the set of groups, up to isomorphism, that appear as primitive torsion growth of an elliptic curve defined over  $\mathbb{Q}$  over a number field of degree  $d$ .
- $\Psi_{\mathbb{Q}}(d, G)$ ,  $\mathcal{G}_{\mathbb{Q}}(d, E)$ ,  $\mathcal{G}_{\mathbb{Q}}(d)$ ,  $g_{\mathbb{Q}}(d)$ ,  $M_{\mathbb{Q}}(d)$  analogously to  $\Phi_{\mathbb{Q}}(d, G)$ ,  $\mathcal{H}_{\mathbb{Q}}(d, E)$ ,  $\mathcal{H}_{\mathbb{Q}}(d)$ ,  $h_{\mathbb{Q}}(d)$ ,  $N_{\mathbb{Q}}(d)$ , respectively.

$$d = 2$$

$$\Phi_{\mathbb{Q}}(2) = \{(3), (4), (5), (6), (7), (8), (9), (10), (12), (15), (16), (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (3, 3), (3, 6), (4, 4)\}$$

$G$	$\Phi_{\mathbb{Q}}(2, G) \setminus \{G\}$
( )	\{(3), (5), (7), (9)\}
(2)	\{(4), (6), (8), (10), (12), (16), (2, 2), (2, 6), (2, 10)\}
(3)	\{(15), (3, 3)\}
(4)	\{(8), (12), (2, 4), (2, 8), (2, 12), (4, 4)\}
(5)	\{(15)\}
(6)	\{(12), (2, 6), (3, 6)\}
(7)	\{\}
(8)	\{(16), (2, 8)\}
(9)	\{\}
(10)	\{(2, 10)\}
(12)	\{(2, 12)\}
(2, 2)	\{(2, 4), (2, 6), (2, 8), (2, 12)\}
(2, 4)	\{(2, 8), (4, 4)\}
(2, 6)	\{(2, 12)\}
(2, 8)	\{\}

$$h_{\mathbb{Q}}(2) = 4 \quad \#\mathcal{H}_{\mathbb{Q}}(2) = 52 \quad N_{\mathbb{Q}}(2) = 3150$$

$G$	$\mathcal{H}_{\mathbb{Q}}(2, E)$	Label
()	(3)	19a2
()	(5)	75a2
()	(7)	208d1
()	(9)	54a2
()	$(3)^2$	175b2
()	(3), (5)	50a4
(2)	(2, 2)	46a1
(2)	(2, 6)	36a3
(2)	(2, 10)	450a3
(2)	(6), (2, 2)	14a3
(2)	(6), (2, 6)	98a3
(2)	(10), (2, 2)	150b3
(2)	$(4)^2$ , (2, 2)	15a5
(2)	$(4)^2$ , (2, 6)	450g1
(2)	(4), (8), (2, 2)	24a6
(2)	(4), (12), (2, 2)	30a3
(2)	(4), (16), (2, 2)	3150bk1
(2)	$(6)^2$ , (2, 2)	98a4
(2)	$(8)^2$ , (2, 2)	2880r6
(2)	$(4)^2$ , (6), (2, 2)	30a7
(3)	(3, 3)	19a1
(3)	(15)	50a3
(4)	(2, 4)	17a1
(4)	(2, 8)	192c6
(4)	(2, 12)	150c3
(4)	(4, 4)	40a4
(4)	(12), (2, 4)	90c1
(4)	$(8)^2$ , (2, 4)	15a7
(4)	$(8)^2$ , (2, 8)	240d6
(5)	(15)	50b1
(6)	(2, 6)	14a4
(6)	(2, 6), (3, 6)	14a1
(6)	$(12)^2$ , (2, 6)	30a1
(8)	(2, 8)	15a4
(8)	$(16)^2$ , (2, 8)	210e1
(10)	(2, 10)	66c1
(12)	(2, 12)	90c3
(2, 2)	(2, 4)	33a1
(2, 2)	(2, 6)	30a6
(2, 2)	(2, 8)	63a2
(2, 2)	(2, 12)	960o6
(2, 2)	$(2, 4)^2$	17a2
(2, 2)	(2, 4), (2, 6)	90c2
(2, 2)	(2, 4), (2, 8)	75b3

$G$	$\mathcal{H}_{\mathbb{Q}}(2, E)$	Label
(2, 2)	$(2, 4)^3$	15a2
(2, 2)	$(2, 4)^2, (2, 8)$	510e5
(2, 4)	$(2, 8)$	15a3
(2, 4)	$(4, 4)$	195a3
(2, 4)	$(2, 8)^2$	1230f2
(2, 4)	$(2, 8), (4, 4)$	15a1
(2, 4)	$(2, 8)^2, (4, 4)$	210e3
(2, 6)	$(2, 12)$	90c6

$$d = 3$$

$$\Phi_{\mathbb{Q}}(3) = \{(2), (3), (4), (6), (7), (9), (10), (12), (13), (14), (18), (21), (2, 2), (2, 6), (2, 14)\}$$

$G$	$\Phi_{\mathbb{Q}}(3, G) \setminus \{G\}$
()	\{(2), (3), (4), (6), (7), (13), (2, 2), (2, 14)\}
(2)	\{(6), (14)\}
(3)	\{(6), (9), (12), (21), (2, 6)\}
(4)	\{(12)\}
(5)	\{(10)\}
(6)	\{(18)\}
(7)	\{(14)\}
(8)	\{\}
(9)	\{(18)\}
(10)	\{\}
(12)	\{\}
(2, 2)	\{(2, 6)\}
(2, 4)	\{\}
(2, 6)	\{\}
(2, 8)	\{\}

$$h_{\mathbb{Q}}(3) = 3 \quad \#\mathcal{H}_{\mathbb{Q}}(3) = 26 \quad N_{\mathbb{Q}}(3) = 3969$$

$G$	$\mathcal{H}_{\mathbb{Q}}(3, E)$	Label
()	(2)	11a2
()	(2, 2)	196a1
()	(2, 14)	1922c1
()	(4)	338b2
()	(6)	108a2
()	(2), (3)	19a2
()	(2), (7)	294a1
()	(2), (13)	147b1
()	(3), (2, 2)	196b2
()	(3), (4)	162d2
()	(4), (7)	338b1
()	(7), (2, 2)	3969a1
()	(2), (3), (7)	162b2
(2)	(6)	14a3
(2)	(14)	49a3
(3)	(2, 6)	196b1
(3)	(6)	19a1
(3)	(12)	162d1
(3)	(6), (9)	19a3
(3)	(6), (21)	162b1
(4)	(12)	90c1
(5)	(10)	11a1
(6)	(18)	14a4
(7)	(14)	26b1
(9)	(18)	54b3
(2, 2)	(2, 6)	30a6

$$d = 4$$

$$\Phi_{\mathbb{Q}}(4) = \left\{ \begin{array}{l} (3), (4), (5), (6), (7), (8), (9), (10), (12), (13), (15), (16), (20), (24), \\ (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (3, 3), (3, 6), (4, 4), (4, 8), (5, 5), (6, 6) \end{array} \right\}$$

$G$	$\Phi_{\mathbb{Q}}(4, G) \setminus \{G\} \supseteq$
( )	{(3), (5), (7), (9), (13), (15), (3, 3), (5, 5)}
(2)	{(4), (6), (8), (10), (12), (16), (20), (24), (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (3, 6), (4, 4), (4, 8), (6, 6)}
(3)	{(15), (3, 3)}
(4)	{(8), (12), (16), (24), (2, 4), (2, 8), (2, 12), (2, 16), (4, 4), (4, 8)}
(5)	{(15), (5, 5)}
(6)	{(12), (24), (2, 6), (2, 12), (3, 6), (6, 6)}
(7)	{}
(8)	{(16), (2, 8), (2, 16), (4, 8)}
(9)	{}
(10)	{(20), (2, 10)}
(12)	{(24), (2, 12)}
(2, 2)	{(2, 4), (2, 6), (2, 8), (2, 12), (2, 16), (4, 4), (4, 8)}
(2, 4)	{(2, 8), (2, 16), (4, 4), (4, 8)}
(2, 6)	{(2, 12)}
(2, 8)	{(2, 16), (4, 8)}

$$h_{\mathbb{Q}}(4) \geq 9 \quad \#\mathcal{H}_{\mathbb{Q}}(4) \geq 130 \quad N_{\mathbb{Q}}(4) \geq 14400$$

$G$	$\mathcal{H}_{\mathbb{Q}}(4, E)$	Label
()	(3)	19a2
()	(5)	11a2
()	(7)	208d1
()	(9)	54a2
()	(13)	2890d1
()	$(3)^2$	121b1
()	(3), (5)	50a2
()	(3), (15)	50b3
()	$(5)^2$	99d2
()	(5), (5, 5)	275b2
()	$(3)^2, (3, 3)$	175b2
()	$(3)^2, (5)$	338d1
()	(3), (5), (15)	50a4
(2)	(2, 2), (2, 4)	200b1
(2)	(4), (2, 2)	46a1
(2)	(4), (2, 6)	36a3
(2)	(4), (2, 10)	450a3
(2)	(4), (2, 2), (2, 4)	49a1
(2)	(4), (2, 2), (2, 10)	1014c2
(2)	(4), (2, 6), (2, 12)	1040g2
(2)	(4), (10), (2, 2)	66c3
(2)	(8), (2, 2), (2, 4)	294f1
(2)	$(4)^2, (2, 2), (2, 4)$	120b1
(2)	$(4)^2, (2, 2), (4, 4)$	320a4
(2)	$(4)^2, (2, 6), (2, 12)$	450g1
(2)	(4), (6), (2, 2), (2, 6)	14a3
(2)	(4), (6), (2, 6), (6, 6)	98a3
(2)	(4), $(6)^2, (2, 2)$	726a2
(2)	(4), (8), (2, 2), (2, 8)	45a1
(2)	(4), (10), (2, 2), (2, 10)	150b3
(2)	(4), (12), (2, 2), (2, 12)	30a3
(2)	(4), (16), (2, 2), (2, 16)	3150bk1
(2)	$(6)^2, (2, 2), (2, 4)$	256a1
(2)	(6), (12), (2, 2), (2, 6)	36a4
(2)	$(8)^2, (2, 2), (4, 8)$	2880r6
(2)	(10), (20), (2, 2), (2, 10)	450a4
(2)	$(4)^2, (2, 2), (2, 4)^2$	33a4
(2)	$(4)^2, (2, 6), (2, 12)^2$	960o7
(2)	$(4)^2, (8), (2, 2), (2, 4)$	33a2
(2)	$(4)^2, (8), (2, 2), (4, 4)$	64a4
(2)	(4), (6), (2, 2), (2, 4), (2, 6)	130a4
(2)	(4), (8), (2, 2), (2, 4), (2, 8)	144b1
(2)	(4), (8), (12), (2, 2), (2, 12)	960e3
(2)	(4), (8), (16), (2, 2), (2, 8)	63a1



$G$	$\mathcal{H}_{\mathbb{Q}}(4, E)$	Label
(2)	(4), (12), (2, 2), (2, 4), (2, 12)	720j3
(2)	(4), (12), (24), (2, 2), (2, 12)	960o3
(2)	$(4)^2$ , (8), (2, 2), $(2, 4)^2$	17a3
(2)	$(4)^2$ , $(8)^2$ , (2, 2), (2, 4)	45a3
(2)	(4), $(8)^2$ , (2, 2), (2, 4), (2, 8)	24a6
(2)	(4), $(8)^3$ , (2, 2), (2, 8)	45a6
(2)	(4), (8), $(16)^2$ , (2, 2), (2, 8)	75b1
(2)	$(4)^2$ , $(8)^2$ , (2, 2), $(2, 4)^2$	63a6
(2)	(4), $(6)^2$ , (2, 2), $(2, 6)^2$ , (3, 6)	112c3
(2)	(4), $(8)^3$ , (16), (2, 2), (2, 8)	75b6
(2)	(4), $(8)^2$ , (16), (2, 2), (2, 4), (2, 8)	510e7
(2)	(4), (8), $(16)^2$ , (2, 2), (2, 4), (2, 8)	1470k3
(2)	$(6)^2$ , (12), (2, 2), $(2, 6)^2$ , (3, 6)	98a4
(2)	$(4)^2$ , (6), $(12)^2$ , (2, 2), (2, 4), (2, 6)	30a7
(2)	$(4)^2$ , $(8)^3$ , (2, 2), $(2, 4)^2$	15a5
(2)	$(4)^2$ , $(8)^4$ , (2, 2), (2, 4)	630c6
(2)	$(4)^2$ , $(8)^4$ , (2, 2), (4, 4)	4410r6
(2)	(4), $(8)^2$ , $(16)^2$ , (2, 2), (2, 4), (2, 8)	1680p1
(2)	$(4)^2$ , (6), (8), $(12)^2$ , (2, 2), (2, 4), (2, 6)	90c5
(2)	$(4)^2$ , (6), $(12)^2$ , (2, 2), $(2, 4)^2$ , (2, 6)	90c4
(3)	(3, 3)	19a1
(3)	(15)	50a1
(4)	(2, 4), (2, 8)	64a3
(4)	(8), (2, 4)	33a3
(4)	(8), (2, 8)	192c6
(4)	(8), (2, 12)	150c3
(4)	(8), (4, 4)	40a4
(4)	(8), (2, 4), (2, 8)	17a4
(4)	(8), (2, 4), (4, 4)	17a1
(4)	(8), (2, 8), (2, 16)	1470k1
(4)	$(8)^2$ , (2, 4), (2, 8)	24a3
(4)	$(8)^2$ , (2, 8), (4, 8)	240d6
(4)	(8), (12), (2, 4), (2, 12)	90c1
(4)	(12), (24), (2, 4), (2, 12)	960o8
(4)	$(8)^2$ , (16), (2, 4), (2, 8)	21a4
(4)	$(8)^2$ , (2, 4), $(2, 8)^2$ , (4, 4)	195a6
(4)	$(8)^2$ , $(16)^2$ , (2, 4), (2, 8)	15a7
(4)	$(8)^2$ , $(16)^3$ , (2, 4), (2, 8)	1230f4
(4)	$(8)^2$ , $(16)^2$ , (2, 4), $(2, 8)^2$ , (4, 4)	210e6
(5)	(5, 5)	11a1
(5)	(15)	50b1
(6)	(12), (2, 6)	14a4
(6)	(12), (2, 6), (2, 12)	130a2
(6)	(12), (2, 6), (3, 6), (6, 6)	14a1

$G$	$\mathcal{H}_{\mathbb{Q}}(4, E)$	Label
(6)	$(12)^2, (2, 6), (2, 12)$	30a1
(6)	$(12)^2, (2, 6), (2, 12)^2$	90c7
(6)	$(12)^2, (24), (2, 6), (2, 12)$	90c8
(8)	$(16), (2, 8)$	21a3
(8)	$(16), (2, 8), (2, 16)$	1230f1
(8)	$(16), (2, 8), (4, 8)$	15a4
(8)	$(16)^2, (2, 8), (2, 16)$	210e1
(10)	$(20), (2, 10)$	66c1
(12)	$(24), (2, 12)$	90c3
(2, 2)	$(2, 4), (4, 4)$	64a1
(2, 2)	$(2, 4)^3$	33a1
(2, 2)	$(2, 4)^2, (2, 8)$	63a2
(2, 2)	$(2, 4)^2, (2, 12)$	960o6
(2, 2)	$(2, 4)^2, (4, 4)$	17a2
(2, 2)	$(2, 4)^2, (4, 8)$	1200j4
(2, 2)	$(2, 4), (2, 8), (4, 8)$	75b3
(2, 2)	$(2, 4)^3, (2, 6)$	210a6
(2, 2)	$(2, 4)^3, (2, 8)$	45a5
(2, 2)	$(2, 4)^3, (4, 4)$	231a3
(2, 2)	$(2, 4)^2, (2, 6), (2, 12)$	30a6
(2, 2)	$(2, 4)^2, (2, 8), (2, 16)$	75b2
(2, 2)	$(2, 4)^2, (2, 8), (4, 4)$	40a1
(2, 2)	$(2, 4)^2, (2, 8), (4, 8)$	510e5
(2, 2)	$(2, 4), (2, 6), (2, 12)^2$	14400bo6
(2, 2)	$(2, 4)^3, (2, 6), (2, 12)$	90c2
(2, 2)	$(2, 4)^3, (2, 8)^2$	45a2
(2, 2)	$(2, 4)^3, (2, 8), (4, 4)$	21a2
(2, 2)	$(2, 4)^2, (2, 6), (2, 12)^2$	720j6
(2, 2)	$(2, 4)^2, (2, 8)^2, (4, 4)$	75b5
(2, 2)	$(2, 4), (2, 6), (2, 12)^3$	150c6
(2, 2)	$(2, 4)^3, (2, 8)^2, (4, 4)$	42a3
(2, 2)	$(2, 4)^2, (2, 8)^3, (4, 4)$	294c2
(2, 2)	$(2, 4)^3, (2, 8)^3, (4, 4)$	15a2
(2, 2)	$(2, 4)^2, (2, 8)^4, (4, 4)$	6720cd4
(2, 2)	$(2, 4)^3, (2, 8)^4, (4, 4)$	210e5
(2, 4)	$(2, 8)^2, (4, 4)$	21a1
(2, 4)	$(2, 8)^2, (4, 8)$	1230f2
(2, 4)	$(2, 8), (4, 4), (4, 8)$	15a1
(2, 4)	$(2, 8)^2, (2, 16), (4, 4)$	15a3
(2, 4)	$(2, 8)^2, (4, 4), (4, 8)$	210e3
(2, 6)	$(2, 12)^3$	30a2
(2, 8)	$(2, 16)^2, (4, 8)$	210e2

$$d = 5$$

$$\Phi_{\mathbb{Q}}(5) = \{(5), (10), (11), (25)\}$$

$G$	$\Phi_{\mathbb{Q}}(5, G) \setminus \{G\}$
( )	\{(5), (11)\}
(2)	\{(10)\}
(3)	\{\}
(4)	\{\}
(5)	\{(25)\}
(6)	\{\}
(7)	\{\}
(8)	\{\}
(9)	\{\}
(10)	\{\}
(12)	\{\}
(2, 2)	\{\}
(2, 4)	\{\}
(2, 6)	\{\}
(2, 8)	\{\}

$$h_{\mathbb{Q}}(5) = 1 \quad \#\mathcal{H}_{\mathbb{Q}}(5) = 4 \quad N_{\mathbb{Q}}(5) = 121$$

$G$	$\mathcal{H}_{\mathbb{Q}}(5, E)$	Label
()	(5)	11a2
()	(11)	121a2
(2)	(10)	66c3
(5)	(25)	11a3

$$d = 6$$

$$\Phi_{\mathbb{Q}}(6) \supseteq \left\{ \begin{array}{l} (2), (3), (4), (5), (6), (7), (8), (9), (10), (12), (13), (14), (15), (16), (18), (21), (30), (2, 2), (2, 4), (2, 6), \\ (2, 8), (2, 10), (2, 12), (2, 14), (2, 18), (3, 3), (3, 6), (3, 9), (3, 12), (4, 4), (4, 12), (6, 6) \end{array} \right\}$$

$G$	$\Phi_{\mathbb{Q}}(6, G) \setminus \{G\} \supseteq$
()	{(2), (3), (4), (5), (6), (7), (9), (10), (12), (13), (14), (15), (18), (21), (2, 2), (2, 6), (2, 10), (2, 14), (2, 18), (3, 3), (3, 9), (4, 4), (4, 12), (6, 6)}
(2)	{(4), (6), (8), (10), (12), (14), (16), (18), (2, 2), (2, 6), (2, 10), (2, 14), (2, 18), (3, 6), (3, 12), (6, 6)}
(3)	{(6), (9), (12), (15), (21), (30), (2, 6), (3, 3), (3, 6), (3, 9), (4, 12), (6, 6)}
(4)	{(8), (12), (2, 4), (2, 8), (2, 12), (3, 12), (4, 4)}
(5)	{(10), (15), (30), (2, 10)}
(6)	{(12), (18), (2, 6), (2, 18), (3, 6), (3, 12), (6, 6)}
(7)	{(14), (2, 14)}
(8)	{(16), (2, 8)}
(9)	{(18), (2, 18), (3, 9)}
(10)	{(2, 10)}
(12)	{(2, 12), (3, 12)}
(2, 2)	{(2, 4), (2, 6), (2, 8), (2, 12), (6, 6)}
(2, 4)	{(2, 8), (4, 4)}
(2, 6)	{(2, 12), (6, 6)}
(2, 8)	{}

$$h_{\mathbb{Q}}(6) \geq 9 \quad \#\mathcal{H}_{\mathbb{Q}}(6) \geq 137 \quad N_{\mathbb{Q}}(6) \geq 10816$$

$G$	$\mathcal{H}_{\mathbb{Q}}(6, E)$	Label
()	(2, 2)	392b1
()	(2, 14)	1922c1
()	(2), (2, 2)	11a2
()	(2, 2), (2, 14)	1922e1
()	(4), (4, 4)	648a1
()	(7), (2, 2)	1922c2
()	(2), (5), (2, 10)	121d1
()	(2), (7), (2, 2)	26b2
()	(2), (7), (2, 14)	10816bk1
()	(2), (13), (2, 2)	147b1
()	(3), (6), (6, 6)	108a2
()	(4), (7), (4, 4)	338b1
()	(2), (3) <sup>2</sup> , (2, 6)	484a1
()	(2), (3), (9), (2, 18)	1728e3
()	(2), (4) <sup>2</sup> , (2, 2)	648c1
()	(2), (5), (10), (2, 2)	75a2
()	(2), (7), (14), (2, 2)	208d1
()	(3) <sup>2</sup> , (2, 2), (2, 6)	196a1
()	(3) <sup>2</sup> , (4), (4, 12)	1296h1
()	(2), (3) <sup>2</sup> , (2, 6), (3, 3)	225b2
()	(2), (3) <sup>2</sup> , (6), (2, 2)	50b3
()	(2), (3) <sup>2</sup> , (6), (2, 6)	361b2
()	(2), (3) <sup>2</sup> , (7), (2, 6)	5184u3
()	(2), (3) <sup>2</sup> , (9), (2, 6)	361b1
()	(2), (3) <sup>2</sup> , (21), (2, 6)	5184u1
()	(2), (3), (6) <sup>2</sup> , (2, 2)	300a1
()	(2), (3), (9), (18), (2, 2)	432e3
()	(2), (4) <sup>2</sup> , (7), (2, 2)	338a1
()	(3) <sup>2</sup> , (2, 2), (2, 6), (3, 3)	196b2
()	(3) <sup>2</sup> , (4), (12), (4, 4)	1296h2
()	(2), (3) <sup>2</sup> , (4) <sup>2</sup> , (2, 6)	1296j1
()	(2), (3) <sup>2</sup> , (4), (12), (2, 2)	1296j2
()	(2), (3) <sup>2</sup> , (5), (6), (2, 10)	1600q1
()	(2), (3) <sup>2</sup> , (5), (10), (2, 6)	1600v3
()	(2), (3) <sup>2</sup> , (6), (2, 2), (3, 3)	44a2
()	(2), (3) <sup>2</sup> , (6), (2, 2), (3, 9)	486c2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (2, 2)	175b2
()	(2), (3) <sup>2</sup> , (6), (7), (2, 2)	1296e2
()	(2), (3) <sup>2</sup> , (6), (9), (2, 2)	175b1
()	(2), (3) <sup>2</sup> , (6), (9), (2, 6)	1728e2
()	(2), (3) <sup>2</sup> , (6), (21), (2, 2)	1296e1
()	(2), (3), (9), (18), (2, 2), (3, 9)	54a2
()	(3) <sup>2</sup> , (4), (12), (3, 3), (4, 4)	162d2
()	(2), (3) <sup>2</sup> , (4) <sup>2</sup> , (6), (2, 2)	4050g2

$G$	$\mathcal{H}_{\mathbb{Q}}(6, E)$	Label
()	(2), (3) <sup>2</sup> , (4), (12), (2, 2), (3, 3)	162a2
()	(2), (3) <sup>2</sup> , (5), (6), (10), (2, 2)	400b1
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (9), (2, 2)	432a1
()	(2), (3) <sup>2</sup> , (6), (7), (2, 2), (3, 3)	162b4
()	(2), (3) <sup>2</sup> , (6), (7), (21), (2, 2)	7938u3
()	(2), (3) <sup>2</sup> , (6), (21), (2, 2), (3, 3)	162c2
()	(2), (3) <sup>2</sup> , (9) <sup>2</sup> , (2, 6), (3, 3)	27a2
()	(2), (3) <sup>2</sup> , (6), (7), (21), (2, 2), (3, 3)	162b2
()	(2), (3) <sup>2</sup> , (6), (9) <sup>2</sup> , (2, 2), (3, 3)	19a2
()	(2), (3) <sup>2</sup> , (5), (6), (10), (15), (2, 2), (3, 3)	50a4
(2)	(2, 2)	46a1
(2)	(2, 10)	450a3
(2)	(2, 2), (2, 14)	49a1
(2)	(6), (2, 6)	80b1
(2)	(10), (2, 2)	150b3
(2)	(14), (2, 2)	49a2
(2)	(4) <sup>2</sup> , (2, 2)	15a5
(2)	(4), (8), (2, 2)	24a6
(2)	(4), (16), (2, 2)	3150bk1
(2)	(6), (2, 2), (2, 6)	80b3
(2)	(6), (2, 6), (2, 18)	98a1
(2)	(6), (2, 6), (6, 6)	36a3
(2)	(6) <sup>2</sup> , (2, 2)	80b2
(2)	(8) <sup>2</sup> , (2, 2)	2880r6
(2)	(14), (2, 2), (2, 14)	49a3
(2)	(4) <sup>2</sup> , (6), (2, 6)	960o7
(2)	(4) <sup>2</sup> , (12), (2, 6)	450g1
(2)	(4), (6), (12), (2, 2)	240b3
(2)	(4), (12), (2, 2), (2, 6)	450g3
(2)	(6) <sup>2</sup> , (18), (2, 2)	98a2
(2)	(6), (18), (2, 2), (2, 6)	98a5
(2)	(4) <sup>2</sup> , (6), (2, 2), (2, 6)	960o4
(2)	(4) <sup>2</sup> , (6) <sup>2</sup> , (2, 2)	150c4
(2)	(4) <sup>2</sup> , (6), (12), (2, 2)	240b1
(2)	(6) <sup>2</sup> , (2, 2), (2, 6), (3, 6)	20a3
(2)	(4), (6), (12) <sup>2</sup> , (2, 2), (2, 6), (3, 12)	30a3
(2)	(6) <sup>2</sup> , (18) <sup>2</sup> , (2, 2), (2, 6), (3, 6)	14a3
(2)	(4) <sup>2</sup> , (6) <sup>2</sup> , (12) <sup>2</sup> , (2, 2), (2, 6), (3, 6)	30a7
(3)	(2, 6), (3, 3)	196b1
(3)	(6), (6, 6)	108a1
(3)	(6), (2, 6), (3, 3)	44a1
(3)	(12), (3, 3), (4, 12)	162d1
(3)	(6), (2, 6), (3, 3), (3, 6)	19a1
(3)	(6), (3, 3), (3, 9), (6, 6)	27a1

$G$	$\mathcal{H}_{\mathbb{Q}}(6, E)$	Label
(3)	(6), (9), (2, 6), (3, 9)	486f1
(3)	(6), (21), (2, 6), (3, 3)	162b1
(3)	(6), (2, 6), (3, 3), (3, 6), (3, 9)	54a1
(3)	(6), (9), (3, 3), (3, 9), (6, 6)	27a3
(3)	(6), (9) <sup>2</sup> , (2, 6), (3, 3)	19a3
(3)	(6), (12) <sup>2</sup> , (2, 6), (3, 3)	162a1
(3)	(6), (15), (30), (2, 6), (3, 3)	50a3
(3)	(6), (9), (2, 6), (3, 3), (3, 6), (3, 9)	54b1
(4)	(2, 4)	17a1
(4)	(2, 8)	192c6
(4)	(4, 4)	40a4
(4)	(12), (2, 12)	150c3
(4)	(8) <sup>2</sup> , (2, 4)	15a7
(4)	(8) <sup>2</sup> , (2, 8)	240d6
(4)	(12), (2, 4), (2, 12)	150c1
(4)	(12) <sup>2</sup> , (2, 4)	720j5
(4)	(12) <sup>2</sup> , (2, 4), (2, 12), (3, 12)	90c1
(5)	(10), (2, 10)	11a1
(5)	(10), (15) <sup>2</sup> , (30), (2, 10)	50b1
(6)	(2, 6), (3, 6)	14a1
(6)	(2, 6), (6, 6)	36a1
(6)	(12) <sup>2</sup> , (2, 6), (3, 6)	30a4
(6)	(12) <sup>2</sup> , (2, 6), (3, 12)	30a1
(6)	(18) <sup>2</sup> , (2, 6), (2, 18), (3, 6)	14a4
(7)	(14), (2, 14)	26b1
(8)	(2, 8)	15a4
(8)	(16) <sup>2</sup> , (2, 8)	210e1
(9)	(18), (2, 18), (3, 9)	54b3
(10)	(2, 10)	66c1
(12)	(2, 12), (3, 12)	90c3
(2, 2)	(2, 4)	33a1
(2, 2)	(2, 8)	63a2
(2, 2)	(2, 4) <sup>2</sup>	17a2
(2, 2)	(2, 4), (2, 8)	75b3
(2, 2)	(2, 6) <sup>2</sup>	240b2
(2, 2)	(2, 6), (2, 12)	960o6
(2, 2)	(2, 4) <sup>3</sup>	15a2
(2, 2)	(2, 4) <sup>2</sup> , (2, 8)	510e5
(2, 2)	(2, 4), (2, 6) <sup>2</sup>	150c2
(2, 2)	(2, 4), (2, 6), (2, 12)	960o2
(2, 2)	(2, 6) <sup>2</sup> , (6, 6)	30a6
(2, 2)	(2, 4), (2, 6) <sup>2</sup> , (2, 12), (6, 6)	90c2
(2, 4)	(2, 8)	15a3
(2, 4)	(4, 4)	195a3



$G$	$\mathcal{H}_{\mathbb{Q}}(6, E)$	Label
(2, 4)	$(2, 8)^2$	1230f2
(2, 4)	$(2, 8), (4, 4)$	15a1
(2, 4)	$(2, 8)^2, (4, 4)$	210e3
(2, 6)	$(6, 6)$	30a2
(2, 6)	$(2, 12), (6, 6)$	90c6

$$d = 7$$

$$\Phi_{\mathbb{Q}}(7) = \{(7)\}$$

$G$	$\Phi_{\mathbb{Q}}(7, G) \setminus \{G\}$
( )	\{(7)\}
(2)	\{\}
(3)	\{\}
(4)	\{\}
(5)	\{\}
(6)	\{\}
(7)	\{\}
(8)	\{\}
(9)	\{\}
(10)	\{\}
(12)	\{\}
(2, 2)	\{\}
(2, 4)	\{\}
(2, 6)	\{\}
(2, 8)	\{\}

$$h_{\mathbb{Q}}(7) = 1 \quad \#\mathcal{H}_{\mathbb{Q}}(7) = 1 \quad N_{\mathbb{Q}}(7) = 26$$

$G$	$\mathcal{H}_{\mathbb{Q}}(7, E)$	Label
()	(7)	26b2

$$d = 8$$

$$\Phi_{\mathbb{Q}}(8) \supseteq \left\{ \begin{array}{l} (3), (4), (5), (6), (7), (8), (9), (10), (12), (13), (15), (16), (17), (20), (21), (24), (30), (32), \\ (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (2, 20), (2, 24), (3, 3), (3, 6), (3, 12), (4, 4), (4, 8), (4, 12), (5, 5), (6, 6) \end{array} \right\}$$

$G$	$\Phi_{\mathbb{Q}}(8, G) \setminus \{G\} \supseteq$
()	{(3), (5), (7), (9), (13), (15), (17), (3, 3), (5, 5)}
(2)	{(4), (6), (8), (10), (12), (16), (20), (24), (32), (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (2, 20), (2, 24), (3, 6), (3, 12), (4, 4), (4, 8), (4, 12), (6, 6)}
(3)	{(15), (3, 3)}
(4)	{(8), (12), (16), (20), (24), (32), (2, 4), (2, 8), (2, 12), (2, 16), (2, 20), (2, 24), (4, 4), (4, 8), (4, 12)}
(5)	{(15), (5, 5)}
(6)	{(12), (24), (2, 6), (2, 12), (2, 24), (3, 6), (3, 12), (4, 12), (6, 6)}
(7)	{(21)}
(8)	{(16), (24), (32), (2, 8), (2, 16), (4, 8)}
(9)	{}
(10)	{(20), (30), (2, 10), (2, 20)}
(12)	{(24), (2, 12), (2, 24), (4, 12)}
(2, 2)	{(2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (2, 20), (2, 24), (4, 4), (4, 8), (4, 12)}
(2, 4)	{(2, 8), (2, 12), (2, 16), (4, 4), (4, 8)}
(2, 6)	{(2, 12), (2, 24), (4, 12)}
(2, 8)	{(2, 16), (2, 24), (4, 8)}

$$h_{\mathbb{Q}}(8) \geq 17 \quad \#\mathcal{H}_{\mathbb{Q}}(8) \geq 275 \quad N_{\mathbb{Q}}(8) \geq 277440$$

$G$	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
()	(3)	19a2
()	(9)	54a2
()	(3), (5)	11a2
()	(3), (7)	208d1
()	(3), (13)	2890d1
()	(3), (15)	50b3
()	(3), (17)	14450n1
()	$(3)^2, (3, 3)$	175b2
()	$(3), (5)^2$	18176b2
()	$(3), (5), (5, 5)$	275b2
()	$(3), (5), (15)$	50a2
()	$(3)^2, (5), (3, 3)$	121b1
()	$(3), (5)^2, (5, 5)$	99d2
()	$(3)^2, (5), (15), (3, 3)$	338d1
(2)	$(4), (2, 6), (4, 12)$	36a3
(2)	$(2, 2), (2, 4)^2, (2, 6)$	223494n1
(2)	$(4), (2, 6), (2, 12)^2$	80b1
(2)	$(4), (2, 6), (2, 12), (4, 12)$	1040g2
(2)	$(4), (6), (2, 2), (4, 4)$	128b1
(2)	$(6), (2, 2), (2, 4)^2$	200b2
(2)	$(4), (2, 2), (2, 4)^2, (2, 6)$	2205a2
(2)	$(4), (6), (2, 2), (2, 4)^2$	46a1
(2)	$(4), (6), (2, 2), (2, 4), (4, 4)$	128a1
(2)	$(4), (6), (2, 2), (2, 6), (4, 12)$	144a1
(2)	$(4), (6), (2, 10), (2, 20)^2$	450a3
(2)	$(6), (2, 2), (2, 4)^2, (2, 8)$	200b1
(2)	$(6), (8), (2, 2), (2, 4), (4, 8)$	294f1
(2)	$(6), (12), (2, 2), (2, 6), (4, 12)$	144a3
(2)	$(4), (6), (2, 2), (2, 4)^2, (2, 10)$	1014c2
(2)	$(4), (6), (2, 2), (2, 4), (2, 6), (2, 12)$	144a2
(2)	$(4), (6), (2, 2), (2, 4), (2, 8), (4, 4)$	49a1
(2)	$(4), (6), (8), (2, 2), (2, 4)^2$	128a2
(2)	$(4), (6), (8)^2, (2, 2), (4, 4)$	16810b2
(2)	$(4), (6), (10), (2, 2), (2, 4)^2$	576f2
(2)	$(4), (6), (10), (2, 2), (2, 4), (4, 4)$	2304h1
(2)	$(4), (6), (12), (2, 2), (2, 6), (4, 4)$	576a1
(2)	$(4), (10), (2, 2), (2, 4)^2, (2, 6)$	288a2
(2)	$(4), (10), (12), (2, 2), (2, 4)^2$	288a1
(2)	$(6), (12), (2, 2), (2, 4), (2, 6), (2, 12)$	36a4
(2)	$(4)^2, (6), (8), (2, 2), (4, 4), (4, 8)$	200c4
(2)	$(4)^2, (6), (8)^2, (2, 2), (4, 4)$	320a4
(2)	$(4)^2, (8), (2, 6), (2, 12)^2, (2, 24)$	14400bo8
(2)	$(4)^2, (8)^2, (2, 6), (2, 12)^2$	450g1
(2)	$(4), (6), (2, 2), (2, 4)^2, (2, 6), (6, 6)$	726a1

$G$	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(2)	(4), (6), (2, 2), (2, 4), (2, 8) <sup>2</sup> , (4, 4)	768c2
(2)	(4), (6), (8) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup>	49a2
(2)	(4), (6), (8) <sup>2</sup> , (10), (2, 2), (4, 4)	256b2
(2)	(4), (6), (10), (2, 2), (2, 4) <sup>2</sup> , (2, 10)	66c3
(2)	(4), (6), (10), (2, 2), (2, 4), (2, 8), (4, 4)	256b1
(2)	(4), (6), (10), (2, 2), (2, 4), (2, 10), (2, 20)	14400cg3
(2)	(4), (6), (12), (2, 2), (2, 4) <sup>2</sup> , (2, 6)	14a3
(2)	(4), (6), (12), (2, 2), (2, 4), (2, 6), (2, 12)	576a2
(2)	(4), (6), (12), (2, 6), (2, 12) <sup>2</sup> , (6, 6)	98a3
(2)	(4), (8), (12), (2, 2), (2, 4), (2, 12), (2, 24)	14400ef3
(2)	(4), (8), (12), (24), (2, 2), (2, 4), (2, 12)	30a3
(2)	(4), (12), (24), (2, 2), (2, 4), (2, 12), (2, 24)	14400bo3
(2)	(6), (8) <sup>2</sup> , (16) <sup>2</sup> , (2, 2), (4, 8)	2880r6
(2)	(6), (10), (20), (2, 2), (2, 4), (2, 10), (2, 20)	450a4
(2)	(6), (12), (24), (2, 2), (2, 4), (2, 6), (2, 12)	1040g1
(2)	(4) <sup>2</sup> , (6), (8), (2, 2), (2, 4) <sup>2</sup> , (2, 8)	153c1
(2)	(4) <sup>2</sup> , (6), (8), (2, 2), (2, 10), (4, 4), (4, 8)	64a4
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup>	120b1
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (2, 2), (2, 4), (4, 4)	153c4
(2)	(4) <sup>2</sup> , (8) <sup>2</sup> , (2, 6), (2, 12) <sup>2</sup> , (4, 12)	960o7
(2)	(4), (6), (8) <sup>2</sup> , (2, 2), (2, 4), (2, 8), (2, 16)	576i4
(2)	(4), (6), (8) <sup>2</sup> , (2, 2), (2, 4), (2, 8), (4, 4)	294f2
(2)	(4), (6), (8) <sup>2</sup> , (16), (2, 2), (2, 4), (2, 8)	126b1
(2)	(4), (6), (8), (12), (2, 2), (2, 4) <sup>2</sup> , (2, 6)	130a3
(2)	(4), (6), (8), (16), (2, 2), (2, 4), (2, 8), (4, 8)	144b1
(2)	(4), (6), (8), (16), (32), (2, 2), (2, 4), (2, 16)	3150bk1
(2)	(4), (6), (10), (20), (2, 2), (2, 4) <sup>2</sup> , (2, 10)	150b3
(2)	(4), (6), (12), (2, 2), (2, 4), (2, 6), (2, 12), (4, 4)	130a4
(2)	(4), (8), (12), (24), (2, 2), (2, 4), (2, 12), (2, 24)	960e3
(2)	(4), (8), (12), (24), (2, 2), (2, 4), (2, 12), (4, 12)	720j3
(2)	(6) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (3, 6)	256a2
(2)	(4) <sup>2</sup> , (6), (2, 2), (2, 4) <sup>2</sup> , (2, 8) <sup>2</sup> , (4, 4)	200c3
(2)	(4) <sup>2</sup> , (6), (8), (2, 2), (2, 4), (2, 8) <sup>2</sup> , (4, 4)	289a4
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 8)	33a2
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (4, 4)	33a4
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (2, 2), (2, 4), (2, 10), (4, 4)	576h1
(2)	(4) <sup>2</sup> , (6), (8), (10), (2, 2), (2, 4) <sup>2</sup> , (2, 8)	288d2
(2)	(4) <sup>2</sup> , (8) <sup>2</sup> , (12), (2, 2), (2, 4), (2, 10), (4, 4)	288d4
(2)	(4) <sup>2</sup> , (8), (10), (12), (2, 2), (2, 4) <sup>2</sup> , (2, 8)	288d3
(2)	(4), (6) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (3, 6)	1210a1
(2)	(4), (6), (8), (2, 2), (2, 4), (2, 8), (2, 16) <sup>2</sup> , (4, 8)	277440dv8
(2)	(4), (6), (8) <sup>3</sup> , (16), (2, 2), (2, 8), (4, 8)	45a6
(2)	(4), (6), (8) <sup>2</sup> , (16), (2, 2), (2, 4), (2, 8), (2, 16)	45a1
(2)	(4), (6), (8) <sup>2</sup> , (16), (2, 2), (2, 4), (2, 8), (4, 8)	24a6

$G$	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(2)	(4), (6), (8), (16), (2, 2), (2, 4), (2, 8) <sup>2</sup> , (4, 8)	1344g5
(2)	(6) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (2, 8), (3, 6)	256a1
(2)	(4) <sup>2</sup> , (6), (8), (2, 2), (2, 4) <sup>2</sup> , (2, 8) <sup>2</sup> , (4, 4)	17a3
(2)	(4) <sup>2</sup> , (6), (8) <sup>3</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 8)	306c5
(2)	(4) <sup>2</sup> , (6), (8) <sup>4</sup> , (2, 2), (4, 4), (4, 8)	187200eh5
(2)	(4) <sup>2</sup> , (6), (20), (2, 2), (2, 4) <sup>2</sup> , (2, 8) <sup>2</sup> , (4, 4)	64a2
(2)	(4), (6) <sup>2</sup> , (12), (2, 2), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (3, 6)	726a2
(2)	(4), (6), (8) <sup>3</sup> , (2, 2), (2, 8), (2, 16) <sup>2</sup> , (4, 8)	1200j6
(2)	(4), (6), (8) <sup>3</sup> , (16) <sup>2</sup> , (2, 2), (2, 8), (4, 8)	225c6
(2)	(4), (6), (8) <sup>2</sup> , (16), (2, 2), (2, 4), (2, 8) <sup>2</sup> , (4, 8)	42a5
(2)	(4), (6), (8) <sup>2</sup> , (16) <sup>2</sup> , (2, 2), (2, 4), (2, 8), (2, 16)	630c1
(2)	(4), (6), (8) <sup>2</sup> , (16) <sup>2</sup> , (2, 2), (2, 4), (2, 8), (4, 8)	48a4
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 8) <sup>2</sup> , (4, 4)	600a4
(2)	(4) <sup>2</sup> , (6), (8) <sup>4</sup> , (2, 2), (4, 4), (4, 8) <sup>2</sup>	6150n6
(2)	(4) <sup>2</sup> , (6), (8) <sup>3</sup> , (16), (2, 2), (2, 4) <sup>2</sup> , (2, 8)	126b3
(2)	(4) <sup>2</sup> , (6), (8), (20), (2, 2), (2, 4) <sup>2</sup> , (2, 8) <sup>2</sup> , (4, 4)	32a3
(2)	(4), (6) <sup>2</sup> , (12), (2, 2), (2, 4), (2, 6) <sup>2</sup> , (2, 12), (3, 6), (6, 6)	3136k3
(2)	(4), (6), (8) <sup>3</sup> , (16), (2, 2), (2, 8), (2, 16) <sup>2</sup> , (4, 8)	75b6
(2)	(4), (6), (8) <sup>3</sup> , (16) <sup>3</sup> , (2, 2), (2, 8), (4, 8)	4800cd6
(2)	(4), (6), (8) <sup>2</sup> , (16), (2, 2), (2, 4), (2, 8), (2, 16) <sup>2</sup> , (4, 8)	510e7
(2)	(4), (6), (8) <sup>2</sup> , (16) <sup>2</sup> , (32), (2, 2), (2, 4), (2, 8), (2, 16)	75b1
(2)	(4), (6), (8), (16) <sup>2</sup> , (2, 2), (2, 4), (2, 8), (2, 16) <sup>2</sup> , (4, 8)	1470k3
(2)	(6) <sup>2</sup> , (12), (2, 2), (2, 4), (2, 6) <sup>2</sup> , (2, 12), (3, 6), (3, 12), (6, 6)	98a4
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 8) <sup>3</sup> , (4, 4)	63a6
(2)	(4) <sup>2</sup> , (6), (8) <sup>3</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 8) <sup>2</sup> , (4, 4)	231a5
(2)	(4) <sup>2</sup> , (6), (8) <sup>4</sup> , (2, 2), (2, 4), (2, 8) <sup>2</sup> , (4, 4)	975a6
(2)	(4) <sup>2</sup> , (6), (8) <sup>4</sup> , (16) <sup>2</sup> , (2, 2), (4, 4), (4, 8)	4410r6
(2)	(4) <sup>2</sup> , (6), (8) <sup>3</sup> , (16) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 8)	45a7
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (12) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 12)	210a3
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (12) <sup>2</sup> , (2, 2), (2, 4), (2, 6), (2, 12) <sup>2</sup>	30a8
(2)	(4) <sup>2</sup> , (6), (8), (12) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8), (2, 12)	14400bo1
(2)	(4) <sup>2</sup> , (6), (8), (12) <sup>2</sup> , (2, 2), (2, 4), (2, 6), (2, 8), (2, 12) <sup>2</sup>	14400ef8
(2)	(4) <sup>2</sup> , (6), (8), (12) <sup>2</sup> , (24), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 12)	30a7
(2)	(4) <sup>2</sup> , (6), (8), (16) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 8) <sup>2</sup> , (4, 4)	40a2
(2)	(4) <sup>2</sup> , (6), (12) <sup>2</sup> , (24), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8), (2, 12)	14400ef7
(2)	(4) <sup>2</sup> , (6), (12) <sup>2</sup> , (24), (2, 2), (2, 4), (2, 6), (2, 8), (2, 12) <sup>2</sup>	14400bo7
(2)	(4), (6) <sup>2</sup> , (12) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (3, 6), (6, 6)	112c3
(2)	(4), (6), (8) <sup>2</sup> , (16) <sup>2</sup> , (2, 2), (2, 4), (2, 8), (2, 16) <sup>2</sup> , (4, 8)	1680p1
(2)	(4) <sup>2</sup> , (6), (8) <sup>3</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 8) <sup>3</sup> , (4, 4)	21a6
(2)	(4) <sup>2</sup> , (6), (8) <sup>4</sup> , (16), (2, 2), (2, 4), (2, 8) <sup>2</sup> , (4, 4)	7605p6
(2)	(4) <sup>2</sup> , (6), (8) <sup>3</sup> , (16), (2, 2), (2, 4) <sup>2</sup> , (2, 8) <sup>2</sup> , (4, 4)	21a5
(2)	(4) <sup>2</sup> , (6), (8) <sup>3</sup> , (16) <sup>3</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 8)	45a3
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (16) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 8) <sup>2</sup> , (4, 4)	192c5
(2)	(4) <sup>2</sup> , (6), (8) <sup>4</sup> , (16) <sup>2</sup> , (2, 2), (2, 4), (2, 8) <sup>2</sup> , (4, 4)	630c6

$G$	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(2)	$(4)^2, (6), (8)^3, (16), (2, 2), (2, 4)^2, (2, 8)^3, (4, 4)$	48a2
(2)	$(4)^2, (6), (8)^3, (16)^2, (2, 2), (2, 4)^2, (2, 8)^2, (4, 4)$	42a6
(2)	$(4)^2, (6), (8)^2, (12)^2, (2, 2), (2, 4)^2, (2, 6), (2, 12)^2, (4, 4)$	90c4
(2)	$(4)^2, (6), (8)^2, (12)^2, (24), (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 12)$	90c5
(2)	$(4)^2, (6), (8)^2, (12)^2, (24), (2, 2), (2, 4), (2, 6), (2, 8), (2, 12)^2$	1050k4
(2)	$(4)^2, (6), (8)^2, (16)^2, (2, 2), (2, 4)^2, (2, 8)^3, (4, 4)$	75b7
(2)	$(4)^2, (6), (8), (12)^2, (24), (2, 2), (2, 4)^2, (2, 6), (2, 12)^2, (4, 4)$	960e7
(2)	$(4)^2, (6), (8), (12)^2, (24)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 12)$	720j7
(2)	$(4)^2, (6), (8), (12)^2, (24)^2, (2, 2), (2, 4), (2, 6), (2, 8), (2, 12)^2$	150c8
(2)	$(4)^2, (6), (12)^2, (24)^2, (2, 2), (2, 4)^2, (2, 6), (2, 12)^2, (4, 4)$	150c7
(2)	$(4)^2, (6), (8)^4, (16)^3, (2, 2), (2, 4), (2, 8)^2, (4, 4)$	1470k6
(2)	$(4)^2, (6), (8)^3, (16)^3, (2, 2), (2, 4)^2, (2, 8)^2, (4, 4)$	195a7
(2)	$(4)^2, (6), (8)^4, (16)^4, (2, 2), (2, 4), (2, 8)^2, (4, 4)$	6720cd6
(2)	$(4)^2, (6), (8)^3, (16)^3, (2, 2), (2, 4)^2, (2, 8)^3, (4, 4)$	15a5
(2)	$(4)^2, (6), (8)^3, (16)^4, (2, 2), (2, 4)^2, (2, 8)^2, (4, 4)$	15a6
(2)	$(4)^2, (6), (8)^3, (16)^4, (2, 2), (2, 4)^2, (2, 8)^3, (4, 4)$	210e7
(3)	$(3, 3)$	19a1
(3)	$(15)$	50a1
(4)	$(8), (2, 12), (2, 24)^2, (4, 12)$	150c3
(4)	$(8), (12), (2, 4), (2, 8), (4, 8)$	2880be6
(4)	$(8), (12), (4, 4), (4, 8)^2$	40a4
(4)	$(12), (2, 4), (2, 8)^2, (4, 4)$	200c1
(4)	$(8), (12), (2, 4), (2, 8)^2, (4, 4)$	17a1
(4)	$(8), (12), (2, 4), (2, 20), (4, 4), (4, 8)$	32a1
(4)	$(8), (12), (2, 8), (2, 16)^2, (4, 8)$	192c6
(4)	$(8), (12), (16), (2, 4), (2, 8), (4, 8)$	72a1
(4)	$(12), (20), (2, 4), (2, 8)^2, (4, 4)$	64a3
(4)	$(8), (12), (2, 4), (2, 8)^2, (2, 16), (4, 4)$	144b4
(4)	$(8), (12), (2, 4), (2, 8), (2, 16)^2, (4, 8)$	277440dv7
(4)	$(8), (12), (16), (2, 4), (2, 8)^2, (4, 4)$	63a5
(4)	$(8), (12), (16), (2, 8), (2, 16)^2, (4, 8)$	294c1
(4)	$(8), (12), (20), (2, 4), (2, 8)^2, (4, 4)$	32a4
(4)	$(12), (24), (2, 4), (2, 8), (2, 12), (2, 24), (4, 4)$	960o8
(4)	$(8)^2, (12), (16)^2, (2, 4), (2, 8), (4, 8)$	24a4
(4)	$(8), (12), (16), (2, 4), (2, 8)^2, (2, 16), (4, 4)$	75b8
(4)	$(8), (12), (16)^2, (2, 4), (2, 8)^2, (4, 4)$	40a3
(4)	$(8), (12), (24), (2, 4), (2, 8)^2, (2, 12), (4, 4)$	90c1
(4)	$(8), (12), (24), (2, 4), (2, 8)^2, (2, 12), (4, 12)$	720j8
(4)	$(8), (12), (24), (2, 4), (2, 8), (2, 12), (2, 24), (4, 4)$	1050k1
(4)	$(8)^2, (12), (16), (2, 4), (2, 8)^2, (2, 16), (4, 4)$	24a3
(4)	$(8)^2, (12), (16)^2, (2, 4), (2, 8)^2, (4, 4)$	120a1
(4)	$(8)^2, (12), (16)^2, (2, 8), (2, 16)^2, (4, 8)$	240d6
(4)	$(8)^2, (12), (16)^2, (2, 4), (2, 8)^2, (2, 16), (4, 4)$	21a4
(4)	$(8)^2, (12), (16)^2, (2, 4), (2, 8)^2, (4, 4), (4, 8)$	195a6



$G$	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(4)	$(8)^2, (12), (16)^2, (2, 4), (2, 8)^2, (4, 4), (4, 8)^2$	510e6
(4)	$(8)^2, (12), (16)^3, (2, 4), (2, 8)^2, (2, 16), (4, 4)$	195a1
(4)	$(8)^2, (12), (16)^3, (2, 4), (2, 8), (2, 16)^2, (4, 8)$	1230f4
(4)	$(8)^2, (12), (16)^2, (2, 4), (2, 8)^2, (2, 16)^2, (4, 4), (4, 8)$	210e6
(4)	$(8)^2, (12), (16)^3, (32), (2, 4), (2, 8)^2, (2, 16), (4, 4)$	15a7
(5)	(15)	11a3
(5)	(15), (5, 5)	11a1
(6)	(12), (2, 6), (4, 12)	36a1
(6)	(12), (2, 6), $(2, 12)^2$	14a4
(6)	(12), (2, 6), (2, 12), (4, 12)	130a2
(6)	(12), (24), (2, 6), $(2, 12)^2$	130a1
(6)	(12), (2, 6), $(2, 12)^2, (3, 6), (3, 12), (6, 6)$	14a1
(6)	$(12)^2, (24)^2, (2, 6), (2, 12)^2$	30a1
(6)	$(12)^2, (24)^2, (2, 6), (2, 12)^2, (2, 24)$	90c8
(6)	$(12)^2, (24)^2, (2, 6), (2, 12)^2, (4, 12)$	90c7
(7)	(21)	26b1
(8)	(16), (24), (2, 8), $(2, 16)^2, (4, 8)$	15a4
(8)	$(16)^2, (24), (32)^2, (2, 8), (2, 16)^2, (4, 8)$	210e1
(10)	(20), (30), (2, 10), $(2, 20)^2$	66c1
(12)	(24), (2, 12), $(2, 24)^2, (4, 12)$	90c3
(2, 2)	$(2, 4)^3, (2, 6)$	120b2
(2, 2)	(2, 4), (2, 6), (2, 8), (4, 4)	289a2
(2, 2)	$(2, 4)^3, (2, 6), (4, 4)$	153c2
(2, 2)	$(2, 4)^3, (2, 6), (4, 8)$	14400dq3
(2, 2)	$(2, 4)^2, (2, 6), (2, 8), (4, 8)$	277440dv6
(2, 2)	$(2, 4)^2, (2, 6), (2, 12), (4, 12)$	14400ef6
(2, 2)	$(2, 4)^2, (2, 12), (2, 24), (4, 12)$	960o6
(2, 2)	(2, 4), (2, 6), (2, 8), (4, 4), (4, 8)	200c2
(2, 2)	(2, 4), (2, 6), $(2, 12)^2, (4, 12)$	14400bo6
(2, 2)	$(2, 4)^3, (2, 6), (2, 8), (4, 4)$	33a1
(2, 2)	$(2, 4)^3, (2, 6), (2, 8), (4, 8)$	600a3
(2, 2)	$(2, 4)^3, (2, 6), (2, 10), (4, 4)$	288d1
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (4, 4)$	17a2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (4, 8)$	1200j4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8), (2, 16), (4, 8)$	63a2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8), (4, 4), (4, 8)$	2880be3
(2, 2)	$(2, 4)^2, (2, 6), (2, 12)^3$	30a6
(2, 2)	(2, 4), (2, 6), (2, 8), (2, 10), (4, 4), (4, 8)	64a1
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (4, 4)$	306c2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (4, 8)$	192d2
(2, 2)	$(2, 4)^3, (2, 6), (2, 12)^3$	210a6
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (4, 4)$	1287e4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (2, 16), (4, 8)$	1344g2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (4, 4), (4, 8)$	40a1

$G$	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(2, 2)	$(2, 4)^2, (2, 6), (2, 8), (2, 12)^2, (4, 12)$	720j6
(2, 2)	$(2, 4)^2, (2, 6), (2, 8), (2, 16)^2, (4, 8)$	75b2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8), (2, 20), (4, 4), (4, 8)$	32a2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8), (4, 4), (4, 8)^2$	72a2
(2, 2)	$(2, 4), (2, 6), (2, 8)^3, (2, 16), (4, 8)$	75b3
(2, 2)	$(2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8)$	1470k2
(2, 2)	$(2, 4), (2, 6), (2, 8), (2, 12)^3, (4, 12)$	150c6
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (4, 4)$	45a5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (4, 8)$	144b3
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (2, 16), (4, 4)$	585f2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (2, 16), (4, 8)$	45a2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8), (2, 16)^2, (4, 8)$	1200j2
(2, 2)	$(2, 4)^3, (2, 6), (2, 12)^3, (4, 4)$	14400bo2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (4, 4)$	2925g3
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (4, 8)$	6150n3
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (4, 8)$	294c4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (4, 4), (4, 8)$	63a4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (2, 16)^2, (4, 8)$	4800cd5
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (2, 16), (4, 4), (4, 8)$	225c2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (4, 4), (4, 8)^2$	144b2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8), (4, 4), (4, 8)^3$	1200j5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (4, 4)$	231a3
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (4, 8)$	192c2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (2, 16), (4, 4)$	225c5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (4, 4), (4, 8)$	120a3
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (4, 4), (4, 8)^2$	24a2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8), (2, 12)^3, (4, 4)$	90c2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (4, 4), (4, 8)$	975a3
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^2, (4, 8)$	1680p2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (4, 4), (4, 8)^2$	45a4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (4, 4), (4, 8)^3$	75b5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 16), (4, 4)$	1470k5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (4, 4), (4, 8)$	21a2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (4, 4), (4, 8)^2$	42a3
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (2, 16), (4, 4), (4, 8)$	3150bk4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (4, 4), (4, 8)^2$	630c4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (4, 4), (4, 8)^3$	1470k4
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 16), (4, 4), (4, 8)$	1230f5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (4, 4), (4, 8)^3$	15a2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 16)^2, (4, 4), (4, 8)$	240d2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (4, 4), (4, 8)^3$	210e5
(2, 4)	$(2, 8)^2, (2, 12), (4, 4)$	231a2
(2, 4)	$(2, 8)^2, (2, 12), (4, 4), (4, 8)$	120a2
(2, 4)	$(2, 8)^2, (2, 12), (2, 16), (4, 4), (4, 8)$	21a1

$G$	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(2, 4)	$(2, 8)^2, (2, 12), (4, 4), (4, 8)^2$	24a1
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^3, (4, 8)$	1230f2
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)$	15a3
(2, 4)	$(2, 8)^2, (2, 12), (2, 16), (4, 4), (4, 8)^2$	42a2
(2, 4)	$(2, 8)^2, (2, 12), (4, 4), (4, 8)^3$	195a3
(2, 4)	$(2, 8), (2, 12), (2, 16), (4, 4), (4, 8)^3$	15a1
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^3, (4, 4), (4, 8)$	510e2
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)^3$	210e3
(2, 6)	$(2, 12)^3$	30a2
(2, 6)	$(2, 12)^3, (2, 24), (4, 12)$	90c6
(2, 8)	$(2, 16)^2, (2, 24), (4, 8)$	210e2

$$d = 9$$

$$\Phi_{\mathbb{Q}}(9) \supseteq \{(2), (3), (4), (6), (7), (9), (10), (12), (13), (14), (18), (19), (21), (26), (27), (28), (36), (42), (2, 2), (2, 6), (2, 14), (2, 18)\}$$

$G$	$\Phi_{\mathbb{Q}}(9, G) \setminus \{G\} \supseteq$
()	\{(2), (3), (4), (6), (7), (9), (12), (13), (14), (19), (21), (26), (28), (2, 2), (2, 6), (2, 14)\}
(2)	\{(6), (14)\}
(3)	\{(6), (9), (12), (18), (21), (27), (42), (2, 6), (2, 18)\}
(4)	\{(12)\}
(5)	\{(10)\}
(6)	\{(18)\}
(7)	\{(14)\}
(8)	\{\}
(9)	\{(18), (27)\}
(10)	\{\}
(12)	\{(36)\}
(2, 2)	\{(2, 6)\}
(2, 4)	\{\}
(2, 6)	\{(2, 18)\}
(2, 8)	\{\}

$$h_{\mathbb{Q}}(9) \geq 6 \quad \#\mathcal{H}_{\mathbb{Q}}(9) \geq 34 \quad N_{\mathbb{Q}}(9) \geq 3969$$

$G$	$\mathcal{H}_{\mathbb{Q}}(9, E)$	Label
()	(2)	11a2
()	(2, 2)	196a1
()	(2, 14)	1922c1
()	(4)	338b2
()	(6)	108a2
()	(2), (7)	2450ba1
()	(2), (19)	361a1
()	(2), (3), (6)	19a2
()	(2), (7), (14)	294a1
()	(2), (13), (26)	147b1
()	(3), (2, 2), (2, 6)	196b2
()	(3), (4), (12)	162d2
()	(4), (7), (28)	338b1
()	(7), (2, 2), (2, 14)	3969a1
()	(2), (3), (6), (9)	54b2
()	(2), (3), (6), (7), (14), (21)	162b2
(2)	(6)	14a3
(2)	(14)	49a3
(3)	(2, 6), (2, 18)	196b1
(3)	(6), (9)	19a1
(3)	(6), (18)	108a1
(3)	(9), (2, 6)	324a1
(3)	(9), (12)	162d1
(3)	(6), (9), (18)	19a3
(3)	(6), (9), (18), (27)	27a4
(3)	(6), (9), (21), (42)	162b1
(4)	(12)	90c1
(5)	(10)	11a1
(6)	(18)	14a1
(7)	(14)	26b1
(9)	(18), (27)	54b3
(12)	(36)	90c3
(2, 2)	(2, 6)	30a6
(2, 6)	(2, 18)	30a2

$$d = 10$$

$$\Phi_{\mathbb{Q}}(10) \supseteq \{(3), (4), (5), (6), (7), (8), (9), (10), (11), (12), (15), (16), (25), (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (3, 3), (3, 6), (4, 4)\}$$

$G$	$\Phi_{\mathbb{Q}}(10, G) \setminus \{G\} \supseteq$
( )	$\{(3), (5), (7), (9), (11), (15), (25)\}$
(2)	$\{(4), (6), (8), (10), (12), (16), (2, 2), (2, 6), (2, 10)\}$
(3)	$\{(15), (3, 3)\}$
(4)	$\{(8), (12), (2, 4), (2, 8), (2, 12), (4, 4)\}$
(5)	$\{(15), (25)\}$
(6)	$\{(12), (2, 6), (3, 6)\}$
(7)	$\{\}$
(8)	$\{(16), (2, 8)\}$
(9)	$\{\}$
(10)	$\{(2, 10)\}$
(12)	$\{(2, 12)\}$
(2, 2)	$\{(2, 4), (2, 6), (2, 8), (2, 12)\}$
(2, 4)	$\{(2, 8), (4, 4)\}$
(2, 6)	$\{(2, 12)\}$
(2, 8)	$\{\}$

$$h_{\mathbb{Q}}(10) \geq 4 \quad \#\mathcal{H}_{\mathbb{Q}}(10) \geq 58 \quad N_{\mathbb{Q}}(10) \geq 3150$$

$G$	$\mathcal{H}_{\mathbb{Q}}(10, E)$	Label
()	(3)	19a2
()	(5)	11a2
()	(7)	208d1
()	(9)	54a2
()	(11)	121a1
()	(3) <sup>2</sup>	175b2
()	(3), (5)	50a2
()	(5), (25)	99d1
()	(3), (5), (15)	50b3
(2)	(2, 2)	46a1
(2)	(2, 6)	36a3
(2)	(2, 10)	450a3
(2)	(2, 2), (2, 10)	450a1
(2)	(6), (2, 2)	14a3
(2)	(6), (2, 6)	98a3
(2)	(10), (2, 2)	150b1
(2)	(4) <sup>2</sup> , (2, 2)	15a5
(2)	(4) <sup>2</sup> , (2, 6)	450g1
(2)	(4), (8), (2, 2)	24a6
(2)	(4), (12), (2, 2)	30a3
(2)	(4), (16), (2, 2)	3150bk1
(2)	(6) <sup>2</sup> , (2, 2)	98a4
(2)	(8) <sup>2</sup> , (2, 2)	2880r6
(2)	(10), (2, 2), (2, 10)	66c3
(2)	(4) <sup>2</sup> , (6), (2, 2)	30a7
(3)	(3, 3)	19a1
(3)	(15)	50a1
(4)	(2, 4)	17a1
(4)	(2, 8)	192c6
(4)	(2, 12)	150c3
(4)	(4, 4)	40a4
(4)	(12), (2, 4)	90c1
(4)	(8) <sup>2</sup> , (2, 4)	15a7
(4)	(8) <sup>2</sup> , (2, 8)	240d6
(5)	(15)	50b1
(5)	(25)	11a3
(6)	(2, 6)	14a4
(6)	(2, 6), (3, 6)	14a1
(6)	(12) <sup>2</sup> , (2, 6)	30a1
(8)	(2, 8)	15a4
(8)	(16) <sup>2</sup> , (2, 8)	210e1
(10)	(2, 10)	66c1
(12)	(2, 12)	90c3
(2, 2)	(2, 4)	33a1

$G$	$\mathcal{H}_{\mathbb{Q}}(10, E)$	Label
(2, 2)	(2, 6)	30a6
(2, 2)	(2, 8)	63a2
(2, 2)	(2, 12)	960o6
(2, 2)	$(2, 4)^2$	17a2
(2, 2)	(2, 4), (2, 6)	90c2
(2, 2)	(2, 4), (2, 8)	75b3
(2, 2)	$(2, 4)^3$	15a2
(2, 2)	$(2, 4)^2, (2, 8)$	510e5
(2, 4)	(2, 8)	15a3
(2, 4)	(4, 4)	195a3
(2, 4)	$(2, 8)^2$	1230f2
(2, 4)	(2, 8), (4, 4)	15a1
(2, 4)	$(2, 8)^2, (4, 4)$	210e3
(2, 6)	(2, 12)	90c6



$$d = 12$$

$$\Phi_{\mathbb{Q}}(12) \supseteq \left\{ \begin{array}{l} (2), (3), (4), (5), (6), (7), (8), (9), (10), (12), (13), (14), (15), (16), (18), (20), (21), (24), (26), (28), (30), (36), (37), (42) \\ , (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 14), (2, 16), (2, 18), (2, 28), (2, 30), (2, 42), \\ (3, 3), (3, 6), (3, 9), (3, 12), (3, 15), (3, 21), (4, 4), (4, 8), (4, 12), (5, 5), (5, 10), (6, 6), (6, 12) \end{array} \right\}$$

$G$	$\Phi_{\mathbb{Q}}(12, G) \setminus \{G\} \supseteq$
$()$	$\left\{ \begin{array}{l} (2), (3), (4), (5), (6), (7), (8), (9), (10), (12), (13), (14), (15), (18), (21), (26), (30), (37), \\ (2, 2), (2, 4), (2, 6), (2, 10), (2, 14), (2, 18), (2, 28), (2, 30), (3, 3), (3, 6), (3, 9), (3, 15), (4, 4), (4, 12), (5, 5), (5, 10), (6, 6) \end{array} \right\}$
$(2)$	$\left\{ \begin{array}{l} (4), (6), (8), (10), (12), (14), (16), (18), (20), (24), (28), (36), (42), \\ (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 14), (2, 16), (2, 18), (2, 28), (2, 42), (3, 6), (3, 12), (4, 4), (4, 8), (6, 6), (6, 12) \end{array} \right\}$
$(3)$	$\{(6), (9), (12), (15), (21), (24), (30), (2, 6), (2, 12), (2, 30), (3, 3), (3, 6), (3, 9), (3, 15), (3, 21), (4, 12), (6, 6)\}$
$(4)$	$\{(8), (12), (16), (24), (2, 4), (2, 8), (2, 12), (2, 16), (3, 12), (4, 4), (4, 8), (6, 12)\}$
$(5)$	$\{(10), (15), (20), (30), (2, 10), (2, 30), (3, 15), (5, 5), (5, 10)\}$
$(6)$	$\{(12), (18), (24), (36), (42), (2, 6), (2, 12), (2, 18), (2, 42), (3, 6), (3, 12), (6, 6), (6, 12)\}$
$(7)$	$\{(14), (28), (2, 14)\}$
$(8)$	$\{(16), (2, 8), (2, 16), (4, 8)\}$
$(9)$	$\{(18), (36), (2, 18), (3, 9)\}$
$(10)$	$\{(20), (2, 10)\}$
$(12)$	$\{(24), (2, 12), (3, 12), (6, 12)\}$
$(2, 2)$	$\{(2, 4), (2, 6), (2, 8), (2, 12), (2, 16), (4, 4), (4, 8), (6, 6), (6, 12)\}$
$(2, 4)$	$\{(2, 8), (2, 16), (4, 4), (4, 8)\}$
$(2, 6)$	$\{(2, 12), (6, 6), (6, 12)\}$
$(2, 8)$	$\{(2, 16), (4, 8)\}$

$$h_{\mathbb{Q}}(12) \geq 19 \quad \#\mathcal{H}_{\mathbb{Q}}(12) \geq 268 \quad N_{\mathbb{Q}}(12) \geq 18176$$

$G$	$\mathcal{H}_{\mathbb{Q}}(12, E)$	Label
()	(2, 2), (2, 4)	392b1
()	(2, 14), (2, 28)	1922c1
()	(2), (4), (2, 2)	37a1
()	(2, 2), (2, 4), (2, 14)	1922e1
()	(4), (8), (4, 4)	648a1
()	(7), (2, 2), (2, 4)	1922c2
()	(2), (4), (5), (2, 10)	121d1
()	(2), (4), (7), (2, 2)	26b2
()	(2), (4), (7), (2, 14)	10816bk1
()	(2), (4), (13), (2, 2)	147b1
()	(2), (4), (37), (2, 2)	1225e1
()	(3), (6), (12), (6, 6)	486a1
()	(4), (7), (8), (4, 4)	338b1
()	(2), (4) <sup>2</sup> , (2, 2), (4, 4)	648c1
()	(2), (4), (5), (2, 2), (2, 10)	1369e1
()	(2), (4), (5), (10), (2, 2)	11a2
()	(2), (4), (13), (26), (2, 2)	2890d1
()	(3), (6), (12), (21), (6, 6)	108a2
()	(2), (3) <sup>2</sup> , (4), (2, 6), (3, 3)	300b2
()	(2), (3), (4), (9), (2, 18), (3, 9)	1728e3
()	(2), (4) <sup>2</sup> , (7), (2, 2), (4, 4)	338a1
()	(2), (4), (5) <sup>2</sup> , (10), (2, 10)	121d2
()	(2), (4), (5), (10), (2, 2), (2, 10)	75a2
()	(2), (4), (7), (14), (2, 2), (2, 14)	208d1
()	(3) <sup>2</sup> , (2, 2), (2, 4), (2, 6), (3, 3)	196a1
()	(3) <sup>2</sup> , (4), (8), (3, 3), (4, 12)	1296h1
()	(2), (3) <sup>2</sup> , (4), (6), (2, 2), (2, 6)	6627e1
()	(2), (3) <sup>2</sup> , (4), (6) <sup>2</sup> , (2, 2)	1210d1
()	(2), (3) <sup>2</sup> , (4), (9), (2, 6), (3, 9)	15552ch2
()	(2), (3) <sup>2</sup> , (4), (21), (2, 6), (3, 3)	225b2
()	(2), (3), (4), (6) <sup>2</sup> , (2, 2), (6, 6)	300a1
()	(2), (4), (5) <sup>2</sup> , (10) <sup>2</sup> , (2, 2)	18176b2
()	(2), (3) <sup>2</sup> , (4) <sup>2</sup> , (2, 6), (3, 3), (4, 12)	1296j1
()	(2), (3) <sup>2</sup> , (4), (5), (10), (2, 6), (3, 3)	1600v1
()	(2), (3) <sup>2</sup> , (4), (6), (2, 2), (2, 6), (3, 3)	44a2
()	(2), (3) <sup>2</sup> , (4), (6), (2, 2), (2, 6), (3, 9)	486c2
()	(2), (3) <sup>2</sup> , (4), (6), (2, 6), (3, 3), (6, 6)	361b2
()	(2), (3) <sup>2</sup> , (4), (6), (9), (2, 2), (2, 6)	121b1
()	(2), (3) <sup>2</sup> , (4), (7), (21), (2, 6), (3, 3)	441b2
()	(2), (3) <sup>2</sup> , (4), (9) <sup>2</sup> , (2, 6), (3, 3)	361b1
()	(2), (3) <sup>2</sup> , (4), (12), (2, 2), (3, 3), (4, 12)	162a2
()	(2), (3), (4), (6) <sup>2</sup> , (7), (2, 2), (6, 6)	1728f1
()	(2), (3), (4), (9), (18), (2, 2), (2, 18), (3, 9)	54a2
()	(2), (3), (6) <sup>2</sup> , (7), (12), (2, 2), (6, 6)	432b1

$G$	$\mathcal{H}_{\mathbb{Q}}(12, E)$	Label
()	(2), (4), (5) <sup>2</sup> , (10) <sup>2</sup> , (2, 2), (2, 10)	99d2
()	(2), (4), (5), (10), (2, 2), (2, 10), (5, 5), (5, 10)	275b2
()	(3) <sup>2</sup> , (4), (8), (12), (3, 3), (4, 4), (4, 12)	162d2
()	(2), (3) <sup>2</sup> , (4), (5), (6) <sup>2</sup> , (10), (2, 2)	338d1
()	(2), (3) <sup>2</sup> , (4), (6), (7), (2, 2), (2, 6), (3, 3)	225a1
()	(2), (3) <sup>2</sup> , (4), (6), (9), (2, 2), (2, 6), (3, 9)	1734j1
()	(2), (3) <sup>2</sup> , (4), (6), (9), (2, 6), (3, 3), (6, 6)	1728e2
()	(2), (3) <sup>2</sup> , (4), (6), (21), (2, 2), (2, 6), (3, 3)	162c2
()	(2), (3) <sup>2</sup> , (4), (9) <sup>2</sup> , (21), (2, 6), (3, 3)	27a2
()	(2), (3) <sup>2</sup> , (6), (7), (12), (2, 2), (2, 6), (3, 3)	3600bd2
()	(2), (3) <sup>2</sup> , (4), (5), (6), (10), (2, 2), (2, 6), (3, 3)	400b3
()	(2), (3) <sup>2</sup> , (4), (6), (7) <sup>2</sup> , (2, 2), (2, 6), (3, 3)	441a1
()	(2), (3) <sup>2</sup> , (4), (6), (7), (21), (2, 2), (2, 6), (3, 3)	162b2
()	(2), (3) <sup>2</sup> , (4), (6), (9) <sup>2</sup> , (2, 2), (2, 6), (3, 3)	19a2
()	(2), (3) <sup>2</sup> , (4), (6), (15), (30), (2, 2), (2, 6), (3, 3)	50b3
()	(2), (3) <sup>2</sup> , (6), (7) <sup>2</sup> , (12), (2, 2), (2, 6), (3, 3)	7056bc2
()	(2), (3) <sup>2</sup> , (4), (5), (6), (10), (15), (2, 2), (2, 6), (3, 3)	50a2
()	(2), (3) <sup>2</sup> , (4), (5), (6), (15) <sup>2</sup> , (2, 10), (2, 30), (3, 3)	1600q1
()	(2), (3) <sup>2</sup> , (4), (5), (10), (15) <sup>2</sup> , (2, 6), (2, 30), (3, 3)	1600v3
()	(2), (3) <sup>2</sup> , (4), (6) <sup>2</sup> , (2, 2), (2, 6) <sup>2</sup> , (3, 3), (3, 6)	175b2
()	(2), (3) <sup>2</sup> , (4), (6), (7), (9) <sup>2</sup> , (2, 2), (2, 6), (3, 3)	432a2
()	(2), (3) <sup>2</sup> , (6), (7), (9) <sup>2</sup> , (12), (2, 2), (2, 6), (3, 3)	432a4
()	(2), (3) <sup>2</sup> , (4) <sup>2</sup> , (6), (12) <sup>2</sup> , (2, 2), (2, 6), (3, 3), (4, 4)	4050g2
()	(2), (3) <sup>2</sup> , (4), (6) <sup>2</sup> , (7), (9) <sup>2</sup> , (2, 2), (3, 3), (6, 6)	675a1
()	(2), (3) <sup>2</sup> , (4), (6) <sup>2</sup> , (9), (2, 2), (2, 6) <sup>2</sup> , (3, 3), (3, 6)	432e2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (7), (9) <sup>2</sup> , (12), (2, 2), (3, 3), (6, 6)	432a1
()	(2), (3) <sup>2</sup> , (4), (5), (6), (10), (15), (30), (2, 2), (2, 6), (2, 10), (3, 15)	450d1
()	(2), (3) <sup>2</sup> , (4), (5), (6), (10), (15) <sup>2</sup> , (30), (2, 2), (2, 6), (2, 10), (3, 3)	400b1
()	(2), (3) <sup>2</sup> , (4), (5), (6), (10), (15) <sup>2</sup> , (30), (2, 2), (2, 6), (2, 10), (3, 3), (3, 15)	50a4
(2)	(2, 2), (2, 4)	200b1
(2)	(4), (2, 2)	46a1
(2)	(4), (2, 10)	450a3
(2)	(4), (2, 2), (2, 4)	128a1
(2)	(4), (2, 2), (2, 10)	1014c2
(2)	(4), (2, 2), (2, 14)	784h2
(2)	(4), (10), (2, 2)	66c3
(2)	(8), (2, 2), (2, 4)	294f1
(2)	(4) <sup>2</sup> , (2, 2), (2, 4)	120b1
(2)	(4) <sup>2</sup> , (2, 2), (4, 4)	320a4
(2)	(4), (6), (2, 2), (2, 6)	726a1
(2)	(4), (6), (2, 6), (6, 6)	80b1
(2)	(4), (6) <sup>2</sup> , (2, 2)	726a2
(2)	(4), (8), (2, 2), (2, 8)	45a1
(2)	(4), (10), (2, 2), (2, 10)	150b3

$G$	$\mathcal{H}_{\mathbb{Q}}(12, E)$	Label
(2)	(4), (14), (2, 2), (2, 14)	441d2
(2)	(4), (16), (2, 2), (2, 16)	3150bk1
(2)	(8) <sup>2</sup> , (2, 2), (4, 8)	2880r6
(2)	(10), (20), (2, 2), (2, 10)	450a4
(2)	(4), (2, 2), (2, 4), (2, 14), (2, 28)	49a1
(2)	(4) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup>	33a4
(2)	(4) <sup>2</sup> , (8), (2, 2), (2, 4)	33a2
(2)	(4) <sup>2</sup> , (8), (2, 2), (4, 4)	64a4
(2)	(4), (6), (2, 6), (2, 12), (6, 6)	1040g2
(2)	(4), (6), (12), (2, 6), (6, 6)	84a3
(2)	(4), (6), (14), (2, 6), (6, 6)	144a4
(2)	(4), (8), (2, 2), (2, 4), (2, 8)	144b1
(2)	(4), (8), (16), (2, 2), (2, 8)	63a1
(2)	(4), (14), (2, 2), (2, 4), (2, 14)	441d1
(2)	(4), (14), (28), (2, 2), (2, 14)	49a2
(2)	(6) <sup>2</sup> , (18), (2, 2), (2, 4)	256a1
(2)	(4) <sup>2</sup> , (8), (2, 2), (2, 4) <sup>2</sup>	17a3
(2)	(4) <sup>2</sup> , (8) <sup>2</sup> , (2, 2), (2, 4)	45a3
(2)	(4) <sup>2</sup> , (12), (2, 6), (2, 12), (6, 12)	450g1
(2)	(4), (6), (2, 2), (2, 6) <sup>2</sup> , (6, 6)	80b3
(2)	(4), (6), (2, 6), (2, 18) <sup>2</sup> , (6, 6)	98a1
(2)	(4), (6) <sup>2</sup> , (2, 2), (2, 6), (6, 6)	336a1
(2)	(4), (6), (12), (2, 6), (2, 42), (6, 6)	36a3
(2)	(4), (8) <sup>2</sup> , (2, 2), (2, 4), (2, 8)	24a6
(2)	(4), (8) <sup>3</sup> , (2, 2), (2, 8)	45a6
(2)	(4), (8), (16) <sup>2</sup> , (2, 2), (2, 8)	75b1
(2)	(4), (12), (2, 2), (2, 6), (2, 12), (6, 12)	450g3
(2)	(4), (14), (28), (2, 2), (2, 4), (2, 14)	784h1
(2)	(6) <sup>2</sup> , (12), (2, 2), (2, 6), (6, 6)	2352t1
(2)	(4) <sup>2</sup> , (8) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup>	63a6
(2)	(4), (6) <sup>2</sup> , (2, 2), (2, 6) <sup>2</sup> , (3, 6)	112c3
(2)	(4), (6) <sup>2</sup> , (2, 2), (2, 6), (2, 14), (6, 6)	576a1
(2)	(4), (6) <sup>2</sup> , (12), (2, 2), (2, 6), (6, 6)	2352t3
(2)	(4), (6), (14), (2, 2), (2, 6) <sup>2</sup> , (6, 6)	144a2
(2)	(4), (8) <sup>3</sup> , (16), (2, 2), (2, 8)	75b6
(2)	(4), (8) <sup>2</sup> , (16), (2, 2), (2, 4), (2, 8)	510e7
(2)	(4), (8), (16) <sup>2</sup> , (2, 2), (2, 4), (2, 8)	1470k3
(2)	(4), (14), (28), (2, 2), (2, 4), (2, 14), (2, 28)	49a3
(2)	(6) <sup>2</sup> , (12), (2, 2), (2, 6) <sup>2</sup> , (3, 6)	80b2
(2)	(6) <sup>2</sup> , (12), (2, 2), (2, 6), (2, 14), (6, 6)	144a3
(2)	(4) <sup>2</sup> , (6), (12) <sup>2</sup> , (2, 6), (2, 12), (6, 6)	1470b7
(2)	(4) <sup>2</sup> , (8) <sup>3</sup> , (2, 2), (2, 4) <sup>2</sup>	15a5
(2)	(4) <sup>2</sup> , (8) <sup>4</sup> , (2, 2), (2, 4)	630c6
(2)	(4) <sup>2</sup> , (8) <sup>4</sup> , (2, 2), (4, 4)	4410r6

$G$	$\mathcal{H}_{\mathbb{Q}}(12, E)$	Label
(2)	(4), (6), (2, 2), (2, 4), (2, 6) <sup>2</sup> , (2, 12), (6, 6)	1040g4
(2)	(4), (6) <sup>2</sup> , (2, 2), (2, 4), (2, 6) <sup>2</sup> , (3, 6)	320c2
(2)	(4), (6) <sup>2</sup> , (12), (2, 2), (2, 6) <sup>2</sup> , (3, 6)	80b4
(2)	(4), (6) <sup>2</sup> , (12), (2, 2), (2, 6), (2, 14), (6, 6)	144a1
(2)	(4), (6) <sup>2</sup> , (14), (2, 2), (2, 6) <sup>2</sup> , (3, 6)	576a2
(2)	(4), (6), (12) <sup>2</sup> , (2, 2), (2, 6), (2, 12), (3, 12)	240b3
(2)	(4), (8) <sup>2</sup> , (16) <sup>2</sup> , (2, 2), (2, 4), (2, 8)	1680p1
(2)	(4) <sup>2</sup> , (6), (12) <sup>2</sup> , (2, 6), (2, 12) <sup>2</sup> , (6, 6)	960o7
(2)	(4), (6) <sup>2</sup> , (12), (2, 2), (2, 6) <sup>2</sup> , (3, 6), (6, 6)	20a3
(2)	(4), (6), (8), (12) <sup>2</sup> , (2, 2), (2, 6), (2, 12), (3, 12)	960e3
(2)	(4), (6), (12) <sup>2</sup> , (2, 2), (2, 4), (2, 6), (2, 12), (3, 12)	720j3
(2)	(4), (6), (12) <sup>2</sup> , (2, 2), (2, 6), (2, 12), (3, 12), (6, 12)	30a3
(2)	(4), (6), (12) <sup>2</sup> , (24), (2, 2), (2, 6), (2, 12), (3, 12)	960o3
(2)	(4), (6), (18), (2, 2), (2, 6) <sup>2</sup> , (2, 18) <sup>2</sup> , (6, 6)	98a5
(2)	(6) <sup>2</sup> , (12), (2, 2), (2, 6) <sup>2</sup> , (3, 6), (3, 12), (6, 6)	84a4
(2)	(4), (6) <sup>2</sup> , (18) <sup>2</sup> , (2, 2), (2, 6) <sup>2</sup> , (2, 18), (3, 6)	112c1
(2)	(6) <sup>2</sup> , (12), (42), (2, 2), (2, 6) <sup>2</sup> , (3, 6), (3, 12), (6, 6)	36a4
(2)	(4) <sup>2</sup> , (6), (12) <sup>2</sup> , (2, 2), (2, 4), (2, 6) <sup>2</sup> , (2, 12), (6, 6)	1470b4
(2)	(4) <sup>2</sup> , (6), (12) <sup>3</sup> , (2, 2), (2, 4), (2, 6), (2, 12), (3, 12)	240b1
(2)	(4), (6) <sup>2</sup> , (12), (2, 2), (2, 4), (2, 6) <sup>2</sup> , (2, 12), (3, 6), (6, 6)	130a4
(2)	(4), (6) <sup>2</sup> , (12), (18) <sup>2</sup> , (2, 2), (2, 6) <sup>2</sup> , (2, 18), (3, 6)	98a6
(2)	(6) <sup>2</sup> , (12), (18) <sup>2</sup> , (36), (2, 2), (2, 6) <sup>2</sup> , (2, 18), (3, 6)	98a2
(2)	(4) <sup>2</sup> , (6) <sup>2</sup> , (12) <sup>3</sup> , (2, 2), (2, 4), (2, 6) <sup>2</sup> , (3, 12)	240b4
(2)	(4) <sup>2</sup> , (6), (8), (12) <sup>3</sup> , (2, 2), (2, 4), (2, 6), (2, 12), (3, 12)	960e1
(2)	(4) <sup>2</sup> , (6), (12) <sup>3</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 12), (3, 12)	720j1
(2)	(4) <sup>2</sup> , (6) <sup>2</sup> , (12) <sup>4</sup> , (2, 2), (2, 4), (2, 6) <sup>2</sup> , (3, 6)	240b5
(2)	(4) <sup>2</sup> , (6), (8), (12) <sup>3</sup> , (24), (2, 2), (2, 4), (2, 6), (2, 12), (3, 12)	960o1
(2)	(4) <sup>2</sup> , (6), (12) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (2, 12) <sup>2</sup> , (6, 6)	960o4
(2)	(4), (6) <sup>2</sup> , (12), (18) <sup>2</sup> , (2, 2), (2, 6) <sup>2</sup> , (2, 18) <sup>2</sup> , (3, 6), (6, 6)	14a3
(2)	(4) <sup>2</sup> , (6) <sup>2</sup> , (8), (12) <sup>4</sup> , (2, 2), (2, 4), (2, 6) <sup>2</sup> , (3, 6)	150c5
(2)	(4) <sup>2</sup> , (6) <sup>2</sup> , (12) <sup>4</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (3, 6)	150c4
(2)	(4) <sup>2</sup> , (6) <sup>2</sup> , (12) <sup>4</sup> , (2, 2), (2, 4), (2, 6) <sup>2</sup> , (2, 12), (3, 6), (3, 12) <sup>2</sup> , (6, 6)	30a7
(2)	(4) <sup>2</sup> , (6) <sup>2</sup> , (8), (12) <sup>4</sup> , (24), (2, 2), (2, 4), (2, 6) <sup>2</sup> , (2, 12), (3, 6), (3, 12) <sup>2</sup> , (6, 6)	90c5
(2)	(4) <sup>2</sup> , (6) <sup>2</sup> , (12) <sup>4</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (2, 12) <sup>2</sup> , (3, 6), (3, 12) <sup>2</sup> , (6, 6)	90c4
(3)	(2, 6), (2, 12), (3, 3)	196b1
(3)	(6), (12), (6, 6)	300b1
(3)	(6), (12), (2, 6), (3, 3)	44a1
(3)	(6), (12), (21), (6, 6)	108a1
(3)	(12), (24), (3, 3), (4, 12)	162d1
(3)	(6), (9), (12), (2, 6), (3, 9)	486f1
(3)	(6), (12), (21), (2, 6), (3, 3)	162b1
(3)	(6), (9) <sup>2</sup> , (12), (2, 6), (3, 3)	19a3
(3)	(6), (12), (2, 6), (3, 3), (3, 6), (6, 6)	19a1
(3)	(6), (12), (3, 3), (3, 9), (3, 21), (6, 6)	27a1

$G$	$\mathcal{H}_{\mathbb{Q}}(12, E)$	Label
(3)	$(6), (12)^2, (2, 6), (3, 3), (4, 12)$	162a1
(3)	$(6), (12), (15), (30), (2, 6), (3, 3)$	50a1
(3)	$(6), (12), (21)^2, (2, 6), (3, 3)$	441b1
(3)	$(6), (9)^2, (12), (21), (2, 6), (3, 3)$	27a4
(3)	$(6), (9), (12), (3, 3), (3, 9), (3, 21), (6, 6)$	27a3
(3)	$(6), (12), (2, 6), (3, 3), (3, 6), (3, 9), (6, 6)$	54a1
(3)	$(6), (9), (12), (2, 6), (3, 3), (3, 6), (3, 9), (6, 6)$	54b1
(3)	$(6), (12), (15), (30), (2, 6), (2, 30), (3, 3), (3, 15)$	50a3
(4)	$(2, 4), (2, 8)$	64a3
(4)	$(8), (2, 4)$	33a3
(4)	$(8), (2, 8)$	192c6
(4)	$(8), (4, 4)$	40a4
(4)	$(8), (2, 4), (2, 8)$	17a4
(4)	$(8), (2, 4), (4, 4)$	17a1
(4)	$(8), (2, 8), (2, 16)$	1470k1
(4)	$(8)^2, (2, 4), (2, 8)$	24a3
(4)	$(8)^2, (2, 8), (4, 8)$	240d6
(4)	$(8), (12), (2, 12), (6, 12)$	150c3
(4)	$(8)^2, (16), (2, 4), (2, 8)$	21a4
(4)	$(8)^2, (2, 4), (2, 8)^2, (4, 4)$	195a6
(4)	$(8)^2, (16)^2, (2, 4), (2, 8)$	15a7
(4)	$(8), (12), (2, 4), (2, 12)^2, (6, 12)$	150c1
(4)	$(8)^2, (16)^3, (2, 4), (2, 8)$	1230f4
(4)	$(8), (12)^2, (2, 4), (2, 12)^2, (3, 12)$	720j5
(4)	$(12)^2, (24), (2, 4), (2, 12)^2, (3, 12)$	960o8
(4)	$(8)^2, (16)^2, (2, 4), (2, 8)^2, (4, 4)$	210e6
(4)	$(8), (12)^2, (24), (2, 4), (2, 12)^2, (3, 12)$	960o5
(4)	$(8), (12)^2, (24), (2, 4), (2, 12)^2, (3, 12), (6, 12)$	90c1
(5)	$(10), (20), (2, 10)$	11a3
(5)	$(10), (20), (2, 10), (5, 5), (5, 10)$	11a1
(5)	$(10), (15)^2, (20), (30), (2, 10), (2, 30), (3, 15)$	50b1
(6)	$(12), (2, 6), (6, 6)$	84a1
(6)	$(12), (2, 6), (2, 42), (6, 6)$	36a1
(6)	$(12), (2, 6), (3, 6), (6, 6)$	14a1
(6)	$(12), (2, 6), (2, 12), (3, 6), (6, 6)$	130a2
(6)	$(12), (2, 6), (3, 6), (3, 12), (6, 6)$	84a2
(6)	$(12)^2, (2, 6), (2, 12), (3, 12), (6, 12)$	30a1
(6)	$(12), (42), (2, 6), (3, 6), (3, 12), (6, 6)$	36a2
(6)	$(12)^2, (2, 6), (2, 12), (3, 6), (3, 12)^2, (6, 6)$	30a4
(6)	$(12)^2, (2, 6), (2, 12)^2, (3, 6), (3, 12)^2, (6, 6)$	90c7
(6)	$(12)^2, (24), (2, 6), (2, 12), (3, 6), (3, 12)^2, (6, 6)$	90c8
(6)	$(12), (18)^2, (36), (2, 6), (2, 18)^2, (3, 6), (6, 6)$	14a4
(7)	$(14), (28), (2, 14)$	26b1
(8)	$(16), (2, 8)$	21a3

$G$	$\mathcal{H}_{\mathbb{Q}}(12, E)$	Label
(8)	(16), (2, 8), (2, 16)	1230f1
(8)	(16), (2, 8), (4, 8)	15a4
(8)	(16) <sup>2</sup> , (2, 8), (2, 16)	210e1
(9)	(18), (36), (2, 18), (3, 9)	54b3
(10)	(20), (2, 10)	66c1
(12)	(24), (2, 12), (3, 12), (6, 12)	90c3
(2, 2)	(2, 4), (4, 4)	64a1
(2, 2)	(2, 4) <sup>3</sup>	33a1
(2, 2)	(2, 4) <sup>2</sup> , (2, 8)	63a2
(2, 2)	(2, 4) <sup>2</sup> , (4, 4)	17a2
(2, 2)	(2, 4) <sup>2</sup> , (4, 8)	1200j4
(2, 2)	(2, 4), (2, 8), (4, 8)	75b3
(2, 2)	(2, 4) <sup>3</sup> , (2, 8)	45a5
(2, 2)	(2, 4) <sup>3</sup> , (4, 4)	231a3
(2, 2)	(2, 4) <sup>2</sup> , (2, 8), (2, 16)	75b2
(2, 2)	(2, 4) <sup>2</sup> , (2, 8), (4, 4)	40a1
(2, 2)	(2, 4) <sup>2</sup> , (2, 8), (4, 8)	510e5
(2, 2)	(2, 4) <sup>3</sup> , (2, 8) <sup>2</sup>	45a2
(2, 2)	(2, 4) <sup>3</sup> , (2, 8), (4, 4)	21a2
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 12), (6, 12)	960o6
(2, 2)	(2, 4) <sup>2</sup> , (2, 8) <sup>2</sup> , (4, 4)	75b5
(2, 2)	(2, 4) <sup>3</sup> , (2, 6) <sup>2</sup> , (6, 6)	1050a2
(2, 2)	(2, 4) <sup>3</sup> , (2, 8) <sup>2</sup> , (4, 4)	42a3
(2, 2)	(2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (2, 12), (6, 6)	240b6
(2, 2)	(2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (2, 12), (6, 12)	1470b2
(2, 2)	(2, 4) <sup>2</sup> , (2, 8) <sup>3</sup> , (4, 4)	294c2
(2, 2)	(2, 4), (2, 6) <sup>2</sup> , (2, 12) <sup>2</sup> , (6, 6)	14400bo6
(2, 2)	(2, 4) <sup>3</sup> , (2, 6) <sup>2</sup> , (2, 12), (6, 6)	240b2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 12) <sup>2</sup> , (6, 12)	960o2
(2, 2)	(2, 4) <sup>3</sup> , (2, 8) <sup>3</sup> , (4, 4)	15a2
(2, 2)	(2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (2, 12) <sup>2</sup> , (6, 6)	450g2
(2, 2)	(2, 4) <sup>2</sup> , (2, 8) <sup>4</sup> , (4, 4)	6720cd4
(2, 2)	(2, 4) <sup>3</sup> , (2, 6) <sup>2</sup> , (2, 12) <sup>2</sup> , (6, 6)	1470m2
(2, 2)	(2, 4) <sup>3</sup> , (2, 8) <sup>4</sup> , (4, 4)	210e5
(2, 2)	(2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (2, 12) <sup>3</sup> , (6, 6)	720j6
(2, 2)	(2, 4), (2, 6) <sup>2</sup> , (2, 12) <sup>4</sup> , (6, 6)	150c6
(2, 2)	(2, 4) <sup>3</sup> , (2, 6) <sup>2</sup> , (2, 12) <sup>3</sup> , (6, 6)	210a6
(2, 2)	(2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (2, 12) <sup>3</sup> , (6, 6), (6, 12)	30a6
(2, 2)	(2, 4) <sup>3</sup> , (2, 6) <sup>2</sup> , (2, 12) <sup>4</sup> , (6, 6)	150c2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6) <sup>2</sup> , (2, 12) <sup>4</sup> , (6, 6), (6, 12)	90c2
(2, 4)	(2, 8) <sup>2</sup> , (4, 4)	21a1
(2, 4)	(2, 8) <sup>2</sup> , (4, 8)	1230f2
(2, 4)	(2, 8), (4, 4), (4, 8)	15a1
(2, 4)	(2, 8) <sup>2</sup> , (2, 16), (4, 4)	15a3

$G$	$\mathcal{H}_{\mathbb{Q}}(12, E)$	Label
(2, 4)	$(2, 8)^2, (4, 4), (4, 8)$	210e3
(2, 6)	$(2, 12)^3, (6, 6)$	210a2
(2, 6)	$(2, 12)^3, (6, 6), (6, 12)$	30a2
(2, 8)	$(2, 16)^2, (4, 8)$	210e2



$$d = 14$$

$$\Phi_{\mathbb{Q}}(14) \supseteq \{(3), (4), (5), (6), (7), (8), (9), (10), (12), (15), (16), (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (3, 3), (3, 6), (4, 4)\}$$

$G$	$\Phi_{\mathbb{Q}}(14, G) \setminus \{G\} \supseteq$
( )	$\{(3), (5), (7), (9)\}$
(2)	$\{(4), (6), (8), (10), (12), (16), (2, 2), (2, 6), (2, 10)\}$
(3)	$\{(15), (3, 3)\}$
(4)	$\{(8), (12), (2, 4), (2, 8), (2, 12), (4, 4)\}$
(5)	$\{(15)\}$
(6)	$\{(12), (2, 6), (3, 6)\}$
(7)	$\{\}$
(8)	$\{(16), (2, 8)\}$
(9)	$\{\}$
(10)	$\{(2, 10)\}$
(12)	$\{(2, 12)\}$
(2, 2)	$\{(2, 4), (2, 6), (2, 8), (2, 12)\}$
(2, 4)	$\{(2, 8), (4, 4)\}$
(2, 6)	$\{(2, 12)\}$
(2, 8)	$\{\}$

$$h_{\mathbb{Q}}(14) \geq 4 \quad \#\mathcal{H}_{\mathbb{Q}}(14) \geq 52 \quad N_{\mathbb{Q}}(14) \geq 3150$$

$G$	$\mathcal{H}_{\mathbb{Q}}(14, E)$	Label
()	(3)	19a2
()	(5)	75a2
()	(7)	26b2
()	(9)	54a2
()	(3) <sup>2</sup>	175b2
()	(3), (5)	50a4
(2)	(2, 2)	46a1
(2)	(2, 6)	36a3
(2)	(2, 10)	450a3
(2)	(6), (2, 2)	14a3
(2)	(6), (2, 6)	98a3
(2)	(10), (2, 2)	150b3
(2)	(4) <sup>2</sup> , (2, 2)	15a5
(2)	(4) <sup>2</sup> , (2, 6)	450g1
(2)	(4), (8), (2, 2)	24a6
(2)	(4), (12), (2, 2)	30a3
(2)	(4), (16), (2, 2)	3150bk1
(2)	(6) <sup>2</sup> , (2, 2)	98a4
(2)	(8) <sup>2</sup> , (2, 2)	2880r6
(2)	(4) <sup>2</sup> , (6), (2, 2)	30a7
(3)	(3, 3)	19a1
(3)	(15)	50a3
(4)	(2, 4)	17a1
(4)	(2, 8)	192c6
(4)	(2, 12)	150c3
(4)	(4, 4)	40a4
(4)	(12), (2, 4)	90c1
(4)	(8) <sup>2</sup> , (2, 4)	15a7
(4)	(8) <sup>2</sup> , (2, 8)	240d6
(5)	(15)	50b1
(6)	(2, 6)	14a4
(6)	(2, 6), (3, 6)	14a1
(6)	(12) <sup>2</sup> , (2, 6)	30a1
(8)	(2, 8)	15a4
(8)	(16) <sup>2</sup> , (2, 8)	210e1
(10)	(2, 10)	66c1
(12)	(2, 12)	90c3
(2, 2)	(2, 4)	33a1
(2, 2)	(2, 6)	30a6
(2, 2)	(2, 8)	63a2
(2, 2)	(2, 12)	960o6
(2, 2)	(2, 4) <sup>2</sup>	17a2
(2, 2)	(2, 4), (2, 6)	90c2
(2, 2)	(2, 4), (2, 8)	75b3

$G$	$\mathcal{H}_{\mathbb{Q}}(14, E)$	Label
(2, 2)	$(2, 4)^3$	15a2
(2, 2)	$(2, 4)^2, (2, 8)$	510e5
(2, 4)	$(2, 8)$	15a3
(2, 4)	$(4, 4)$	195a3
(2, 4)	$(2, 8)^2$	1230f2
(2, 4)	$(2, 8), (4, 4)$	15a1
(2, 4)	$(2, 8)^2, (4, 4)$	210e3
(2, 6)	$(2, 12)$	90c6

$$d = 15$$

$$\Phi_{\mathbb{Q}}(15) \supseteq \{(2), (3), (4), (5), (6), (7), (9), (10), (11), (12), (13), (14), (18), (21), (22), (25), (50), (2, 2), (2, 6), (2, 14)\}$$

$G$	$\Phi_{\mathbb{Q}}(15, G) \setminus \{G\} \supseteq$
()	\{(2), (3), (4), (5), (6), (7), (10), (11), (13), (22), (2, 2), (2, 14)\}
(2)	\{(6), (10), (14)\}
(3)	\{(6), (9), (12), (21), (2, 6)\}
(4)	\{(12)\}
(5)	\{(10), (25), (50)\}
(6)	\{(18)\}
(7)	\{(14)\}
(8)	\{\}
(9)	\{(18)\}
(10)	\{\}
(12)	\{\}
(2, 2)	\{(2, 6)\}
(2, 4)	\{\}
(2, 6)	\{\}
(2, 8)	\{\}

$$h_{\mathbb{Q}}(15) \geq 3 \quad \#\mathcal{H}_{\mathbb{Q}}(15) \geq 30 \quad N_{\mathbb{Q}}(15) \geq 3969$$

$G$	$\mathcal{H}_{\mathbb{Q}}(15, E)$	Label
()	(2)	26b2
()	(2, 2)	196a1
()	(2, 14)	1922c1
()	(4)	338b2
()	(6)	108a2
()	(2), (3)	19a2
()	(2), (7)	294a1
()	(2), (13)	147b1
()	(3), (2, 2)	196b2
()	(3), (4)	162d2
()	(4), (7)	338b1
()	(7), (2, 2)	3969a1
()	(2), (3), (7)	162b2
()	(2), (5), (10)	11a2
()	(2), (11), (22)	121a2
(2)	(6)	14a3
(2)	(10)	66c3
(2)	(14)	49a3
(3)	(2, 6)	196b1
(3)	(6)	19a1
(3)	(12)	162d1
(3)	(6), (9)	19a3
(3)	(6), (21)	162b1
(4)	(12)	90c1
(5)	(10)	11a1
(5)	(10), (25), (50)	11a3
(6)	(18)	14a4
(7)	(14)	26b1
(9)	(18)	54b3
(2, 2)	(2, 6)	30a6

$$d = 16$$

$$\Phi_{\mathbb{Q}}(16) \supseteq \left\{ \begin{array}{l} (3), (4), (5), (6), (7), (8), (9), (10), (12), (13), (15), (16), (17), (20), (21), (24), (30), (32), (40), (48), \\ (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (2, 20), (2, 24), (2, 30), (2, 32), (3, 3), (3, 6), (3, 12), (3, 15), \\ (4, 4), (4, 8), (4, 12), (4, 16), (4, 20), (5, 5), (5, 15), (6, 6), (6, 12), (8, 8) \end{array} \right\}$$

$G$	$\Phi_{\mathbb{Q}}(16, G) \setminus \{G\} \supseteq$
()	{(3), (5), (7), (9), (13), (15), (17), (21), (3, 3), (3, 15), (5, 5), (5, 15)}
(2)	{(4), (6), (8), (10), (12), (16), (20), (24), (30), (32), (40), (48), (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (2, 20), (2, 24), (2, 30), (2, 32), (3, 6), (3, 12), (4, 4), (4, 8), (4, 12), (4, 16), (4, 20), (6, 6), (6, 12), (8, 8)}
(3)	{(15), (3, 3), (5, 15)}
(4)	{(8), (12), (16), (20), (24), (32), (40), (48), (2, 4), (2, 8), (2, 12), (2, 16), (2, 20), (2, 24), (2, 32), (3, 12), (4, 4), (4, 8), (4, 12), (4, 16), (4, 20), (6, 12), (8, 8)}
(5)	{(15), (5, 5)}
(6)	{(12), (24), (48), (2, 6), (2, 12), (2, 24), (3, 6), (3, 12), (4, 12), (6, 6), (6, 12)}
(7)	{(21)}
(8)	{(16), (24), (32), (48), (2, 8), (2, 16), (2, 24), (2, 32), (4, 8), (4, 16), (8, 8)}
(9)	{}
(10)	{(20), (30), (40), (2, 10), (2, 20), (2, 30)}
(12)	{(24), (48), (2, 12), (2, 24), (4, 12)}
(2, 2)	{(2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (2, 20), (2, 24), (2, 32), (4, 4), (4, 8), (4, 12), (4, 16), (4, 20), (6, 6), (6, 12), (8, 8)}
(2, 4)	{(2, 8), (2, 12), (2, 16), (2, 24), (2, 32), (4, 4), (4, 8), (4, 12), (4, 16), (8, 8)}
(2, 6)	{(2, 12), (2, 24), (4, 12)}
(2, 8)	{(2, 16), (2, 24), (2, 32), (4, 8), (4, 16), (8, 8)}

$$h_{\mathbb{Q}}(16) \geq 25 \quad \#\mathcal{H}_{\mathbb{Q}}(16) \geq 480 \quad N_{\mathbb{Q}}(16) \geq 277440$$

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
()	(3)	19a2
()	(9)	54a2
()	(3), (3, 3)	245a1
()	(3), (5)	11a2
()	(3), (13)	2890d1
()	(3), (15)	50b3
()	(3), (17)	14450n1
()	$(3)^2, (3, 3)$	175b2
()	(3), (5), (3, 3)	1369e2
()	$(3), (5)^2$	608b1
()	(3), (5), (5, 5)	6975a1
()	(3), (5), (5, 15)	225a2
()	(3), (5), (15)	50a2
()	(3), (7), (21)	208d1
()	(3), (15), (5, 15)	225a1
()	$(3), (5)^2, (3, 3)$	361a1
()	$(3), (5)^2, (5, 5)$	18176b2
()	(3), (5), (15), (3, 3)	1369e1
()	(3), (5), (15), (5, 5)	275b2
()	$(3), (5)^2, (15), (5, 5)$	99d2
()	$(3)^2, (5)^2, (15), (3, 3)$	121b1
()	$(3)^2, (5), (15), (3, 3), (3, 15)$	338d1
()	$(3)^2, (5), (15)^2, (3, 3)$	338d2
(2)	(4), (8), (2, 6), (4, 12)	36a3
(2)	(4), (8), (2, 6), $(2, 12)^2$	84a3
(2)	(4), (2, 6), $(2, 12)^2, (2, 24), (4, 12)$	144a4
(2)	(4), (6), (8), (2, 2), (2, 6), (4, 4)	128b1
(2)	(4), (6), (8), (2, 2), (2, 6), (4, 12)	144a1
(2)	(4), (8), (2, 6), $(2, 12)^2, (4, 12)$	80b1
(2)	(4), (8), (2, 6), (2, 12), (2, 24), (4, 12)	1040g2
(2)	(6), (12), (24), (2, 2), (2, 6), (4, 12)	144a3
(2)	(4), (6), (8), (2, 2), $(2, 4)^2, (2, 6)$	46a1
(2)	(4), (6), (8), (2, 2), $(2, 4)^2, (6, 6)$	6727a2
(2)	(4), (6), (8), (2, 10), $(2, 20)^2, (2, 30)$	450a3
(2)	(4), (8), (2, 2), $(2, 4)^2, (2, 6), (6, 6)$	2205a2
(2)	(6), (2, 2), $(2, 4)^2, (2, 6), (2, 8), (4, 4)$	1792a1
(2)	(6), (2, 2), $(2, 4)^2, (2, 6), (2, 8), (4, 8)$	200b1
(2)	(2, 2), $(2, 4)^2, (2, 6), (2, 8), (2, 12), (4, 4), (6, 6)$	223494n1
(2)	(4), (6), (2, 2), $(2, 4)^2, (2, 6), (2, 8), (4, 4)$	128b2
(2)	(4), (6), (2, 2), (2, 4), (2, 6), (2, 12), (2, 24), (4, 12)	144a2
(2)	(4), (6), (8), (2, 2), $(2, 4)^2, (2, 6), (3, 6)$	1568d1
(2)	(4), (6), (8), (2, 2), $(2, 4)^2, (2, 6), (4, 4)$	52a1
(2)	(4), (6), (8), (2, 2), (2, 4), (2, 6), (2, 8), (4, 4)	128a1
(2)	(4), (6), (8), (2, 2), (2, 4), (2, 6), $(2, 12)^2$	2352t3

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2)	(4), (6), (8), (2, 2), (2, 4), (2, 6), (2, 12), (4, 12)	400e1
(2)	(4), (6), (8), (2, 2), (2, 4), (2, 6), (4, 4), (4, 8)	768a2
(2)	(4), (6), (8) <sup>2</sup> , (2, 2), (2, 6), (4, 4), (4, 8)	16810b2
(2)	(4), (6), (8), (12), (2, 2), (2, 4) <sup>2</sup> , (6, 6)	4107a1
(2)	(4), (6), (8), (12), (2, 2), (2, 6), (4, 4), (4, 12)	576a3
(2)	(4), (6), (12), (24), (2, 2), (2, 6), (4, 4), (4, 12)	576a1
(2)	(4), (8), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (4, 4), (6, 6)	173280f2
(2)	(6), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup> , (4, 4)	200b2
(2)	(6), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8), (2, 16), (4, 8)	3362a1
(2)	(6), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8), (3, 6), (4, 4)	4225j1
(2)	(6), (12), (2, 2), (2, 4), (2, 6), (2, 12), (2, 24), (4, 12)	36a4
(2)	(6), (12), (24), (2, 2), (2, 4), (2, 6), (2, 12) <sup>2</sup>	84a4
(2)	(6), (12), (24), (2, 2), (2, 4), (2, 6), (2, 12), (4, 12)	80b2
(2)	(4) <sup>2</sup> , (8), (2, 6), (2, 12) <sup>2</sup> , (2, 24) <sup>2</sup> , (4, 12)	14400bo8
(2)	(4), (6), (2, 2), (2, 4), (2, 6), (2, 8) <sup>2</sup> , (4, 4), (4, 8)	16810b1
(2)	(4), (6), (8), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8), (4, 4)	128a2
(2)	(4), (6), (8), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (3, 6), (4, 4)	126350bb1
(2)	(4), (6), (8), (2, 2), (2, 4), (2, 6), (2, 8) <sup>2</sup> , (4, 4)	867b1
(2)	(4), (6), (8), (12), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (3, 6)	2205a1
(2)	(4), (6), (8), (12), (2, 2), (2, 4), (2, 6), (2, 12), (4, 12)	650j2
(2)	(4), (6), (12), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8), (4, 12)	576a4
(2)	(4), (6), (12), (2, 2), (2, 4), (2, 6), (2, 8), (2, 12), (4, 12)	576a2
(2)	(4), (8), (12), (2, 2), (2, 4), (2, 12), (2, 24) <sup>2</sup> , (4, 12)	14400ef3
(2)	(4), (12), (24), (2, 2), (2, 4), (2, 12), (2, 24) <sup>2</sup> , (4, 12)	14400bo3
(2)	(6), (8), (16), (2, 2), (2, 4), (2, 6), (2, 8) <sup>2</sup> , (4, 8)	294f1
(2)	(6), (12), (24), (2, 2), (2, 4), (2, 6), (2, 12), (2, 24), (4, 12)	1040g1
(2)	(4) <sup>2</sup> , (8) <sup>2</sup> , (2, 6), (2, 12) <sup>2</sup> , (2, 24) <sup>2</sup> , (4, 12)	450g1
(2)	(4), (6), (8), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 10), (2, 20) <sup>2</sup>	1014c2
(2)	(4), (6), (8), (2, 2), (2, 4), (2, 6), (2, 8) <sup>2</sup> , (4, 4), (4, 8)	768c2
(2)	(4), (6), (8), (2, 2), (2, 4), (2, 8), (2, 16), (4, 4), (4, 8), (6, 6)	49a1
(2)	(4), (6), (8) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8), (4, 4)	768a1
(2)	(4), (6), (8), (10), (20), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 10)	66c3
(2)	(4), (6), (8), (12), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 12) <sup>2</sup>	14a3
(2)	(4), (6), (8), (12), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (3, 6), (4, 4)	173280f1
(2)	(4), (6), (8), (12), (2, 6), (2, 12) <sup>2</sup> , (6, 6), (6, 12) <sup>2</sup>	98a3
(2)	(4), (8), (12), (24), (2, 2), (2, 4), (2, 12), (2, 24) <sup>2</sup> , (4, 12)	30a3
(2)	(4) <sup>2</sup> , (8) <sup>2</sup> , (2, 6), (2, 12) <sup>2</sup> , (2, 24) <sup>3</sup> , (4, 12)	960o7
(2)	(4), (6), (8) <sup>2</sup> , (2, 2), (2, 4), (2, 6), (2, 8), (4, 4), (4, 8) <sup>2</sup>	294f2
(2)	(4), (6), (8), (10), (20), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 10), (2, 20)	1014c1
(2)	(4), (6), (8), (10), (30), (2, 2), (2, 4), (2, 6), (2, 10), (2, 20) <sup>2</sup>	14400cg3
(2)	(4), (6), (8), (12), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 12) <sup>2</sup> , (4, 4)	20a3
(2)	(4), (6), (8), (12), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 12) <sup>2</sup> , (6, 6)	726a1
(2)	(4), (6), (8), (12), (2, 2), (2, 4), (2, 6), (2, 8), (2, 12), (4, 4), (4, 12)	130a4
(2)	(4), (6), (12), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8), (2, 12) <sup>2</sup> , (4, 4)	900b2



$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2)	(4), (6), (12), (24), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 12) <sup>2</sup> , (4, 4)	650j1
(2)	(4), (8), (10) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 10), (4, 4), (6, 6)	7200a2
(2)	(4), (8), (10) <sup>2</sup> , (12), (2, 2), (2, 4) <sup>2</sup> , (2, 10), (4, 4), (6, 12)	288a1
(2)	(4), (8), (12), (16), (24), (2, 2), (2, 4), (2, 12), (2, 24) <sup>2</sup> , (4, 12)	960e3
(2)	(4), (8), (12), (24), (2, 2), (2, 4), (2, 8), (2, 12), (2, 24) <sup>2</sup> , (4, 12)	720j3
(2)	(4), (8), (12), (24), (48), (2, 2), (2, 4), (2, 12), (2, 24) <sup>2</sup> , (4, 12)	960o3
(2)	(6), (10), (20), (30), (40), (2, 2), (2, 4), (2, 6), (2, 10), (2, 20) <sup>2</sup>	450a4
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (12) <sup>2</sup> , (2, 2), (2, 4), (2, 6), (4, 4), (4, 8)	7200bn4
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (12) <sup>2</sup> , (2, 2), (2, 6), (4, 4), (4, 8) <sup>2</sup>	320a4
(2)	(4) <sup>2</sup> , (6), (8), (12) <sup>2</sup> , (16), (2, 2), (2, 6), (4, 4), (4, 8) <sup>2</sup>	200c4
(2)	(4), (6), (8) <sup>2</sup> , (10) <sup>2</sup> , (2, 2), (2, 6), (2, 10), (3, 6), (4, 4), (4, 8)	2304h2
(2)	(4), (6), (8) <sup>2</sup> , (16) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8), (4, 4)	768c1
(2)	(4), (6), (8), (10), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 10) <sup>2</sup> , (3, 6), (4, 4)	800d1
(2)	(4), (6), (8), (10) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 10), (3, 6), (4, 4)	1568a1
(2)	(4), (6), (8), (10) <sup>2</sup> , (12), (2, 2), (2, 4) <sup>2</sup> , (2, 10), (4, 4), (6, 6)	576f2
(2)	(4), (6), (8), (10), (20), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 10), (3, 6), (4, 4)	800d2
(2)	(4), (6), (10) <sup>2</sup> , (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (3, 6), (4, 4), (8, 8)	256b1
(2)	(4), (8), (10) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 10), (2, 12), (4, 4), (6, 6)	576f1
(2)	(4), (8), (10) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 10), (2, 12), (4, 4), (6, 12)	288a2
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (12) <sup>2</sup> , (2, 2), (2, 4), (2, 6), (2, 8) <sup>2</sup> , (4, 4)	153c4
(2)	(4) <sup>2</sup> , (6), (8), (12) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup> , (4, 4)	153c1
(2)	(4) <sup>2</sup> , (8) <sup>2</sup> , (10), (12), (2, 2), (2, 4), (2, 10), (2, 20), (4, 4), (4, 8), (6, 12)	288d4
(2)	(4), (6) <sup>2</sup> , (8), (12) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (3, 6), (6, 6)	1210a1
(2)	(4), (6), (8) <sup>2</sup> , (10) <sup>2</sup> , (16), (2, 2), (2, 6), (2, 10), (3, 6), (4, 4), (8, 8)	256b2
(2)	(4), (6), (8) <sup>2</sup> , (12), (24), (2, 2), (2, 4), (2, 6), (2, 8), (2, 16) <sup>2</sup> , (4, 8)	7056bx3
(2)	(4), (6), (8) <sup>2</sup> , (16) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8), (3, 6), (4, 4)	49a2
(2)	(4), (6), (8), (10), (20), (30), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 10), (2, 20) <sup>2</sup>	150b3
(2)	(4), (6), (8), (12), (24), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8), (2, 12) <sup>2</sup> , (4, 4)	130a3
(2)	(4), (6), (10) <sup>2</sup> , (2, 2), (2, 4), (2, 6), (2, 8) <sup>2</sup> , (2, 10), (3, 6), (4, 4), (4, 8)	2304h1
(2)	(6) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (2, 8), (2, 12) <sup>2</sup> , (3, 6), (4, 4), (6, 6)	2304c1
(2)	(6) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (2, 8), (2, 12) <sup>2</sup> , (3, 6), (4, 8), (6, 6)	256a1
(2)	(6), (8) <sup>2</sup> , (16) <sup>2</sup> , (24) <sup>2</sup> , (2, 2), (2, 6), (4, 8), (4, 16) <sup>2</sup> , (8, 8)	2880r6
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (12) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup> , (4, 4)	120b1
(2)	(4) <sup>2</sup> , (6), (8), (12) <sup>2</sup> , (16), (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup> , (4, 4)	936i1
(2)	(4) <sup>2</sup> , (6), (8), (12) <sup>2</sup> , (16), (2, 2), (2, 4), (2, 6), (2, 8) <sup>2</sup> , (4, 4), (4, 8)	289a4
(2)	(4) <sup>2</sup> , (6), (12) <sup>2</sup> , (2, 2), (2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>3</sup> , (4, 4), (4, 8)	289a3
(2)	(4), (6) <sup>2</sup> , (8), (12), (2, 2), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (2, 12), (3, 6), (3, 12), (6, 6)	726a2
(2)	(4), (6), (8) <sup>2</sup> , (12), (16), (24), (2, 2), (2, 4), (2, 6), (2, 8), (2, 16) <sup>2</sup> , (4, 8)	306c1
(2)	(4), (6), (8) <sup>2</sup> , (12), (24), (2, 2), (2, 4), (2, 6), (2, 8) <sup>2</sup> , (2, 16) <sup>2</sup> , (4, 8)	576i4
(2)	(4), (6), (8), (12), (16), (24), (2, 2), (2, 4), (2, 6), (2, 8) <sup>2</sup> , (2, 16) <sup>2</sup> , (4, 8)	147a3
(2)	(4), (6), (8), (12), (16), (24), (2, 2), (2, 4), (2, 6), (2, 8), (2, 16) <sup>2</sup> , (4, 8), (8, 8)	192d6
(2)	(4), (6), (8), (12), (16), (32), (48), (2, 2), (2, 4), (2, 6), (2, 16), (2, 32) <sup>2</sup> , (4, 16)	3150bk1
(2)	(4), (6), (8), (12), (24), (2, 2), (2, 4), (2, 6), (2, 8) <sup>2</sup> , (2, 16) <sup>2</sup> , (4, 8), (4, 16)	277440dv8
(2)	(4) <sup>2</sup> , (6), (8) <sup>2</sup> , (10), (12) <sup>2</sup> , (2, 2), (2, 4), (2, 10), (2, 20), (4, 4), (4, 8), (6, 6)	576h1

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2)	$(4)^2, (6), (8)^2, (12)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (4, 4)$	33a4
(2)	$(4)^2, (6), (8)^2, (12)^2, (16), (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (4, 4)$	33a2
(2)	$(4)^2, (6), (8)^2, (12)^2, (20), (2, 2), (2, 4), (2, 10), (2, 20), (4, 4), (4, 8), (6, 6)$	800a4
(2)	$(4)^2, (6), (8), (10), (12)^2, (16), (2, 2), (2, 10), (4, 4), (4, 8), (4, 20), (6, 6), (8, 8)$	64a4
(2)	$(4)^2, (6), (8), (12)^2, (2, 2), (2, 4), (2, 6), (2, 8), (2, 12)^2, (2, 24)^2, (4, 12)$	14400ef8
(2)	$(4)^2, (6), (8), (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (4, 4)$	320a1
(2)	$(4)^2, (6), (12)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (4, 4), (4, 8)$	200c3
(2)	$(4)^2, (6), (12)^2, (24), (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 12), (2, 24)^2, (4, 12)$	14400ef7
(2)	$(4)^2, (6), (12)^2, (24), (2, 2), (2, 4), (2, 6), (2, 8), (2, 12)^2, (2, 24)^2, (4, 12)$	14400bo7
(2)	$(4), (6)^2, (8), (12), (2, 2), (2, 4), (2, 6)^2, (2, 12)^3, (3, 6), (6, 6), (6, 12)$	3136k3
(2)	$(4), (6), (8)^3, (12), (16)^3, (24), (2, 2), (2, 6), (2, 8), (4, 8), (4, 16)$	14400y6
(2)	$(4), (6), (8)^3, (12), (16), (24), (2, 2), (2, 6), (2, 8), (2, 16)^2, (4, 8), (4, 16)$	4800b6
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (2, 2), (2, 4), (2, 6), (2, 8), (2, 16)^2, (4, 8)$	126b1
(2)	$(4), (6), (8)^2, (12), (16), (24), (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8)$	126b5
(2)	$(4), (6), (8)^2, (12), (16), (24), (2, 2), (2, 4), (2, 6), (2, 8), (2, 16)^2, (2, 32), (4, 8)$	45a1
(2)	$(4), (6), (8)^2, (12), (16), (24), (32), (2, 2), (2, 4), (2, 6), (2, 8), (2, 16)^2, (4, 8)$	63a1
(2)	$(4), (6), (8), (12), (16), (24), (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8), (4, 16)$	144b1
(2)	$(4), (6), (8), (12), (16), (24), (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8), (8, 8)$	1344g5
(2)	$(6)^2, (12), (24), (2, 2), (2, 4), (2, 6)^2, (2, 12)^3, (3, 6), (3, 12), (6, 6), (6, 12)$	98a4
(2)	$(4)^2, (6), (8)^3, (12)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 16)^2, (4, 8)$	14400dq5
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8), (4, 8)$	360a1
(2)	$(4)^2, (6), (8), (12)^2, (16), (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (4, 4), (4, 8)$	17a3
(2)	$(4), (6), (8)^3, (12), (16)^3, (24), (2, 2), (2, 6), (2, 8), (2, 16)^2, (4, 8)$	585f6
(2)	$(4), (6), (8)^3, (12), (16)^2, (24), (2, 2), (2, 6), (2, 8), (2, 16)^2, (4, 8), (4, 16)$	225c6
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8)$	120a6
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (2, 2), (2, 4), (2, 6), (2, 8), (2, 16)^2, (4, 8), (8, 8)$	24a6
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (32), (2, 2), (2, 4), (2, 6), (2, 8), (2, 16)^2, (4, 8)$	1344g1
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (32)^2, (2, 2), (2, 4), (2, 6), (2, 8), (2, 16), (4, 16)$	25200dz1
(2)	$(4), (6), (8)^2, (12), (16), (24), (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8), (4, 16)$	816h1
(2)	$(4), (6), (8)^2, (12), (16), (24), (32), (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8)$	1344g4
(2)	$(4)^2, (6), (8)^3, (12)^2, (16), (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16), (4, 4)$	360a4
(2)	$(4)^2, (6), (8)^3, (12)^2, (16), (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 16)^2, (4, 8)$	600a5
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (4, 4)$	990c5
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (4, 8)$	306c6
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (2, 2), (2, 4)^2, (2, 6), (2, 8), (4, 8)$	600d1
(2)	$(4)^2, (6), (8)^2, (12)^2, (24), (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 12)^2, (2, 24), (4, 4)$	2880n1
(2)	$(4)^2, (6), (8)^2, (12)^2, (24)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 12), (4, 12)$	240b1
(2)	$(4)^2, (6), (8)^2, (12)^2, (24)^2, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 12)^2, (4, 12)$	30a8
(2)	$(4)^2, (6), (8), (12)^2, (24), (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 12)^2, (2, 24), (4, 4)$	14400bo1
(2)	$(4)^2, (6), (8), (12)^2, (24)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 12)^2, (2, 24), (4, 4)$	30a7
(2)	$(4)^2, (8), (10)^2, (12), (20)^2, (2, 2), (2, 4)^2, (2, 8)^2, (2, 10), (2, 12), (3, 12), (4, 4)$	288d3
(2)	$(4), (6), (8)^3, (12), (16)^3, (24), (2, 2), (2, 6), (2, 8), (2, 16)^2, (4, 8), (4, 16)$	4800cd6
(2)	$(4), (6), (8)^3, (12), (16)^3, (24), (2, 2), (2, 6), (2, 8), (2, 16)^2, (4, 8), (8, 8)$	45a6
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8), (4, 16)$	48a4

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8), (8, 8)$	42a5
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (32), (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8)$	294c5
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (32), (2, 2), (2, 4), (2, 6), (2, 8), (2, 16)^2, (2, 32), (4, 8)$	25200dz4
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (32)^2, (2, 2), (2, 4), (2, 6), (2, 8), (2, 16)^2, (4, 8)$	630c1
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^4, (2, 2), (2, 6), (4, 4), (4, 8)^2$	187200eh5
(2)	$(4)^2, (6), (8)^3, (12)^2, (16), (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (4, 4)$	600d4
(2)	$(4)^2, (6), (8)^3, (12)^2, (16), (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16)^2, (4, 8)$	192d3
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (4, 4)$	525b6
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16), (4, 4)$	306c4
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 16)^2, (4, 8)$	192d1
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (4, 4)$	525b5
(2)	$(4)^2, (6), (8)^2, (12)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^2, (4, 4), (4, 8)$	2880be5
(2)	$(4)^2, (6), (8)^2, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (4, 4), (4, 8)$	1287e6
(2)	$(4)^2, (6), (8)^2, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (4, 4), (4, 8)^2$	600a4
(2)	$(4)^2, (6), (8)^2, (12)^2, (16), (24), (2, 2), (2, 4), (2, 6), (2, 8), (2, 12)^2, (2, 24)^2, (4, 12)$	1050k4
(2)	$(4)^2, (6), (8)^2, (12)^2, (24)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 12)^2, (4, 4)$	210a3
(2)	$(4)^2, (6), (8), (10)^2, (12), (20)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 10), (3, 12), (4, 4)$	288d2
(2)	$(4)^2, (6), (8), (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (4, 4), (4, 8)$	40a2
(2)	$(4)^2, (6), (8), (12)^2, (16), (24)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 12), (2, 24)^2, (4, 12)$	720j7
(2)	$(4)^2, (6), (8), (12)^2, (16), (24)^2, (2, 2), (2, 4), (2, 6), (2, 8), (2, 12)^2, (2, 24)^2, (4, 12)$	150c8
(2)	$(4)^2, (6), (8), (12)^2, (24), (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 12)^2, (2, 24)^2, (4, 4), (4, 12)$	960e7
(2)	$(4)^2, (6), (10), (12), (20), (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (2, 20), (3, 12), (4, 4), (4, 8)$	64a2
(2)	$(4)^2, (6), (12)^2, (24)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 12)^2, (2, 24)^2, (4, 4), (4, 12)$	150c7
(2)	$(4), (6)^2, (8), (12)^2, (2, 2), (2, 4)^2, (2, 6)^2, (2, 12)^4, (3, 6), (3, 12), (6, 6)$	112c3
(2)	$(4), (6), (8)^3, (12), (16)^3, (24), (32), (2, 2), (2, 6), (2, 8), (2, 16)^2, (4, 8), (4, 16)$	75b6
(2)	$(4), (6), (8)^2, (12), (16)^3, (24), (32)^2, (2, 2), (2, 4), (2, 6), (2, 8), (2, 16)^2, (4, 8)$	4800cd8
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (32), (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8), (4, 16)$	510e7
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (32)^2, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8)$	4800cd7
(2)	$(4), (6), (8)^2, (12), (16)^2, (24), (32)^2, (2, 2), (2, 4), (2, 6), (2, 8), (2, 16)^2, (2, 32), (4, 8)$	75b1
(2)	$(4), (6), (8), (12), (16)^2, (24), (32)^2, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8), (4, 16)$	1470k3
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^4, (2, 2), (2, 6), (4, 4), (4, 8)^2, (4, 16)$	4410r6
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^4, (2, 2), (2, 6), (4, 4), (4, 8)^2, (8, 8)$	6150n6
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (4, 4)$	126b3
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16)^2, (4, 8)$	144b5
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16), (4, 4)$	126b6
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 16)^2, (4, 8)$	975a4
(2)	$(4)^2, (6), (8)^2, (12)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^3, (4, 4), (4, 8)$	3264h5
(2)	$(4)^2, (6), (8)^2, (12)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^2, (4, 4), (4, 8)^2$	72a3
(2)	$(4)^2, (6), (8)^2, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (4, 4), (4, 8)$	1008k5
(2)	$(4)^2, (6), (8)^2, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (4, 4), (4, 8)^2$	63a6
(2)	$(4)^2, (6), (8), (10)^2, (12)^2, (20)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 10), (3, 6), (4, 4)$	800a2
(2)	$(4)^2, (6), (8), (10), (12)^2, (20)^3, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 10), (3, 6), (4, 4)$	800a3
(2)	$(4), (6), (8)^2, (12), (16)^3, (24), (32)^2, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8)$	6720cd1
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^2, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 4), (4, 8)$	40560bg5

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^4, (2, 2), (2, 4), (2, 6), (2, 8)^2, (4, 4), (4, 8)$	2925g6
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (4, 4), (4, 8)$	240a1
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (4, 4)$	45a7
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (4, 4), (4, 8)$	231a5
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16)^2, (4, 8)$	192c1
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (4, 4), (4, 8)^2$	240a4
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^4, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16), (4, 4)$	45a8
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^4, (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 16)^2, (4, 8)$	960i8
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (32), (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16), (4, 4)$	585f1
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (32), (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 16)^2, (4, 8)$	45a3
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (32)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8), (2, 16)^2, (4, 8)$	1200j1
(2)	$(4)^2, (6), (8)^2, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^2, (4, 4), (4, 8)$	2352v1
(2)	$(4)^2, (6), (8)^2, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16)^2, (4, 4), (4, 8)^2$	1734i4
(2)	$(4)^2, (6), (8)^2, (12)^2, (16), (24)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 12)^2, (2, 24), (4, 4)$	90c5
(2)	$(4)^2, (6), (8)^2, (12)^2, (24)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 12)^2, (4, 4), (4, 12)$	90c4
(2)	$(4)^2, (6), (8), (10), (12), (20), (40), (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (2, 20), (3, 12), (4, 4), (4, 8)$	32a3
(2)	$(4), (6), (8)^2, (12), (16)^3, (24), (32)^2, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 8), (4, 16)$	1680p1
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^2, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 4), (4, 8)^2$	69360cb5
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^3, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 4), (4, 8)$	7605p6
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^4, (2, 2), (2, 4), (2, 6), (2, 8)^2, (4, 4), (4, 8)^2$	975a6
(2)	$(4)^2, (6), (8)^3, (12)^2, (16), (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^3, (4, 4), (4, 8)$	24a5
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^2, (4, 4), (4, 8)$	120a5
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16)^2, (4, 4), (4, 8)^2$	816h4
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (4, 4), (4, 8)$	21a5
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (4, 4), (4, 8)^2$	21a6
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^4, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (4, 4)$	1050c7
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^4, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16)^2, (4, 8)$	630c8
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^4, (32), (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16), (4, 4)$	225c8
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (32), (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (4, 4)$	225c7
(2)	$(4)^2, (6), (8)^2, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^3, (4, 4), (4, 8)$	192c5
(2)	$(4)^2, (6), (8)^2, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^2, (4, 4), (4, 8)^2$	294c3
(2)	$(4)^2, (6), (8)^2, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16)^3, (4, 4), (4, 8)^2$	1200j8
(2)	$(4)^2, (6), (8)^2, (12)^2, (16)^2, (32), (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^2, (4, 4), (4, 8)$	225c3
(2)	$(4)^2, (6), (8)^4, (12)^2, (16), (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^4, (4, 4), (4, 8)^2$	277440dv5
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^2, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^4, (4, 4), (4, 8)$	6720c6
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^3, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 4), (4, 8)^2$	130050bu6
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^4, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 4), (4, 8)$	1050c6
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^3, (4, 4), (4, 8)$	42a6
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^2, (4, 4), (4, 8)^2$	48a2
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^4, (32), (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16), (4, 4)$	1470k7
(2)	$(4)^2, (6), (8)^2, (12)^2, (16)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^3, (4, 4), (4, 8)^2$	75b7
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^4, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 4), (4, 8)^2$	630c6
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^4, (32), (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^2, (4, 4), (4, 8)$	3150bk6
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^4, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^2, (4, 4), (4, 8)$	195a7

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^3, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^4, (4, 4), (4, 8)^2$	1470k6
(2)	$(4)^2, (6), (8)^4, (12)^2, (16)^4, (2, 2), (2, 4), (2, 6), (2, 8)^2, (2, 16)^4, (4, 4), (4, 8)$	6720cd6
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^3, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^3, (4, 4), (4, 8)^2$	15a5
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^4, (2, 2), (2, 4)^2, (2, 6), (2, 8)^2, (2, 16)^3, (4, 4), (4, 8)^2$	15a6
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^4, (32), (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^2, (4, 4), (4, 8)$	1230f7
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^4, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^3, (4, 4), (4, 8)^2$	210e7
(2)	$(4)^2, (6), (8)^3, (12)^2, (16)^4, (32)^2, (2, 2), (2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^2, (4, 4), (4, 8)$	240d1
(3)	$(3, 3)$	19a1
(3)	$(15)$	50a1
(3)	$(15), (5, 15)$	225b1
(4)	$(8), (16), (2, 12), (2, 24)^2, (4, 12)$	150c3
(4)	$(8), (12), (16), (4, 4), (4, 8)^2, (4, 12)$	40a4
(4)	$(8), (12), (2, 8), (2, 16)^2, (2, 24), (4, 8), (4, 16)$	1734i1
(4)	$(8), (12), (16), (2, 4), (2, 8)^2, (2, 12), (4, 4)$	33a3
(4)	$(8), (12), (16), (2, 8), (2, 16)^2, (2, 24), (4, 8)$	2352v4
(4)	$(12), (2, 4), (2, 8)^2, (2, 12), (2, 16), (4, 4), (4, 8)$	289a1
(4)	$(8), (12), (16), (2, 4), (2, 8), (2, 12), (2, 16)^2, (4, 8)$	2880be6
(4)	$(8), (12), (16), (2, 8), (2, 16)^2, (2, 24), (4, 8), (4, 16)$	294c1
(4)	$(8), (12), (16), (2, 8), (2, 16)^2, (2, 24), (4, 8), (8, 8)$	192c6
(4)	$(12), (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)$	200c1
(4)	$(8), (12), (16), (2, 4), (2, 8)^2, (2, 12), (2, 16), (4, 4), (4, 8)$	17a4
(4)	$(8), (12), (16), (2, 4), (2, 8)^2, (2, 12), (4, 4), (4, 8)^2$	17a1
(4)	$(8), (12), (16), (2, 4), (2, 8), (2, 12), (2, 16)^2, (4, 8), (4, 16)$	72a1
(4)	$(8), (12), (16), (2, 4), (2, 8), (2, 12), (2, 16)^2, (4, 8), (8, 8)$	3264h6
(4)	$(12), (24), (48), (2, 4), (2, 8), (2, 12), (2, 24)^2, (4, 4), (4, 12)$	960o8
(4)	$(8), (12), (2, 4), (2, 8)^2, (2, 12), (2, 16)^3, (4, 4), (4, 8)$	192d5
(4)	$(8), (12), (16), (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)$	147a1
(4)	$(8), (12), (16), (2, 8), (2, 16)^2, (2, 24), (2, 32)^2, (4, 8), (4, 16)$	1470k1
(4)	$(8), (12), (16), (20), (2, 4), (2, 20), (4, 4), (4, 8), (4, 20), (6, 12), (8, 8)$	32a1
(4)	$(8), (12), (16), (24), (2, 4), (2, 8)^2, (2, 12), (2, 24)^2, (4, 12)$	720j8
(4)	$(8), (12), (16), (24), (2, 4), (2, 8), (2, 12), (2, 24)^2, (4, 4), (4, 12)$	1050k1
(4)	$(8), (12), (2, 4), (2, 8)^2, (2, 12), (2, 16)^3, (4, 4), (4, 8)^2$	1200j7
(4)	$(8), (12), (16), (2, 4), (2, 8)^2, (2, 12), (2, 16)^3, (4, 4), (4, 8)$	63a5
(4)	$(8), (12), (16), (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (2, 32), (4, 4), (4, 8)$	225c1
(4)	$(8), (12), (16), (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)^2$	144b4
(4)	$(8), (12), (16)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)$	40a3
(4)	$(8), (12), (16), (24), (2, 4), (2, 8)^2, (2, 12), (2, 24)^2, (4, 4), (4, 12)$	90c1
(4)	$(8)^2, (12), (16)^2, (24)^2, (2, 4), (2, 8), (2, 12), (2, 16)^2, (4, 8)$	240a6
(4)	$(8), (12), (16), (2, 4), (2, 8)^2, (2, 12), (2, 16)^3, (4, 4), (4, 8)^2$	75b8
(4)	$(12), (20)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (2, 20), (3, 12), (4, 4), (4, 8)$	64a3
(4)	$(8)^2, (12), (16)^2, (24)^2, (2, 4), (2, 8), (2, 12), (2, 16)^2, (4, 8), (4, 16)$	24a4
(4)	$(8)^2, (12), (16)^2, (24)^2, (2, 4), (2, 8), (2, 12), (2, 16)^2, (4, 8), (8, 8)$	816h6
(4)	$(8)^2, (12), (16), (24)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)$	240a5
(4)	$(8)^2, (12), (16)^2, (24)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)$	231a1

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(4)	$(8)^2, (12), (16)^2, (24)^2, (2, 8), (2, 16)^2, (2, 24), (4, 8), (4, 16)^2, (8, 8)$	240d6
(4)	$(8)^2, (12), (16), (24)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^3, (4, 4), (4, 8)$	816h5
(4)	$(8)^2, (12), (16), (24)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)^2$	24a3
(4)	$(8), (12), (20)^2, (40), (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (2, 20), (3, 12), (4, 4), (4, 8)$	32a4
(4)	$(8)^2, (12), (16)^2, (24)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^3, (4, 4), (4, 8)$	120a1
(4)	$(8)^2, (12), (16)^2, (24)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)^2$	120a4
(4)	$(8)^2, (12), (16)^2, (24)^2, (32), (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)$	21a4
(4)	$(8)^2, (12), (16)^2, (24)^2, (32), (2, 4), (2, 8)^2, (2, 12), (2, 16)^3, (4, 4), (4, 8)$	48a5
(4)	$(8)^2, (12), (16)^2, (24)^2, (32), (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)^2$	42a4
(4)	$(8)^2, (12), (16)^3, (24)^2, (32)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)$	195a1
(4)	$(8)^2, (12), (16)^3, (24)^2, (32)^3, (2, 4), (2, 8), (2, 12), (2, 16)^2, (4, 8), (4, 16)$	1230f4
(4)	$(8)^2, (12), (16)^2, (24)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^4, (4, 4), (4, 8)^2$	195a6
(4)	$(8)^2, (12), (16)^3, (24)^2, (32)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (2, 32), (4, 4), (4, 8)$	15a7
(4)	$(8)^2, (12), (16)^3, (24)^2, (32)^3, (2, 4), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)$	510e1
(4)	$(8)^2, (12), (16)^2, (24)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^4, (4, 4), (4, 8)^2, (4, 16)$	1680p6
(4)	$(8)^2, (12), (16)^2, (24)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^4, (4, 4), (4, 8)^2, (8, 8)$	510e6
(4)	$(8)^2, (12), (16)^3, (24)^2, (32)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^3, (4, 4), (4, 8)^2$	240d7
(4)	$(8)^2, (12), (16)^2, (24)^2, (32)^2, (2, 4), (2, 8)^2, (2, 12), (2, 16)^4, (4, 4), (4, 8)^2, (4, 16)$	210e6
(5)	(15)	11a3
(5)	(15), (5, 5)	11a1
(6)	(12), (24), (2, 6), (4, 12)	36a1
(6)	(12), (24), (2, 6), (2, 12) <sup>2</sup>	14a4
(6)	(12), (2, 6), (2, 12) <sup>2</sup> , (2, 24), (4, 12)	36a2
(6)	(12), (24), (2, 6), (2, 12) <sup>2</sup> , (4, 12)	20a1
(6)	(12), (24), (2, 6), (2, 12), (2, 24), (4, 12)	130a2
(6)	(12), (24), (2, 6), (2, 12) <sup>2</sup> , (2, 24), (4, 12)	130a1
(6)	(12) <sup>2</sup> , (24) <sup>2</sup> , (2, 6), (2, 12) <sup>2</sup> , (2, 24) <sup>2</sup> , (4, 12)	30a1
(6)	(12), (24), (2, 6), (2, 12) <sup>2</sup> , (3, 6), (3, 12), (6, 6), (6, 12) <sup>2</sup>	14a1
(6)	(12) <sup>2</sup> , (24) <sup>2</sup> , (2, 6), (2, 12) <sup>2</sup> , (2, 24) <sup>3</sup> , (4, 12)	90c7
(6)	(12) <sup>2</sup> , (24) <sup>2</sup> , (48), (2, 6), (2, 12) <sup>2</sup> , (2, 24) <sup>2</sup> , (4, 12)	90c8
(7)	(21)	26b1
(8)	(16), (24), (32), (2, 8), (2, 16) <sup>2</sup> , (2, 24), (4, 8)	21a3
(8)	(16), (24), (32), (2, 8), (2, 16) <sup>2</sup> , (2, 24), (4, 8), (4, 16)	42a1
(8)	(16), (24), (32), (2, 8), (2, 16) <sup>2</sup> , (2, 24), (4, 8), (8, 8)	48a6
(8)	(16), (24), (32), (2, 8), (2, 16) <sup>2</sup> , (2, 24), (2, 32) <sup>2</sup> , (4, 8), (4, 16)	1230f1
(8)	(16), (24), (32), (2, 8), (2, 16) <sup>2</sup> , (2, 24), (4, 8), (4, 16) <sup>2</sup> , (8, 8)	15a4
(8)	(16) <sup>2</sup> , (24), (32) <sup>2</sup> , (48) <sup>2</sup> , (2, 8), (2, 16) <sup>2</sup> , (2, 24), (2, 32) <sup>2</sup> , (4, 8), (4, 16)	210e1
(10)	(20), (30), (40), (2, 10), (2, 20) <sup>2</sup> , (2, 30)	66c1
(12)	(24), (48), (2, 12), (2, 24) <sup>2</sup> , (4, 12)	90c3
(2, 2)	(2, 4) <sup>2</sup> , (2, 8) <sup>2</sup> , (2, 12), (2, 24), (4, 12)	960o6
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (4, 4)	120b2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 12), (4, 8)	14400dq3
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>2</sup> , (4, 4), (4, 8)	7200bn1
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 12), (2, 24), (4, 12)	14400ef6

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8), (2, 16), (2, 24), (4, 8), (8, 8)	72a4
(2, 2)	(2, 4), (2, 6), (2, 8), (2, 12) <sup>2</sup> , (2, 24) <sup>2</sup> , (4, 12)	14400bo6
(2, 2)	(2, 4), (2, 6), (2, 8), (2, 12), (4, 4), (4, 8) <sup>3</sup>	200c2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 12), (4, 4)	33a1
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (4, 4), (4, 8)	320a2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 12), (4, 8), (8, 8)	576d2
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 16), (2, 24), (4, 8)	63a2
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 16), (2, 24), (4, 8), (8, 8)	1344g2
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8), (2, 16) <sup>2</sup> , (2, 24), (4, 8), (8, 8)	6720c2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>4</sup> , (2, 12), (4, 4)	990e2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 12), (2, 16), (4, 8)	600a3
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 12), (4, 4), (4, 8)	990c4
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 12), (2, 16), (4, 8), (8, 8)	192d2
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 16) <sup>2</sup> , (2, 24), (4, 8)	1050c2
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 16), (2, 24), (4, 8), (8, 8)	294c4
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 12) <sup>3</sup> , (2, 24), (4, 12)	30a6
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 12) <sup>2</sup> , (2, 24) <sup>2</sup> , (4, 12)	720j6
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 16) <sup>2</sup> , (2, 24), (4, 8), (8, 8)	4800cd5
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8), (2, 12) <sup>2</sup> , (4, 4), (4, 8) <sup>3</sup>	2880be3
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8), (2, 12) <sup>2</sup> , (4, 4), (4, 8) <sup>2</sup> , (8, 8)	3264h3
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8), (2, 12) <sup>2</sup> , (4, 8), (4, 16) <sup>2</sup> , (8, 8)	277440dv6
(2, 2)	(2, 4), (2, 6), (2, 8), (2, 12) <sup>3</sup> , (2, 24) <sup>3</sup> , (4, 12)	150c6
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>4</sup> , (2, 12), (4, 4), (4, 8)	525b3
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 12) <sup>3</sup> , (4, 4)	210a6
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 12) <sup>3</sup> , (4, 12)	240b2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 12), (2, 16) <sup>2</sup> , (4, 8)	40560bg2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 12), (2, 16), (4, 8), (8, 8)	1734i3
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 12), (4, 4), (4, 8) <sup>2</sup>	360a2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 12), (2, 16) <sup>2</sup> , (4, 8), (8, 8)	576d4
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 12), (4, 4), (4, 8) <sup>3</sup>	14400dq2
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 16) <sup>2</sup> , (2, 24), (4, 8), (4, 16)	630c2
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 16) <sup>2</sup> , (2, 24), (4, 8), (8, 8)	6720cd2
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 12) <sup>2</sup> , (4, 4), (4, 8) <sup>3</sup>	17a2
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 12) <sup>2</sup> , (4, 4), (4, 8) <sup>2</sup> , (8, 8)	69360cb3
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup> , (2, 12) <sup>2</sup> , (4, 8), (4, 16) <sup>2</sup> , (8, 8)	1200j4
(2, 2)	(2, 4) <sup>2</sup> , (2, 6), (2, 8), (2, 12) <sup>2</sup> , (2, 16), (4, 4), (4, 8) <sup>2</sup> , (8, 8)	72a2
(2, 2)	(2, 4), (2, 6), (2, 8), (2, 10) <sup>2</sup> , (2, 12), (4, 4), (4, 8), (4, 20), (6, 6), (8, 8)	64a1
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>4</sup> , (2, 12), (2, 16) <sup>2</sup> , (4, 8)	441c2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>4</sup> , (2, 12), (2, 16), (4, 4), (4, 8)	525b2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>4</sup> , (2, 12), (4, 4), (4, 8) <sup>2</sup>	306c3
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 12) <sup>3</sup> , (4, 4), (4, 12)	14400bo2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 12), (2, 16) <sup>2</sup> , (4, 8), (4, 16)	1200j2
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 12), (2, 16) <sup>2</sup> , (4, 8), (8, 8)	144b3
(2, 2)	(2, 4) <sup>3</sup> , (2, 6), (2, 8) <sup>3</sup> , (2, 12), (2, 16), (4, 4), (4, 8) <sup>2</sup>	306c2

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (2, 12), (4, 4), (4, 8)^3$	7056bx4
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (2, 10)^2, (2, 20), (4, 4), (4, 8), (6, 6)$	800a1
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (2, 12), (2, 16)^3, (4, 8), (8, 8)$	69360cb6
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (2, 12), (2, 16), (4, 4), (4, 8)^3$	2880be2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (2, 12)^2, (4, 4), (4, 8), (8, 8)$	252150c4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (2, 12)^2, (4, 8), (4, 16), (8, 8)$	6150n3
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 12)^2, (2, 16), (4, 4), (4, 8), (8, 8)$	14400y4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 12)^2, (4, 4), (4, 8)^3$	1008k3
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 16)^2, (2, 24), (2, 32), (4, 8), (4, 16)$	75b2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (2, 12)^2, (2, 16), (4, 4), (4, 8)^3$	147a2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (2, 12)^2, (2, 16), (4, 4), (4, 8)^2, (8, 8)$	144b2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8), (2, 10), (2, 12), (2, 20), (4, 4), (4, 8), (4, 20), (6, 12), (8, 8)$	32a2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8), (2, 12)^2, (2, 16), (4, 4), (4, 8)^3, (8, 8)$	277440dv4
(2, 2)	$(2, 4), (2, 6), (2, 8)^3, (2, 12), (2, 16), (2, 24), (4, 8), (4, 16)^2, (8, 8)$	75b3
(2, 2)	$(2, 4), (2, 6), (2, 8)^2, (2, 12), (2, 16)^2, (2, 24), (4, 8), (4, 16)^2, (8, 8)$	1470k2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12), (2, 16)^3, (4, 8)$	975a2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12), (2, 16)^2, (4, 4), (4, 8)$	585f2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12), (2, 16)^2, (4, 8), (4, 16)$	45a2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12), (2, 16)^2, (4, 8), (8, 8)$	192c2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12), (2, 16), (4, 4), (4, 8)^2$	126b2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12), (4, 4), (4, 8)^3$	441c3
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (2, 12)^3, (2, 24), (4, 4), (4, 12)$	90c2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (2, 12), (2, 16)^3, (4, 8), (8, 8)$	960g5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (2, 12), (2, 16), (4, 4), (4, 8)^3$	147a4
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (2, 10)^2, (2, 12), (2, 20), (4, 4), (4, 8), (6, 6)$	576h2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (2, 10)^2, (2, 12), (2, 20), (4, 4), (4, 8), (6, 12)$	288d1
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)^3$	4800b2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (2, 12)^2, (4, 4), (4, 8)^3$	975a3
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 12)^2, (2, 16), (4, 4), (4, 8)^3$	63a4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 12)^2, (2, 16), (4, 4), (4, 8)^2, (8, 8)$	45a4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (2, 12)^2, (2, 16)^2, (4, 4), (4, 8)^3$	40a1
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (2, 12)^2, (2, 16)^2, (4, 4), (4, 8)^2, (8, 8)$	225c4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (2, 12)^2, (2, 16), (4, 4), (4, 8)^3, (4, 16)$	225c2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8), (2, 12)^2, (2, 16)^2, (4, 4), (4, 8)^3, (8, 8)$	1200j5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12), (2, 16)^3, (4, 4), (4, 8)$	960g2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12), (2, 16)^3, (4, 8), (4, 16)$	6150n2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12), (2, 16)^3, (4, 8), (8, 8)$	630c5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12), (2, 16), (4, 4), (4, 8)^3$	2352v3
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (2, 12)^3, (4, 4), (4, 8)^3$	240a2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (2, 12), (2, 16)^2, (4, 4), (4, 8)^3$	225c5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (2, 12)^3, (2, 16), (4, 4), (4, 8)^2, (8, 8)$	24a2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^2, (2, 12), (2, 16)^3, (4, 4), (4, 8)^3$	277440dv2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (2, 12)^2, (2, 16)^2, (4, 4), (4, 8), (8, 8)$	141120e13
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 12)^2, (2, 16)^2, (4, 4), (4, 8)^3$	2352v2



$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 12)^2, (2, 16)^2, (4, 4), (4, 8)^2, (8, 8)$	192c3
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 12)^2, (2, 16), (2, 24), (4, 8), (4, 16)^2, (8, 8)$	510e5
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (2, 12)^2, (2, 16)^2, (4, 4), (4, 8)^3, (4, 16)$	130050bu2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (2, 12)^2, (2, 16)^2, (4, 4), (4, 8)^3, (8, 8)$	2880r4
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12)^3, (4, 4), (4, 8)^3$	231a3
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12), (2, 16)^2, (4, 4), (4, 8)^3$	1050c5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (2, 12)^3, (2, 16), (4, 4), (4, 8)^3$	120a3
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (2, 12), (2, 16)^3, (4, 4), (4, 8)^3$	45a5
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (2, 12)^2, (2, 16)^2, (4, 4), (4, 8)^3$	1050c3
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (2, 12)^2, (2, 16)^2, (4, 4), (4, 8)^2, (8, 8)$	630c4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (2, 12)^2, (2, 16), (4, 4), (4, 8)^3, (4, 16)$	25200dz3
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 12)^2, (2, 16)^3, (4, 4), (4, 8)^2, (8, 8)$	294c2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 12)^2, (2, 16)^2, (2, 24), (4, 8), (4, 16)^2, (8, 8)$	1680p2
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^2, (2, 12)^2, (2, 16)^3, (4, 4), (4, 8)^3, (8, 8)$	75b5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12)^3, (2, 16), (4, 4), (4, 8)^3$	21a2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12), (2, 16)^3, (4, 4), (4, 8)^3$	1470k5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (2, 12)^3, (2, 16)^2, (4, 4), (4, 8)^2, (8, 8)$	42a3
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (2, 12)^2, (2, 16)^2, (4, 4), (4, 8)^3, (4, 16)$	3150bk4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^3, (2, 12)^2, (2, 16)^3, (4, 4), (4, 8)^3, (8, 8)$	1470k4
(2, 2)	$(2, 4)^2, (2, 6), (2, 8)^4, (2, 12)^2, (2, 16)^4, (4, 4), (4, 8)^2, (8, 8)$	6720cd4
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12)^3, (2, 16)^3, (4, 4), (4, 8)^3$	195a5
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12)^3, (2, 16)^3, (4, 4), (4, 8)^3, (4, 16)$	240d2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^3, (2, 12)^3, (2, 16)^4, (4, 4), (4, 8)^3, (8, 8)$	15a2
(2, 2)	$(2, 4)^3, (2, 6), (2, 8)^4, (2, 12)^3, (2, 16)^5, (4, 4), (4, 8)^3, (8, 8)$	210e5
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)^3$	120a2
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)^2, (8, 8)$	24a1
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^2, (2, 24), (4, 4), (4, 8)^3$	21a1
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^2, (2, 24), (4, 4), (4, 8)^2, (8, 8)$	42a2
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)^3, (4, 12)$	195a3
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^3, (2, 24), (4, 4), (4, 8)^3$	195a2
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^3, (2, 24)^2, (4, 8), (4, 16)^2, (8, 8)$	1230f2
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^3, (2, 24), (4, 4), (4, 8)^3, (4, 16)$	510e2
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^3, (2, 24), (4, 4), (4, 8)^3, (8, 8)$	240d5
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)^3, (4, 12), (4, 16), (8, 8)$	510e3
(2, 4)	$(2, 8), (2, 12), (2, 16), (2, 24), (4, 4), (4, 8)^3, (4, 12), (4, 16)^2, (8, 8)$	15a1
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^3, (2, 24), (2, 32), (4, 4), (4, 8)^3, (4, 16)$	15a3
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^2, (4, 4), (4, 8)^3, (4, 12), (4, 16)^2, (8, 8)$	240d4
(2, 4)	$(2, 8)^2, (2, 12), (2, 16)^2, (2, 24)^2, (4, 4), (4, 8)^3, (4, 12), (4, 16)^2, (8, 8)$	210e3
(2, 6)	$(2, 12)^3, (2, 24)^3, (4, 12)$	30a2
(2, 8)	$(2, 16)^2, (2, 24), (2, 32)^2, (4, 8), (4, 16)^2, (8, 8)$	210e2

$$d = 18$$

$$\Phi_{\mathbb{Q}}(18) \supseteq \left\{ \begin{array}{l} (2), (3), (4), (5), (6), (7), (8), (9), (10), (12), (13), (14), (15), (16), (18), (19), (21), (26), (27), (28), (30), (36), (42), (45), \\ (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 14), (2, 18), (2, 26), (2, 36), (2, 42), \\ (3, 3), (3, 6), (3, 9), (3, 12), (3, 18), (3, 21), (4, 4), (4, 12), (4, 28), (6, 6), (6, 18), (7, 7), (9, 9) \end{array} \right\}$$

$G$	$\Phi_{\mathbb{Q}}(18, G) \setminus \{G\} \supseteq$
$()$	$\left\{ \begin{array}{l} (2), (3), (4), (5), (6), (7), (9), (10), (12), (13), (14), (15), (18), (19), (21), (26), (27), (28), (30), (42), (2, 2), (2, 6), \\ (2, 10), (2, 14), (2, 18), (2, 26), (2, 42), (3, 3), (3, 6), (3, 9), (3, 12), (3, 18), (3, 21), (4, 4), (4, 12), (4, 28), (6, 6), (6, 18), (7, 7), (9, 9) \end{array} \right\}$
$(2)$	$\{(4), (6), (8), (10), (12), (14), (16), (18), (36), (2, 2), (2, 6), (2, 10), (2, 14), (2, 18), (3, 6), (3, 12), (3, 18), (6, 6), (6, 18)\}$
$(3)$	$\{(6), (9), (12), (15), (18), (21), (27), (30), (42), (45), (2, 6), (2, 18), (2, 42), (3, 3), (3, 6), (3, 9), (3, 12), (3, 18), (3, 21), (4, 12), (6, 6), (6, 18), (9, 9)\}$
$(4)$	$\{(8), (12), (36), (2, 4), (2, 8), (2, 12), (2, 36), (3, 12), (4, 4)\}$
$(5)$	$\{(10), (15), (30), (45), (2, 10)\}$
$(6)$	$\{(12), (18), (36), (2, 6), (2, 18), (3, 6), (3, 12), (3, 18), (6, 6), (6, 18)\}$
$(7)$	$\{(14), (2, 14)\}$
$(8)$	$\{(16), (2, 8)\}$
$(9)$	$\{(18), (27), (2, 18), (3, 9), (3, 18)\}$
$(10)$	$\{(2, 10)\}$
$(12)$	$\{(36), (2, 12), (2, 36), (3, 12)\}$
$(2, 2)$	$\{(2, 4), (2, 6), (2, 8), (2, 12), (2, 18), (2, 36), (6, 6)\}$
$(2, 4)$	$\{(2, 8), (4, 4)\}$
$(2, 6)$	$\{(2, 12), (2, 18), (2, 36), (6, 6)\}$
$(2, 8)$	$\{\}$

$$h_{\mathbb{Q}}(18) \geq 17 \quad \#\mathcal{H}_{\mathbb{Q}}(18) \geq 192 \quad N_{\mathbb{Q}}(18) \geq 254016$$

$G$	$\mathcal{H}_{\mathbb{Q}}(18, E)$	Label
()	(2, 2)	392b1
()	(2, 14)	1922c1
()	(2), (2, 2)	11a2
()	(2, 2), (2, 14)	1922e1
()	(4), (4, 4)	648a1
()	(2), (5), (2, 10)	121d1
()	(2), (7), (2, 14)	10816bk1
()	(2), (19), (2, 2)	361a1
()	(7), (2, 2), (2, 14)	1922c2
()	(2), (4) <sup>2</sup> , (2, 2)	648c1
()	(2), (5), (10), (2, 2)	75a2
()	(2), (7), (2, 2), (2, 14)	3249b1
()	(2), (7) <sup>2</sup> , (2, 2)	2450a1
()	(2), (7), (14), (2, 2)	26b2
()	(2), (13), (2, 2), (2, 26)	441e1
()	(2), (13), (26), (2, 2)	147c1
()	(3), (6), (6, 6), (6, 18)	108a2
()	(3), (6), (9), (6, 6)	486a1
()	(4), (7), (4, 4), (4, 28)	2704e1
()	(4), (7), (28), (4, 4)	338b2
()	(2), (7), (14), (2, 2), (2, 14)	294a1
()	(2), (13), (26), (2, 2), (2, 26)	147b1
()	(4), (7), (28), (4, 4), (4, 28)	338b1
()	(2), (3) <sup>2</sup> , (6), (9), (2, 6)	484a1
()	(2), (3), (6) <sup>2</sup> , (9), (2, 2)	300a1
()	(2), (3), (6) <sup>2</sup> , (18), (2, 2)	432b1
()	(2), (3), (6), (9), (27), (2, 18)	1728e3
()	(2), (4) <sup>2</sup> , (7), (2, 2), (2, 14)	132496bu2
()	(2), (4) <sup>2</sup> , (7), (14), (2, 2)	338a2
()	(2), (4) <sup>2</sup> , (7), (28), (2, 2)	338a1
()	(2), (7) <sup>2</sup> , (14), (2, 2), (7, 7)	2450ba1
()	(3) <sup>2</sup> , (2, 2), (2, 6) <sup>2</sup> , (2, 18)	196a1
()	(3) <sup>2</sup> , (4), (9), (12), (4, 12)	1296h1
()	(3) <sup>2</sup> , (9), (2, 2), (2, 6) <sup>2</sup>	196a2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (9), (2, 2)	50b3
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (18), (2, 2)	300a2
()	(2), (3) <sup>2</sup> , (6), (9), (2, 2), (2, 6)	484a2
()	(2), (3) <sup>2</sup> , (6), (9), (2, 6), (2, 18)	361b1
()	(2), (3) <sup>2</sup> , (6), (9) <sup>2</sup> , (2, 6)	361b2
()	(2), (3), (6), (9), (18), (27), (2, 2)	432e3
()	(2), (3), (9), (18), (27), (2, 2), (2, 6)	1728j3
()	(3) <sup>2</sup> , (2, 2), (2, 6) <sup>2</sup> , (3, 3), (6, 18)	1764e1
()	(3) <sup>2</sup> , (4), (9), (12), (4, 4), (4, 12)	1296h2
()	(2), (3) <sup>2</sup> , (4) <sup>2</sup> , (9), (12), (2, 6)	1296j1

$G$	$\mathcal{H}_{\mathbb{Q}}(18, E)$	Label
()	(2), (3) <sup>2</sup> , (4), (6), (9), (12), (2, 2)	4050g1
()	(2), (3) <sup>2</sup> , (4), (9), (12), (2, 2), (2, 6)	1296j2
()	(2), (3) <sup>2</sup> , (5), (6) <sup>2</sup> , (9), (2, 10)	1600q1
()	(2), (3) <sup>2</sup> , (5), (6), (9), (10), (2, 6)	1600v3
()	(2), (3) <sup>2</sup> , (6), (2, 6), (2, 18), (3, 3), (6, 6)	300b2
()	(2), (3) <sup>2</sup> , (6), (2, 6), (3, 3), (3, 9), (6, 6)	225b2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (9) <sup>2</sup> , (2, 2)	175b2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (9), (18), (2, 2)	175b1
()	(2), (3) <sup>2</sup> , (6), (7), (9), (14), (2, 6)	5184u3
()	(2), (3) <sup>2</sup> , (6), (9), (2, 6), (3, 3), (6, 6)	540c2
()	(2), (3) <sup>2</sup> , (6), (9) <sup>2</sup> , (2, 2), (2, 6)	15552ch1
()	(2), (3) <sup>2</sup> , (6), (9) <sup>2</sup> , (2, 6), (2, 18)	1728e2
()	(2), (3) <sup>2</sup> , (6), (9) <sup>2</sup> , (18), (2, 6)	1728j1
()	(2), (3) <sup>2</sup> , (6), (9), (18), (2, 2), (2, 6)	361b3
()	(2), (3) <sup>2</sup> , (6), (9), (21), (2, 6), (2, 42)	5184u1
()	(3) <sup>2</sup> , (2, 2), (2, 6) <sup>2</sup> , (3, 3), (3, 9), (6, 6)	196b2
()	(3) <sup>2</sup> , (9), (2, 2), (2, 6) <sup>2</sup> , (3, 3), (6, 6)	324a2
()	(2), (3) <sup>2</sup> , (4) <sup>2</sup> , (6), (9), (12), (2, 2)	4050g2
()	(2), (3) <sup>2</sup> , (5), (6) <sup>2</sup> , (9), (10), (2, 2)	400b1
()	(2), (3) <sup>2</sup> , (5), (6), (9), (10), (2, 2), (2, 6)	1600v4
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (2, 2), (2, 6), (3, 9), (3, 18)	486c2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (7), (9), (2, 2), (2, 14)	254016dv3
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (7), (9), (14), (2, 2)	1296e3
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (9) <sup>2</sup> , (18), (2, 2)	432a1
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (9), (18), (27), (2, 2)	432a2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (9), (21), (42), (2, 2)	1296e1
()	(2), (3) <sup>2</sup> , (6), (7), (9), (14), (2, 2), (2, 6)	5184u4
()	(2), (3) <sup>2</sup> , (6), (7), (9), (14), (21), (2, 6)	5184bd1
()	(2), (3) <sup>2</sup> , (6), (9), (2, 6), (3, 3), (6, 6), (9, 9)	243a1
()	(2), (3) <sup>2</sup> , (6), (9) <sup>2</sup> , (18), (2, 2), (2, 6)	1728e1
()	(2), (3) <sup>2</sup> , (6), (9), (21), (42), (2, 2), (2, 6)	5184bd2
()	(2), (4) <sup>2</sup> , (7), (14), (28) <sup>2</sup> , (2, 2), (2, 14)	16562be2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (2, 2), (2, 6), (3, 3), (3, 6), (3, 9)	676c2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (7), (9), (14), (21), (2, 2)	1296e2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (9), (2, 2), (2, 6), (3, 3), (3, 6)	44a2
()	(2), (3) <sup>2</sup> , (6), (7), (9), (21), (2, 2), (2, 6), (2, 14)	5184u2
()	(2), (3), (6), (9), (18), (27), (2, 2), (2, 6), (3, 9), (3, 18)	54a2
()	(3) <sup>2</sup> , (4), (9), (12) <sup>2</sup> , (3, 3), (3, 12), (4, 4), (4, 12)	162d2
()	(2), (3) <sup>2</sup> , (4), (6), (9), (12) <sup>2</sup> , (2, 2), (2, 6), (3, 3), (3, 12)	162a2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (9), (2, 2), (2, 6), (3, 3), (3, 6), (3, 9) <sup>2</sup>	486f2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (7), (9), (14), (21), (2, 2), (2, 6), (3, 3), (3, 6)	162b4
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (7), (9), (14), (21) <sup>2</sup> , (42), (2, 2), (2, 14)	7938u3
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (9), (21), (42), (2, 2), (2, 6), (3, 3), (3, 6), (3, 21)	162c2
()	(2), (3) <sup>2</sup> , (5), (6) <sup>2</sup> , (9), (10), (15), (30), (2, 2), (2, 6), (3, 3), (3, 6)	50a4

$G$	$\mathcal{H}_{\mathbb{Q}}(18, E)$	Label
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (9) <sup>2</sup> , (18) <sup>2</sup> , (2, 2), (2, 6), (3, 3), (3, 6), (3, 9)	19a2
()	(2), (3) <sup>2</sup> , (6), (9) <sup>2</sup> , (27) <sup>2</sup> , (2, 6), (2, 18) <sup>2</sup> , (3, 3), (3, 9), (6, 6)	27a2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (9) <sup>3</sup> , (18) <sup>2</sup> , (2, 2), (2, 6), (3, 3), (3, 6), (3, 9) <sup>2</sup>	54b2
()	(2), (3) <sup>2</sup> , (6) <sup>2</sup> , (7), (9), (14), (21) <sup>2</sup> , (42), (2, 2), (2, 6), (2, 14), (3, 3), (3, 6), (3, 21)	162b2
(2)	(2, 2)	46a1
(2)	(2, 10)	450a3
(2)	(2, 2), (2, 14)	49a1
(2)	(10), (2, 2)	150b3
(2)	(14), (2, 2)	49a2
(2)	(4) <sup>2</sup> , (2, 2)	15a5
(2)	(4), (8), (2, 2)	24a6
(2)	(4), (16), (2, 2)	3150bk1
(2)	(6), (2, 6), (2, 18)	80b1
(2)	(8) <sup>2</sup> , (2, 2)	2880r6
(2)	(14), (2, 2), (2, 14)	49a3
(2)	(6), (2, 6), (2, 18), (6, 6)	84a3
(2)	(6), (2, 6), (6, 6), (6, 18)	36a3
(2)	(6) <sup>2</sup> , (18), (2, 2)	80b2
(2)	(6), (18), (2, 2), (2, 6)	80b3
(2)	(6), (18), (2, 6), (2, 18)	98a3
(2)	(4) <sup>2</sup> , (6), (2, 6), (2, 18)	960o7
(2)	(4) <sup>2</sup> , (12), (2, 6), (2, 18)	450g1
(2)	(4), (6), (12), (36), (2, 2)	240b3
(2)	(4), (12), (36), (2, 2), (2, 6)	450g3
(2)	(6) <sup>2</sup> , (18) <sup>2</sup> , (2, 2)	98a4
(2)	(4) <sup>2</sup> , (6) <sup>2</sup> , (18), (2, 2)	150c4
(2)	(4) <sup>2</sup> , (6), (12), (18), (2, 2)	240b1
(2)	(4) <sup>2</sup> , (6), (18), (2, 2), (2, 6)	960o4
(2)	(6) <sup>2</sup> , (2, 2), (2, 6), (3, 6), (3, 18)	36a4
(2)	(6) <sup>2</sup> , (18), (2, 2), (2, 6), (3, 6)	20a3
(2)	(4), (6), (12) <sup>2</sup> , (36), (2, 2), (2, 6), (3, 12)	30a3
(2)	(6) <sup>2</sup> , (18) <sup>2</sup> , (2, 2), (2, 6), (3, 6), (3, 18)	14a3
(2)	(4) <sup>2</sup> , (6) <sup>2</sup> , (12) <sup>2</sup> , (18), (2, 2), (2, 6), (3, 6)	30a7
(3)	(6), (9), (6, 6)	300b1
(3)	(2, 6), (2, 18), (3, 3), (6, 18)	196b1
(3)	(6), (18), (6, 6), (6, 18)	108a1
(3)	(9), (2, 6), (3, 3), (6, 6)	324a1
(3)	(6), (9), (2, 6), (3, 3), (3, 6)	44a1
(3)	(6), (9), (2, 6), (3, 3), (6, 6)	540c1
(3)	(9), (2, 6), (3, 3), (3, 9), (6, 6)	1764e2
(3)	(9), (12), (3, 3), (3, 12), (4, 12)	162d1
(3)	(6), (9), (2, 6), (3, 3), (3, 6), (3, 9)	676c1
(3)	(6), (9), (2, 6), (3, 3), (3, 9), (6, 6)	225b1
(3)	(6), (9), (2, 6), (3, 3), (6, 6), (9, 9)	243a2

$G$	$\mathcal{H}_{\mathbb{Q}}(18, E)$	Label
(3)	(6), (18), (2, 6), (2, 18), (3, 3), (6, 6)	486a2
(3)	(6), (9), (2, 6), (3, 3), (3, 6), (3, 9) <sup>2</sup>	486c1
(3)	(6), (9), (3, 3), (3, 9), (6, 6), (6, 18), (9, 9)	27a1
(3)	(6), (9), (12) <sup>2</sup> , (2, 6), (3, 3), (3, 12)	162a1
(3)	(6), (9), (18), (2, 6), (2, 18), (3, 9), (3, 18)	486f1
(3)	(6), (9), (21), (42), (2, 6), (3, 3), (3, 6)	162b3
(3)	(6), (9), (2, 6), (3, 3), (3, 6), (3, 9) <sup>3</sup>	19a1
(3)	(6), (9), (15), (30), (45), (2, 6), (3, 3), (3, 6)	50a3
(3)	(6), (9), (18), (3, 3), (3, 9), (6, 6), (6, 18), (9, 9)	27a3
(3)	(6), (9), (21), (42), (2, 6), (3, 3), (3, 6), (3, 21)	162c1
(3)	(6), (9), (2, 6), (3, 3), (3, 6), (3, 9) <sup>3</sup> , (3, 18)	54a1
(3)	(6), (9), (21), (42), (2, 6), (2, 42), (3, 3), (3, 6), (3, 21)	162b1
(3)	(6), (9) <sup>2</sup> , (18) <sup>2</sup> , (2, 6), (2, 18), (3, 3), (3, 6), (3, 9)	19a3
(3)	(6), (9) <sup>2</sup> , (18) <sup>2</sup> , (2, 6), (2, 18), (3, 3), (3, 6), (3, 9) <sup>2</sup>	54a3
(3)	(6), (9), (18), (2, 6), (2, 18), (3, 3), (3, 6), (3, 9) <sup>3</sup> , (3, 18)	54b1
(3)	(6), (9) <sup>2</sup> , (18), (27) <sup>2</sup> , (2, 6), (2, 18) <sup>2</sup> , (3, 3), (3, 9), (6, 6)	27a4
(4)	(2, 4)	17a1
(4)	(2, 8)	192c6
(4)	(4, 4)	40a4
(4)	(8) <sup>2</sup> , (2, 4)	15a7
(4)	(8) <sup>2</sup> , (2, 8)	240d6
(4)	(12), (2, 12), (2, 36)	150c3
(4)	(12) <sup>2</sup> , (36), (2, 4)	720j5
(4)	(12), (36), (2, 4), (2, 12)	150c1
(4)	(12) <sup>2</sup> , (36), (2, 4), (2, 12), (3, 12)	90c1
(5)	(10), (2, 10)	11a1
(5)	(10), (15) <sup>2</sup> , (30) <sup>2</sup> , (45), (2, 10)	50b1
(6)	(18), (2, 6), (2, 18), (3, 6)	20a1
(6)	(18), (2, 6), (2, 18), (6, 6)	84a1
(6)	(18), (2, 6), (6, 6), (6, 18)	36a1
(6)	(18), (2, 6), (2, 18), (3, 6), (3, 18)	36a2
(6)	(18) <sup>2</sup> , (2, 6), (2, 18), (3, 6), (3, 18)	14a4
(6)	(18), (2, 6), (2, 18), (3, 6), (3, 18) <sup>3</sup>	14a1
(6)	(12) <sup>2</sup> , (18), (36) <sup>2</sup> , (2, 6), (2, 18), (3, 6)	30a4
(6)	(12) <sup>2</sup> , (18), (36) <sup>2</sup> , (2, 6), (2, 18), (3, 12)	30a1
(7)	(14), (2, 14)	26b1
(8)	(2, 8)	15a4
(8)	(16) <sup>2</sup> , (2, 8)	210e1
(9)	(18), (27), (2, 18), (3, 9), (3, 18)	54b3
(10)	(2, 10)	66c1
(12)	(36), (2, 12), (2, 36), (3, 12)	90c3
(2, 2)	(2, 4)	33a1
(2, 2)	(2, 8)	63a2
(2, 2)	(2, 4) <sup>2</sup>	17a2

$G$	$\mathcal{H}_{\mathbb{Q}}(18, E)$	Label
(2, 2)	(2, 4), (2, 8)	75b3
(2, 2)	(2, 4) <sup>3</sup>	15a2
(2, 2)	(2, 4) <sup>2</sup> , (2, 8)	510e5
(2, 2)	(2, 6) <sup>2</sup> , (2, 18)	240b2
(2, 2)	(2, 6), (2, 12), (2, 36)	960o6
(2, 2)	(2, 4), (2, 6) <sup>2</sup> , (2, 18)	150c2
(2, 2)	(2, 4), (2, 6), (2, 12), (2, 18)	960o2
(2, 2)	(2, 6) <sup>2</sup> , (2, 18), (6, 6)	30a6
(2, 2)	(2, 4), (2, 6) <sup>2</sup> , (2, 12), (2, 18), (6, 6)	90c2
(2, 4)	(2, 8)	15a3
(2, 4)	(4, 4)	195a3
(2, 4)	(2, 8) <sup>2</sup>	1230f2
(2, 4)	(2, 8), (4, 4)	15a1
(2, 4)	(2, 8) <sup>2</sup> , (4, 4)	210e3
(2, 6)	(2, 18), (6, 6)	30a2
(2, 6)	(2, 12), (2, 18), (2, 36), (6, 6)	90c6

$$d = 20$$

$$\Phi_{\mathbb{Q}}(20) \supseteq \left\{ \begin{array}{l} (3), (4), (5), (6), (7), (8), (9), (10), (11), (12), (13), (15), (16), (20), (22), (24), (25), (33), \\ (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (2, 22), (3, 3), (3, 6), (4, 4), (4, 8), (5, 5), (5, 10), (5, 15), (6, 6) \end{array} \right\}$$

$G$	$\Phi_{\mathbb{Q}}(20, G) \setminus \{G\} \supseteq$
( )	{(3), (5), (7), (9), (11), (13), (15), (25), (33), (3, 3), (5, 5), (5, 15)}
(2)	{(4), (6), (8), (10), (12), (16), (20), (22), (24), (2, 2), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (2, 22), (3, 6), (4, 4), (4, 8), (5, 10), (6, 6)}
(3)	{(15), (3, 3), (5, 15)}
(4)	{(8), (12), (16), (24), (2, 4), (2, 8), (2, 12), (2, 16), (4, 4), (4, 8)}
(5)	{(15), (25), (5, 5), (5, 15)}
(6)	{(12), (24), (2, 6), (2, 12), (3, 6), (6, 6)}
(7)	{ }
(8)	{(16), (2, 8), (2, 16), (4, 8)}
(9)	{ }
(10)	{(20), (2, 10), (5, 10)}
(12)	{(24), (2, 12)}
(2, 2)	{(2, 4), (2, 6), (2, 8), (2, 12), (2, 16), (4, 4), (4, 8)}
(2, 4)	{(2, 8), (2, 16), (4, 4), (4, 8)}
(2, 6)	{(2, 12)}
(2, 8)	{(2, 16), (4, 8)}

$$h_{\mathbb{Q}}(20) \geq 9 \quad \#\mathcal{H}_{\mathbb{Q}}(20) \geq 149 \quad N_{\mathbb{Q}}(20) \geq 14400$$



$G$	$\mathcal{H}_{\mathbb{Q}}(20, E)$	Label
()	(3)	19a2
()	(7)	208d1
()	(9)	54a2
()	(11)	121a1
()	(13)	2890d1
()	$(3)^2$	1210d1
()	$(5)^2$	99d2
()	(5), (5, 5)	75a2
()	$(3)^2, (3, 3)$	175b2
()	$(3)^2, (11)$	1089e1
()	$(5)^2, (5, 5)$	38b2
()	$(5)^2, (25)$	99d1
()	$(3)^2, (5)^2$	338d1
()	$(3)^2, (11), (33)$	121b2
()	(3), $(5)^2, (15)$	400b1
()	(3), (5), (15), (5, 5)	50a4
()	(3), (5), $(15)^2$	450d2
()	(5), $(25)^2, (5, 5)$	275b1
()	$(3)^2, (11), (33)^2$	121b1
()	(3), $(5)^2, (15), (5, 5)$	50a2
()	(3), (5), $(15)^2, (5, 15)$	50b3
()	$(5)^2, (25)^2, (5, 5)$	11a2
(2)	(2, 2), (2, 4)	200b1
(2)	(4), (2, 2)	46a1
(2)	(4), (2, 6)	36a3
(2)	(4), (2, 2), (2, 4)	128a1
(2)	(4), (2, 6), (2, 12)	1040g2
(2)	(4), (10), (2, 10)	450a3
(2)	(4), (22), (2, 2)	49a2
(2)	(8), (2, 2), (2, 4)	294f1
(2)	(4), (2, 2), (2, 4), (2, 22)	49a1
(2)	$(4)^2, (2, 2), (2, 4)$	120b1
(2)	$(4)^2, (2, 2), (4, 4)$	320a4
(2)	$(4)^2, (2, 6), (2, 12)$	450g1
(2)	(4), (6), (2, 2), (2, 6)	14a3
(2)	(4), (6), (2, 6), (6, 6)	98a3
(2)	(4), $(6)^2, (2, 2)$	726a2
(2)	(4), (8), (2, 2), (2, 8)	45a1
(2)	(4), (10), (2, 2), (2, 10)	450a1
(2)	(4), $(10)^2, (2, 2)$	768b1
(2)	(4), (12), (2, 2), (2, 12)	30a3
(2)	(4), (16), (2, 2), (2, 16)	3150bk1
(2)	(6), (12), (2, 2), (2, 6)	36a4
(2)	$(8)^2, (2, 2), (4, 8)$	2880r6

$G$	$\mathcal{H}_{\mathbb{Q}}(20, E)$	Label
(2)	$(4)^2, (2, 2), (2, 4)^2$	33a4
(2)	$(4)^2, (2, 6), (2, 12)^2$	960o7
(2)	$(4)^2, (8), (2, 2), (2, 4)$	33a2
(2)	$(4)^2, (8), (2, 2), (4, 4)$	64a4
(2)	$(4), (6), (2, 2), (2, 4), (2, 6)$	130a4
(2)	$(4), (8), (2, 2), (2, 4), (2, 8)$	144b1
(2)	$(4), (8), (12), (2, 2), (2, 12)$	960e3
(2)	$(4), (8), (16), (2, 2), (2, 8)$	63a1
(2)	$(4), (10), (2, 2), (2, 10), (5, 10)$	150b3
(2)	$(4), (10)^2, (2, 2), (2, 10)$	198e1
(2)	$(4), (12), (2, 2), (2, 4), (2, 12)$	720j3
(2)	$(4), (12), (24), (2, 2), (2, 12)$	960o3
(2)	$(6)^2, (22), (2, 2), (2, 4)$	256a1
(2)	$(10)^2, (20), (2, 2), (2, 10)$	450a4
(2)	$(4)^2, (8), (2, 2), (2, 4)^2$	17a3
(2)	$(4)^2, (8)^2, (2, 2), (2, 4)$	45a3
(2)	$(4), (8)^2, (2, 2), (2, 4), (2, 8)$	24a6
(2)	$(4), (8)^3, (2, 2), (2, 8)$	45a6
(2)	$(4), (8), (16)^2, (2, 2), (2, 8)$	75b1
(2)	$(4), (10)^2, (2, 2), (2, 10), (5, 10)$	150b1
(2)	$(4), (10)^2, (20), (2, 2), (2, 10)$	450a2
(2)	$(4)^2, (8)^2, (2, 2), (2, 4)^2$	63a6
(2)	$(4), (6)^2, (2, 2), (2, 6)^2, (3, 6)$	112c3
(2)	$(4), (8)^3, (16), (2, 2), (2, 8)$	75b6
(2)	$(4), (8)^2, (16), (2, 2), (2, 4), (2, 8)$	510e7
(2)	$(4), (8), (16)^2, (2, 2), (2, 4), (2, 8)$	1470k3
(2)	$(4), (10)^2, (20), (2, 2), (2, 10), (5, 10)$	66c3
(2)	$(6)^2, (12), (2, 2), (2, 6)^2, (3, 6)$	98a4
(2)	$(4)^2, (6), (12)^2, (2, 2), (2, 4), (2, 6)$	30a7
(2)	$(4)^2, (8)^3, (2, 2), (2, 4)^2$	15a5
(2)	$(4)^2, (8)^4, (2, 2), (2, 4)$	630c6
(2)	$(4)^2, (8)^4, (2, 2), (4, 4)$	4410r6
(2)	$(4), (8)^2, (16)^2, (2, 2), (2, 4), (2, 8)$	1680p1
(2)	$(4)^2, (6), (8), (12)^2, (2, 2), (2, 4), (2, 6)$	90c5
(2)	$(4)^2, (6), (12)^2, (2, 2), (2, 4)^2, (2, 6)$	90c4
(3)	$(3, 3)$	19a1
(3)	$(15), (5, 15)$	50a3
(3)	$(15)^2$	450b2
(3)	$(15)^2, (5, 15)$	50a1
(4)	$(2, 4), (2, 8)$	64a3
(4)	$(8), (2, 4)$	33a3
(4)	$(8), (2, 8)$	192c6
(4)	$(8), (2, 12)$	150c3
(4)	$(8), (4, 4)$	40a4

$G$	$\mathcal{H}_{\mathbb{Q}}(20, E)$	Label
(4)	(8), (2, 4), (2, 8)	17a4
(4)	(8), (2, 4), (4, 4)	17a1
(4)	(8), (2, 8), (2, 16)	1470k1
(4)	$(8)^2$ , (2, 4), (2, 8)	24a3
(4)	$(8)^2$ , (2, 8), (4, 8)	240d6
(4)	(8), (12), (2, 4), (2, 12)	90c1
(4)	(12), (24), (2, 4), (2, 12)	960o8
(4)	$(8)^2$ , (16), (2, 4), (2, 8)	21a4
(4)	$(8)^2$ , (2, 4), $(2, 8)^2$ , (4, 4)	195a6
(4)	$(8)^2$ , $(16)^2$ , (2, 4), (2, 8)	15a7
(4)	$(8)^2$ , $(16)^3$ , (2, 4), (2, 8)	1230f4
(4)	$(8)^2$ , $(16)^2$ , (2, 4), $(2, 8)^2$ , (4, 4)	210e6
(5)	(5, 5)	11a1
(5)	(15), (5, 5)	50b2
(5)	(15), (5, 15)	50b1
(5)	$(25)^2$ , (5, 5)	11a3
(6)	(12), (2, 6)	14a4
(6)	(12), (2, 6), (2, 12)	130a2
(6)	(12), (2, 6), (3, 6), (6, 6)	14a1
(6)	$(12)^2$ , (2, 6), (2, 12)	30a1
(6)	$(12)^2$ , (2, 6), $(2, 12)^2$	90c7
(6)	$(12)^2$ , (24), (2, 6), (2, 12)	90c8
(8)	(16), (2, 8)	21a3
(8)	(16), (2, 8), (2, 16)	1230f1
(8)	(16), (2, 8), (4, 8)	15a4
(8)	$(16)^2$ , (2, 8), (2, 16)	210e1
(10)	(20), (2, 10), (5, 10)	66c1
(12)	(24), (2, 12)	90c3
(2, 2)	(2, 4), (4, 4)	64a1
(2, 2)	$(2, 4)^3$	33a1
(2, 2)	$(2, 4)^2$ , (2, 8)	63a2
(2, 2)	$(2, 4)^2$ , (2, 12)	960o6
(2, 2)	$(2, 4)^2$ , (4, 4)	17a2
(2, 2)	$(2, 4)^2$ , (4, 8)	1200j4
(2, 2)	(2, 4), (2, 8), (4, 8)	75b3
(2, 2)	$(2, 4)^3$ , (2, 6)	210a6
(2, 2)	$(2, 4)^3$ , (2, 8)	45a5
(2, 2)	$(2, 4)^3$ , (4, 4)	231a3
(2, 2)	$(2, 4)^2$ , (2, 6), (2, 12)	30a6
(2, 2)	$(2, 4)^2$ , (2, 8), (2, 16)	75b2
(2, 2)	$(2, 4)^2$ , (2, 8), (4, 4)	40a1
(2, 2)	$(2, 4)^2$ , (2, 8), (4, 8)	510e5
(2, 2)	(2, 4), (2, 6), $(2, 12)^2$	14400bo6
(2, 2)	$(2, 4)^3$ , (2, 6), (2, 12)	90c2

$G$	$\mathcal{H}_{\mathbb{Q}}(20, E)$	Label
(2, 2)	$(2, 4)^3, (2, 8)^2$	45a2
(2, 2)	$(2, 4)^3, (2, 8), (4, 4)$	21a2
(2, 2)	$(2, 4)^2, (2, 6), (2, 12)^2$	720j6
(2, 2)	$(2, 4)^2, (2, 8)^2, (4, 4)$	75b5
(2, 2)	$(2, 4), (2, 6), (2, 12)^3$	150c6
(2, 2)	$(2, 4)^3, (2, 8)^2, (4, 4)$	42a3
(2, 2)	$(2, 4)^2, (2, 8)^3, (4, 4)$	294c2
(2, 2)	$(2, 4)^3, (2, 8)^3, (4, 4)$	15a2
(2, 2)	$(2, 4)^2, (2, 8)^4, (4, 4)$	6720cd4
(2, 2)	$(2, 4)^3, (2, 8)^4, (4, 4)$	210e5
(2, 4)	$(2, 8)^2, (4, 4)$	21a1
(2, 4)	$(2, 8)^2, (4, 8)$	1230f2
(2, 4)	$(2, 8), (4, 4), (4, 8)$	15a1
(2, 4)	$(2, 8)^2, (2, 16), (4, 4)$	15a3
(2, 4)	$(2, 8)^2, (4, 4), (4, 8)$	210e3
(2, 6)	$(2, 12)^3$	30a2
(2, 8)	$(2, 16)^2, (4, 8)$	210e2

$$d = 21$$

$$\Phi_{\mathbb{Q}}(21) \supseteq \{(2), (3), (4), (6), (7), (9), (10), (12), (13), (14), (18), (21), (43), (2, 2), (2, 6), (2, 14)\}$$

$G$	$\Phi_{\mathbb{Q}}(21, G) \setminus \{G\} \supseteq$
()	\{(2), (3), (4), (6), (7), (13), (14), (43), (2, 2), (2, 14)\}
(2)	\{(6), (14)\}
(3)	\{(6), (9), (12), (21), (2, 6)\}
(4)	\{(12)\}
(5)	\{(10)\}
(6)	\{(18)\}
(7)	\{(14)\}
(8)	\{\}
(9)	\{(18)\}
(10)	\{\}
(12)	\{\}
(2, 2)	\{(2, 6)\}
(2, 4)	\{\}
(2, 6)	\{\}
(2, 8)	\{\}

$$h_{\mathbb{Q}}(21) \geq 3 \quad \#\mathcal{H}_{\mathbb{Q}}(21) \geq 29 \quad N_{\mathbb{Q}}(21) \geq 3969$$

$G$	$\mathcal{H}_{\mathbb{Q}}(21, E)$	Label
()	(2)	11a2
()	(2, 2)	196a1
()	(2, 14)	1922c1
()	(4)	648a1
()	(6)	108a2
()	(2), (3)	19a2
()	(2), (7)	294a1
()	(2), (13)	147b1
()	(2), (43)	1849a1
()	(2, 2), (2, 14)	1922c2
()	(3), (2, 2)	196b2
()	(3), (4)	162d2
()	(4), (7)	338b1
()	(7), (2, 2)	3969a1
()	(2), (3), (7)	162b2
()	(2), (7), (14)	26b2
(2)	(6)	14a3
(2)	(14)	49a1
(3)	(2, 6)	196b1
(3)	(6)	19a1
(3)	(12)	162d1
(3)	(6), (9)	19a3
(3)	(6), (21)	162b1
(4)	(12)	90c1
(5)	(10)	11a1
(6)	(18)	14a4
(7)	(14)	26b1
(9)	(18)	54b3
(2, 2)	(2, 6)	30a6

$$d = 4$$

$$\Psi_{\mathbb{Q}}(4) \supseteq \{(3), (4), (5), (6), (8), (10), (12), (13), (15), (16), (20), (24), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (3, 3), (3, 6), (4, 4), (4, 8), (5, 5), (6, 6)\}$$

$G$	$\Psi_{\mathbb{Q}}(4, G) \setminus \{G\} \supseteq$
()	\{(3), (5), (13), (15), (3, 3), (5, 5)\}
(2)	\{(4), (6), (8), (10), (12), (16), (20), (24), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (3, 6), (4, 4), (4, 8), (6, 6)\}
(3)	\{(15)\}
(4)	\{(8), (16), (24), (2, 8), (2, 12), (2, 16), (4, 4), (4, 8)\}
(5)	\{(5, 5)\}
(6)	\{(12), (24), (2, 12), (6, 6)\}
(7)	\{\}
(8)	\{(16), (2, 16), (4, 8)\}
(9)	\{\}
(10)	\{(20)\}
(12)	\{(24)\}
(2, 2)	\{(2, 4), (2, 8), (2, 12), (2, 16), (4, 4), (4, 8)\}
(2, 4)	\{(2, 8), (2, 16), (4, 4), (4, 8)\}
(2, 6)	\{(2, 12)\}
(2, 8)	\{(2, 16), (4, 8)\}

$$g_{\mathbb{Q}}(4) \geq 5 \quad \#\mathcal{G}_{\mathbb{Q}}(4) \geq 104 \quad M_{\mathbb{Q}}(4) \geq 18176$$

$G$	$\mathcal{H}_{\mathbb{Q}}(4, E)$	Label
()	(3, 3)	175b2
()	(5)	11a2
()	(5, 5)	275b2
()	(13)	2890d1
()	(15)	50a4
()	$(3)^2$	121b1
()	$(5)^2$	18176b2
()	$(3)^2, (5)$	338d1
(2)	(2, 4)	120b1
(2)	(2, 8)	45a1
(2)	(2, 12)	30a3
(2)	(2, 16)	3150bk1
(2)	(4)	36a3
(2)	(4, 4)	320a4
(2)	(4, 8)	2880r6
(2)	$(2, 4)^2$	33a4
(2)	(2, 4), (2, 8)	144b1
(2)	(2, 4), (2, 12)	720j3
(2)	$(2, 12)^2$	960o7
(2)	(4), (2, 4)	49a1
(2)	(4), (2, 6)	14a3
(2)	(4), (2, 10)	150b3
(2)	(4), (2, 12)	1040g2
(2)	(4), (6, 6)	98a3
(2)	(4), (10)	66c3
(2)	(8), (2, 4)	33a2
(2)	(8), (2, 12)	960e3
(2)	(8), (4, 4)	64a4
(2)	(12), (2, 6)	36a4
(2)	(16), (2, 8)	63a1
(2)	(20), (2, 10)	450a4
(2)	(24), (2, 12)	960o3
(2)	(4), (2, 4), (2, 6)	130a4
(2)	(4), (6), (2, 6)	726a1
(2)	$(4), (6)^2$	726a2
(2)	$(6)^2, (2, 4)$	256a1
(2)	$(8), (2, 4)^2$	17a3
(2)	(8), (2, 4), (2, 8)	24a6
(2)	$(8)^2, (2, 4)$	45a3
(2)	$(8)^2, (2, 8)$	45a6
(2)	$(16)^2, (2, 8)$	75b1
(2)	$(4), (2, 6)^2, (3, 6)$	112c3
(2)	$(8)^2, (2, 4)^2$	63a6
(2)	$(8)^2, (16), (2, 8)$	75b6



$G$	$\mathcal{H}_{\mathbb{Q}}(4, E)$	Label
(2)	(8), (16), (2, 4), (2, 8)	510e7
(2)	(12), (2, 6) <sup>2</sup> , (3, 6)	98a4
(2)	(12) <sup>2</sup> , (2, 4), (2, 6)	30a7
(2)	(16) <sup>2</sup> , (2, 4), (2, 8)	1470k3
(2)	(8) <sup>3</sup> , (2, 4) <sup>2</sup>	15a5
(2)	(8) <sup>4</sup> , (2, 4)	630c6
(2)	(8) <sup>4</sup> , (4, 4)	4410r6
(2)	(8), (12) <sup>2</sup> , (2, 4), (2, 6)	90c5
(2)	(8), (16) <sup>2</sup> , (2, 4), (2, 8)	1680p1
(2)	(12) <sup>2</sup> , (2, 4) <sup>2</sup> , (2, 6)	90c4
(3)	(15)	50a1
(4)	(2, 8)	24a3
(4)	(4, 8)	240d6
(4)	(8)	33a3
(4)	(8), (2, 8)	17a4
(4)	(8), (2, 12)	90c1
(4)	(8), (2, 16)	1470k1
(4)	(8), (4, 4)	17a1
(4)	(16), (2, 8)	21a4
(4)	(24), (2, 12)	960o8
(4)	(2, 8) <sup>2</sup> , (4, 4)	195a6
(4)	(16) <sup>2</sup> , (2, 8)	15a7
(4)	(16) <sup>3</sup> , (2, 8)	1230f4
(4)	(16) <sup>2</sup> , (2, 8) <sup>2</sup> , (4, 4)	210e6
(5)	(5, 5)	11a1
(6)	(2, 12)	30a1
(6)	(12)	14a4
(6)	(2, 12) <sup>2</sup>	90c7
(6)	(12), (2, 12)	130a2
(6)	(12), (6, 6)	14a1
(6)	(24), (2, 12)	90c8
(8)	(2, 16)	210e1
(8)	(16)	21a3
(8)	(16), (2, 16)	1230f1
(8)	(16), (4, 8)	15a4
(10)	(20)	66c1
(12)	(24)	90c3
(2, 2)	(4, 4)	17a2
(2, 2)	(4, 8)	75b3
(2, 2)	(2, 4) <sup>2</sup>	33a1
(2, 2)	(2, 8), (4, 4)	21a2
(2, 2)	(2, 4) <sup>3</sup>	120b2
(2, 2)	(2, 4) <sup>2</sup> , (2, 8)	45a5
(2, 2)	(2, 4) <sup>2</sup> , (2, 12)	30a6

$G$	$\mathcal{H}_{\mathbb{Q}}(4, E)$	Label
(2, 2)	$(2, 4)^2, (2, 16)$	75b2
(2, 2)	$(2, 4), (2, 12)^2$	720j6
(2, 2)	$(2, 8)^2, (4, 4)$	42a3
(2, 2)	$(2, 12)^3$	150c6
(2, 2)	$(2, 4)^2, (2, 8)^2$	45a2
(2, 2)	$(2, 8)^3, (4, 4)$	15a2
(2, 2)	$(2, 8)^4, (4, 4)$	210e5
(2, 4)	$(4, 8)$	15a1
(2, 4)	$(2, 8)^2$	195a3
(2, 4)	$(2, 8), (4, 4)$	21a1
(2, 4)	$(2, 8)^2, (4, 4)$	24a1
(2, 4)	$(2, 8)^2, (4, 8)$	240d4
(2, 4)	$(2, 8), (2, 16), (4, 4)$	15a3
(2, 6)	$(2, 12)^2$	90c6
(2, 6)	$(2, 12)^3$	30a2
(2, 8)	$(2, 16)^2, (4, 8)$	210e2

$$d = 6$$

$$\Psi_{\mathbb{Q}}(6) \supseteq \left\{ \begin{array}{l} (3), (4), (6), (7), (9), (10), (12), (13), (14), (15), (18), (21), (30), \\ (2, 2), (2, 6), (2, 10), (2, 12), (2, 14), (2, 18), (3, 3), (3, 6), (3, 9), (3, 12), (4, 4), (4, 12), (6, 6) \end{array} \right\}$$

$G$	$\Psi_{\mathbb{Q}}(6, G) \setminus \{G\} \supseteq$
()	{(3), (4), (6), (7), (9), (10), (12), (13), (14), (15), (18), (21), (2, 2), (2, 6), (2, 10), (2, 14), (2, 18), (3, 3), (3, 9), (4, 4), (4, 12), (6, 6)}
(2)	{(6), (12), (14), (18), (2, 6), (2, 14), (2, 18), (3, 6), (3, 12), (6, 6)}
(3)	{(9), (12), (21), (30), (2, 6), (3, 3), (3, 6), (3, 9), (4, 12), (6, 6)}
(4)	{(12), (2, 12), (3, 12)}
(5)	{(15), (30), (2, 10)}
(6)	{(18), (2, 18), (3, 6), (3, 12), (6, 6)}
(7)	{(2, 14)}
(8)	{}
(9)	{(2, 18), (3, 9)}
(10)	{}
(12)	{(3, 12)}
(2, 2)	{(2, 6), (2, 12), (6, 6)}
(2, 4)	{}
(2, 6)	{(6, 6)}
(2, 8)	{}

$$g_{\mathbb{Q}}(6) \geq 5 \quad \#\mathcal{G}_{\mathbb{Q}}(6) \geq 88 \quad M_{\mathbb{Q}}(6) \geq 5184$$

$G$	$\mathcal{H}_{\mathbb{Q}}(6, E)$	Label
()	(2, 2)	11a2
()	(2, 10)	121d1
()	(2, 14)	1922e1
()	(4, 4)	338b1
()	(6, 6)	108a2
()	(7)	1922c2
()	(2, 6), (3, 3)	196b2
()	(3), (2, 6)	196a1
()	(3), (2, 18)	1728e3
()	(3), (4, 12)	1296h1
()	(6), (2, 6)	361b2
()	(7), (2, 2)	26b2
()	(7), (4, 4)	338b2
()	(10), (2, 2)	75a2
()	(13), (2, 2)	147c1
()	(14), (2, 2)	208d1
()	(3), (6), (2, 2)	50b3
()	(3), (6), (2, 10)	1600q1
()	(3), (7), (2, 6)	5184u3
()	(3), (9), (2, 6)	361b1
()	(3), (10), (2, 6)	1600v3
()	(3), (12), (4, 4)	1296h2
()	(3), (18), (2, 2)	432e3
()	(3), (21), (2, 6)	5184u1
()	(4) <sup>2</sup> , (2, 2)	648c1
()	(6), (2, 2), (3, 3)	44a2
()	(6), (2, 2), (3, 9)	486c2
()	(6) <sup>2</sup> , (2, 2)	175b2
()	(6), (9), (2, 6)	1728e2
()	(12), (3, 3), (4, 4)	162d2
()	(18), (2, 2), (3, 9)	54a2
()	(3), (4) <sup>2</sup> , (2, 6)	1296j1
()	(3), (4), (12), (2, 2)	1296j2
()	(3), (6), (7), (2, 2)	1296e2
()	(3), (6), (9), (2, 2)	175b1
()	(3), (6), (10), (2, 2)	400b1
()	(3), (6), (21), (2, 2)	1296e1
()	(4) <sup>2</sup> , (7), (2, 2)	338a1
()	(4), (12), (2, 2), (3, 3)	162a2
()	(6) <sup>2</sup> , (9), (2, 2)	432a1
()	(6), (7), (2, 2), (3, 3)	162b4
()	(6), (21), (2, 2), (3, 3)	162b2
()	(9) <sup>2</sup> , (2, 6), (3, 3)	27a2
()	(3), (4) <sup>2</sup> , (6), (2, 2)	4050g2

$G$	$\mathcal{H}_{\mathbb{Q}}(6, E)$	Label
()	$(6), (9)^2, (2, 2), (3, 3)$	19a2
()	$(6), (10), (15), (2, 2), (3, 3)$	50a4
(2)	$(2, 6)$	80b3
(2)	$(2, 14)$	49a1
(2)	$(6)$	80b1
(2)	$(6, 6)$	36a3
(2)	$(12)$	240b1
(2)	$(14)$	49a2
(2)	$(2, 6), (3, 6)$	20a3
(2)	$(6), (2, 18)$	98a1
(2)	$(6), (18)$	98a2
(2)	$(18), (2, 6)$	98a5
(2)	$(12), (2, 6), (3, 12)$	30a3
(2)	$(12)^2, (2, 6), (3, 6)$	30a7
(2)	$(18)^2, (2, 6), (3, 6)$	14a3
(3)	$(3, 3)$	196b1
(3)	$(6, 6)$	108a1
(3)	$(2, 6), (3, 3)$	44a1
(3)	$(2, 6), (3, 6)$	19a1
(3)	$(2, 6), (3, 9)$	486f1
(3)	$(3, 3), (4, 12)$	162d1
(3)	$(3, 9), (6, 6)$	27a1
(3)	$(2, 6), (3, 6), (3, 9)$	54a1
(3)	$(9), (2, 6), (3, 3)$	19a3
(3)	$(21), (2, 6), (3, 3)$	162b3
(3)	$(30), (2, 6), (3, 3)$	50a3
(3)	$(12)^2, (2, 6), (3, 3)$	162a1
(4)	$(2, 12)$	150c1
(4)	$(12)$	150c3
(4)	$(2, 12), (3, 12)$	90c1
(5)	$(2, 10)$	11a1
(5)	$(15), (30), (2, 10)$	50b1
(6)	$(3, 6)$	20a1
(6)	$(3, 12)$	30a1
(6)	$(6, 6)$	36a1
(6)	$(18), (2, 18), (3, 6)$	14a4
(7)	$(2, 14)$	26b1
(9)	$(2, 18), (3, 9)$	54b3
(12)	$(3, 12)$	90c3
(2, 2)	$(2, 6)$	150c2
(2, 2)	$(2, 12)$	960o2
(2, 2)	$(6, 6)$	30a6
(2, 2)	$(2, 12), (6, 6)$	90c2
(2, 6)	$(6, 6)$	30a2

$$d = 8$$

$$\Psi_{\mathbb{Q}}(8) \supseteq \left\{ \begin{array}{l} (3), (5), (6), (8), (10), (12), (15), (16), (17), (20), (21), (24), (30), (32), \\ (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (2, 20), (2, 24), (3, 3), (3, 6), (3, 12), (4, 4), (4, 8), (4, 12), (5, 5), (6, 6) \end{array} \right\}$$

$G$	$\Psi_{\mathbb{Q}}(8, G) \setminus \{G\} \supseteq$
( )	{(3), (5), (15), (17), (3, 3), (5, 5)}
(2)	{(6), (8), (10), (12), (16), (20), (24), (32), (2, 4), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (2, 20), (2, 24), (3, 6), (3, 12), (4, 4), (4, 8), (4, 12), (6, 6)}
(3)	{(15)}
(4)	{(12), (16), (20), (24), (32), (2, 8), (2, 16), (2, 20), (2, 24), (4, 4), (4, 8), (4, 12)}
(5)	{(15)}
(6)	{(24), (2, 12), (2, 24), (3, 12), (4, 12)}
(7)	{(21)}
(8)	{(24), (32), (2, 16), (4, 8)}
(9)	{}
(10)	{(30), (2, 20)}
(12)	{(2, 24), (4, 12)}
(2, 2)	{(2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (2, 20), (2, 24), (4, 4), (4, 8), (4, 12)}
(2, 4)	{(2, 12), (2, 16), (4, 8)}
(2, 6)	{(2, 24), (4, 12)}
(2, 8)	{(2, 24)}

$$g_{\mathbb{Q}}(8) \geq 9 \quad \# \mathcal{G}_{\mathbb{Q}}(8) \geq 200 \quad M_{\mathbb{Q}}(8) \geq 223494$$

$G$	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
()	(3)	11a2
()	(3, 3)	338d2
()	(5)	225a2
()	(15)	50a2
()	(3), (5)	361a1
()	(3), (5, 5)	99d2
()	(3), (17)	14450n1
()	(5), (3, 3)	121b1
()	(15), (3, 3)	338d1
(2)	(4, 12)	36a3
(2)	(2, 4), (2, 6)	223494n1
(2)	(2, 4), (2, 12)	36a4
(2)	(2, 12) <sup>2</sup>	80b1
(2)	(6), (2, 4)	200b2
(2)	(6), (4, 4)	128a1
(2)	(6), (4, 8)	200c4
(2)	(12), (4, 4)	576a1
(2)	(2, 4) <sup>2</sup> , (2, 6)	2205a2
(2)	(2, 4) <sup>2</sup> , (6, 6)	726a1
(2)	(6), (2, 4) <sup>2</sup>	46a1
(2)	(6), (2, 4), (2, 8)	200b1
(2)	(6), (2, 4), (2, 20)	450a4
(2)	(6), (2, 8), (4, 4)	49a1
(2)	(6), (2, 10), (4, 8)	64a4
(2)	(6), (2, 20) <sup>2</sup>	450a3
(2)	(6), (4, 8) <sup>2</sup>	6150n6
(2)	(6), (8) <sup>2</sup>	320a4
(2)	(6), (10), (4, 4)	2304h1
(2)	(6), (16), (4, 8)	24a6
(2)	(6), (16) <sup>2</sup>	2880r6
(2)	(8), (2, 4), (2, 24)	960o3
(2)	(8), (2, 12), (2, 24)	14400bo8
(2)	(8) <sup>2</sup> , (2, 12)	450g1
(2)	(8) <sup>2</sup> , (4, 12)	960o7
(2)	(8), (24), (2, 4)	30a3
(2)	(8), (24), (4, 12)	720j3
(2)	(12), (2, 4) <sup>2</sup>	14a3
(2)	(12), (2, 4), (2, 12)	576a2
(2)	(12), (2, 12) <sup>2</sup>	98a3
(2)	(12), (2, 12), (4, 4)	130a4
(2)	(24), (2, 4), (2, 12)	1040g1
(2)	(24), (2, 4), (2, 24)	960e3
(2)	(2, 4), (2, 6) <sup>2</sup> , (3, 6)	256a2
(2)	(2, 4), (2, 12), (3, 12), (6, 6)	98a4

$G$	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(2)	$(6), (2, 4)^2, (2, 10)$	66c3
(2)	$(6), (2, 8)^2, (4, 4)$	17a3
(2)	$(6), (2, 16)^2, (4, 8)$	75b6
(2)	$(6), (8), (2, 4)^2$	128a2
(2)	$(6), (8), (2, 4), (2, 8)$	33a2
(2)	$(6), (8), (2, 4), (2, 16)$	63a1
(2)	$(6), (8)^2, (2, 4)$	120b1
(2)	$(6), (8)^2, (4, 4)$	33a4
(2)	$(6), (8), (16), (2, 4)$	126b1
(2)	$(6), (8), (32), (2, 4)$	3150bk1
(2)	$(6), (10), (2, 4)^2$	576f2
(2)	$(6), (10), (2, 8), (4, 4)$	256b1
(2)	$(6), (16), (2, 8), (4, 8)$	42a5
(2)	$(6), (16)^2, (4, 8)$	48a4
(2)	$(6), (20), (2, 4)^2$	150b3
(2)	$(8), (2, 4), (2, 8), (2, 12)$	14400bo1
(2)	$(8), (2, 8), (2, 12)^2$	14400ef8
(2)	$(8)^2, (2, 4), (2, 12)$	210a3
(2)	$(8)^2, (2, 12)^2$	30a8
(2)	$(8), (12), (2, 4)^2$	130a3
(2)	$(8), (24), (2, 4), (2, 12)$	30a7
(2)	$(10), (2, 4)^2, (2, 6)$	288a2
(2)	$(10), (12), (2, 4)^2$	288a1
(2)	$(12), (2, 4), (2, 12), (6, 6)$	3136k3
(2)	$(24), (2, 4), (2, 8), (2, 12)$	14400ef7
(2)	$(24), (2, 8), (2, 12)^2$	14400bo7
(2)	$(2, 4)^2, (2, 6)^2, (3, 6)$	1210a1
(2)	$(2, 4), (2, 6)^2, (2, 8), (3, 6)$	256a1
(2)	$(6), (2, 8)^3, (4, 4)$	21a6
(2)	$(6), (8)^2, (2, 4)^2$	49a2
(2)	$(6), (8)^2, (2, 8), (4, 4)$	294f2
(2)	$(6), (8)^2, (2, 10), (4, 4)$	576h1
(2)	$(6), (8)^2, (10), (4, 4)$	256b2
(2)	$(6), (8), (10), (2, 4), (2, 8)$	288d2
(2)	$(6), (8), (16), (2, 4), (2, 8)$	126b3
(2)	$(6), (8), (16), (2, 4), (2, 16)$	45a1
(2)	$(6), (8), (32), (2, 4), (2, 16)$	75b1
(2)	$(6), (16), (2, 8)^2, (4, 4)$	21a5
(2)	$(6), (16)^3, (4, 8)$	4800cd6
(2)	$(6), (20), (2, 4)^2, (2, 10)$	1014c1
(2)	$(6), (20), (2, 8)^2, (4, 4)$	32a3
(2)	$(8)^2, (2, 12)^2, (4, 4)$	90c4
(2)	$(8)^2, (12), (2, 10), (4, 4)$	288d4
(2)	$(8), (10), (12), (2, 4), (2, 8)$	288d3



$G$	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(2)	(8), (24), (2, 4), (2, 8), (2, 12)	90c5
(2)	(8), (24), (2, 8), (2, 12) <sup>2</sup>	1050k4
(2)	(8), (24), (2, 12) <sup>2</sup> , (4, 4)	960e7
(2)	(12) <sup>2</sup> , (2, 4) <sup>2</sup> , (6, 6)	112c3
(2)	(24) <sup>2</sup> , (2, 4), (2, 8), (2, 12)	720j7
(2)	(24) <sup>2</sup> , (2, 8), (2, 12) <sup>2</sup>	150c8
(2)	(24) <sup>2</sup> , (2, 12) <sup>2</sup> , (4, 4)	150c7
(2)	(6), (8), (16) <sup>2</sup> , (2, 4), (2, 8)	45a7
(2)	(6), (16), (2, 8) <sup>3</sup> , (4, 4)	48a2
(2)	(6), (16) <sup>2</sup> , (2, 8) <sup>2</sup> , (4, 4)	40a2
(2)	(12), (2, 4) <sup>2</sup> , (2, 6) <sup>2</sup> , (3, 6)	726a2
(2)	(6), (8), (16) <sup>3</sup> , (2, 4), (2, 8)	45a3
(2)	(6), (16) <sup>2</sup> , (2, 8) <sup>3</sup> , (4, 4)	75b7
(2)	(6), (16) <sup>3</sup> , (2, 8) <sup>2</sup> , (4, 4)	195a7
(2)	(6), (16) <sup>3</sup> , (2, 8) <sup>3</sup> , (4, 4)	15a5
(2)	(6), (16) <sup>4</sup> , (2, 8) <sup>2</sup> , (4, 4)	15a6
(2)	(6), (16) <sup>4</sup> , (2, 8) <sup>3</sup> , (4, 4)	210e7
(3)	(15)	225b1
(4)	(12), (4, 8)	2880be6
(4)	(2, 8), (2, 24), (4, 4)	960o8
(4)	(2, 24) <sup>2</sup> , (4, 12)	150c3
(4)	(12), (2, 8) <sup>2</sup>	17a1
(4)	(12), (2, 8), (4, 4)	17a4
(4)	(12), (2, 16), (4, 8)	1470k1
(4)	(12), (2, 20), (4, 8)	32a1
(4)	(12), (4, 8) <sup>2</sup>	40a4
(4)	(12), (16), (4, 8)	72a1
(4)	(12), (2, 8) <sup>2</sup> , (4, 4)	33a3
(4)	(12), (2, 8), (2, 16), (4, 4)	144b4
(4)	(12), (2, 16) <sup>2</sup> , (4, 8)	192c6
(4)	(12), (16), (2, 8), (4, 4)	63a5
(4)	(12), (16) <sup>2</sup> , (4, 8)	24a4
(4)	(12), (20), (2, 8), (4, 4)	32a4
(4)	(24), (2, 8) <sup>2</sup> , (4, 4)	90c1
(4)	(24), (2, 8) <sup>2</sup> , (4, 12)	720j8
(4)	(24), (2, 8), (2, 24), (4, 4)	1050k1
(4)	(12), (16), (2, 8), (2, 16), (4, 4)	21a4
(4)	(12), (16), (2, 16) <sup>2</sup> , (4, 8)	294c1
(4)	(12), (16) <sup>2</sup> , (2, 8), (4, 4)	40a3
(4)	(12), (16) <sup>2</sup> , (2, 16) <sup>2</sup>	240d6
(4)	(12), (16) <sup>2</sup> , (4, 8) <sup>2</sup>	510e6
(4)	(12), (16) <sup>2</sup> , (2, 16) <sup>2</sup> , (4, 8)	1680p6
(4)	(12), (16), (32), (2, 8), (2, 16), (4, 4)	15a7
(5)	(15)	11a1

$G$	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(6)	(4, 12)	36a1
(6)	(2, 12) <sup>2</sup>	14a4
(6)	(2, 12) <sup>2</sup> , (3, 12)	14a1
(6)	(24), (2, 12) <sup>2</sup>	130a1
(6)	(24), (2, 12), (2, 24)	90c8
(6)	(24) <sup>2</sup> , (2, 12)	30a1
(6)	(24) <sup>2</sup> , (4, 12)	90c7
(7)	(21)	26b1
(8)	(24), (2, 16) <sup>2</sup>	15a4
(8)	(24), (2, 16), (4, 8)	1230f1
(8)	(24), (2, 16) <sup>2</sup> , (4, 8)	21a3
(8)	(24), (32) <sup>2</sup> , (2, 16), (4, 8)	210e1
(10)	(30), (2, 20) <sup>2</sup>	66c1
(12)	(2, 24) <sup>2</sup> , (4, 12)	90c3
(2, 2)	(2, 6)	120b2
(2, 2)	(4, 12)	14400bo6
(2, 2)	(2, 6), (2, 8)	289a2
(2, 2)	(2, 6), (4, 4)	153c2
(2, 2)	(2, 6), (4, 8)	441c2
(2, 2)	(2, 8), (4, 12)	150c6
(2, 2)	(2, 12) <sup>2</sup>	30a6
(2, 2)	(2, 24), (4, 12)	960o6
(2, 2)	(2, 6), (2, 8) <sup>2</sup>	17a2
(2, 2)	(2, 6), (2, 8), (4, 4)	33a1
(2, 2)	(2, 6), (2, 8), (4, 8)	40a1
(2, 2)	(2, 6), (2, 10), (4, 4)	288d1
(2, 2)	(2, 6), (2, 16), (4, 8)	45a2
(2, 2)	(2, 6), (4, 8) <sup>2</sup>	72a2
(2, 2)	(2, 12) <sup>3</sup>	210a6
(2, 2)	(2, 6), (2, 8) <sup>3</sup>	1287e4
(2, 2)	(2, 6), (2, 8) <sup>2</sup> , (2, 16)	75b3
(2, 2)	(2, 6), (2, 8) <sup>2</sup> , (4, 4)	45a5
(2, 2)	(2, 6), (2, 8) <sup>2</sup> , (4, 8)	63a4
(2, 2)	(2, 6), (2, 8), (2, 10), (4, 8)	64a1
(2, 2)	(2, 6), (2, 8), (2, 16) <sup>2</sup>	1470k2
(2, 2)	(2, 6), (2, 8), (2, 16), (4, 4)	585f2
(2, 2)	(2, 6), (2, 8), (2, 16), (4, 8)	225c2
(2, 2)	(2, 6), (2, 8), (2, 20), (4, 8)	32a2
(2, 2)	(2, 6), (2, 8), (4, 8) <sup>2</sup>	24a2
(2, 2)	(2, 6), (2, 16) <sup>2</sup> , (4, 8)	630c2
(2, 2)	(2, 6), (4, 8) <sup>3</sup>	15a2
(2, 2)	(2, 8), (2, 12) <sup>2</sup> , (4, 4)	90c2
(2, 2)	(2, 12) <sup>3</sup> , (4, 4)	14400bo2
(2, 2)	(2, 6), (2, 8) <sup>4</sup>	231a3

$G$	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(2, 2)	(2, 6), (2, 8) <sup>3</sup> , (4, 4)	306c3
(2, 2)	(2, 6), (2, 8) <sup>3</sup> , (4, 8)	21a2
(2, 2)	(2, 6), (2, 8) <sup>2</sup> , (2, 16) <sup>2</sup>	1680p2
(2, 2)	(2, 6), (2, 8) <sup>2</sup> , (2, 16), (4, 4)	225c5
(2, 2)	(2, 6), (2, 8) <sup>2</sup> , (2, 16), (4, 8)	294c4
(2, 2)	(2, 6), (2, 8) <sup>2</sup> , (4, 8) <sup>2</sup>	45a4
(2, 2)	(2, 6), (2, 8), (2, 16) <sup>2</sup> , (4, 8)	4800cd5
(2, 2)	(2, 6), (2, 8) <sup>4</sup> , (4, 4)	441c3
(2, 2)	(2, 6), (2, 8) <sup>4</sup> , (4, 8)	975a3
(2, 2)	(2, 6), (2, 8) <sup>3</sup> , (2, 16), (4, 4)	1470k5
(2, 2)	(2, 6), (2, 8) <sup>2</sup> , (2, 16) <sup>2</sup> , (4, 8)	240d2
(2, 4)	(2, 12)	231a2
(2, 4)	(2, 12), (4, 8)	120a2
(2, 4)	(2, 12), (2, 16), (4, 8)	15a3
(2, 4)	(2, 12), (4, 8) <sup>2</sup>	24a1
(2, 4)	(2, 12), (2, 16) <sup>3</sup>	1230f2
(2, 4)	(2, 12), (2, 16) <sup>2</sup> , (4, 8)	195a2
(2, 4)	(2, 12), (2, 16), (4, 8) <sup>2</sup>	15a1
(2, 4)	(2, 12), (4, 8) <sup>3</sup>	195a3
(2, 4)	(2, 12), (2, 16) <sup>3</sup> , (4, 8)	510e2
(2, 4)	(2, 12), (2, 16) <sup>2</sup> , (4, 8) <sup>2</sup>	210e3
(2, 4)	(2, 12), (2, 16) <sup>2</sup> , (4, 8) <sup>3</sup>	240d5
(2, 6)	(2, 24), (4, 12)	90c6
(2, 8)	(2, 24)	210e2

$$d = 9$$

$$\Psi_{\mathbb{Q}}(9) \supseteq \{(6), (7), (9), (12), (14), (18), (19), (21), (26), (27), (28), (36), (42), (2, 6), (2, 14), (2, 18)\}$$

$G$	$\Psi_{\mathbb{Q}}(9, G) \setminus \{G\} \supseteq$
()	\{(6), (7), (9), (12), (14), (19), (21), (26), (28), (2, 6), (2, 14)\}
(2)	\{\}
(3)	\{(9), (18), (27), (42), (2, 18)\}
(4)	\{\}
(5)	\{\}
(6)	\{(18)\}
(7)	\{\}
(8)	\{\}
(9)	\{(27)\}
(10)	\{\}
(12)	\{(36)\}
(2, 2)	\{\}
(2, 4)	\{\}
(2, 6)	\{(2, 18)\}
(2, 8)	\{\}

$$g_{\mathbb{Q}}(9) \geq 3 \quad \#\mathcal{G}_{\mathbb{Q}}(9) \geq 20 \quad M_{\mathbb{Q}}(9) \geq 3969$$

$G$	$\mathcal{H}_{\mathbb{Q}}(9, E)$	Label
()	(2, 6)	196b2
()	(2, 14)	3969a1
()	(6)	19a2
()	(7)	2450ba1
()	(12)	162d2
()	(14)	294a1
()	(19)	361a1
()	(26)	147b1
()	(28)	338b1
()	(6), (9)	54b2
()	(6), (14), (21)	162b2
(3)	(2, 18)	196b1
(3)	(9)	19a1
(3)	(18)	19a3
(3)	(9), (42)	162b1
(3)	(18), (27)	27a4
(6)	(18)	14a1
(9)	(27)	54b3
(12)	(36)	90c3
(2, 6)	(2, 18)	30a2

$$d = 10$$

$$\Psi_{\mathbb{Q}}(10) \supseteq \{(5), (10), (11), (15), (25), (2, 10)\}$$

$G$	$\Psi_{\mathbb{Q}}(10, G) \setminus \{G\} \supseteq$
()	\{(5), (11), (15), (25)\}
(2)	\{(10), (2, 10)\}
(3)	\{(15)\}
(4)	\{\}
(5)	\{\}
(6)	\{\}
(7)	\{\}
(8)	\{\}
(9)	\{\}
(10)	\{\}
(12)	\{\}
(2, 2)	\{\}
(2, 4)	\{\}
(2, 6)	\{\}
(2, 8)	\{\}

$$g_{\mathbb{Q}}(10) \geq 1 \quad \#\mathcal{G}_{\mathbb{Q}}(10) \geq 7 \quad M_{\mathbb{Q}}(10) \geq 150$$

$G$	$\mathcal{H}_{\mathbb{Q}}(10, E)$	Label
()	(5)	50a2
()	(11)	121a1
()	(15)	50b3
()	(25)	99d1
(2)	(2, 10)	66c3
(2)	(10)	150b1
(3)	(15)	50a1

$$d = 12$$

$$\Psi_{\mathbb{Q}}(12) \supseteq \left\{ \begin{array}{l} (4), (6), (7), (8), (9), (10), (12), (13), (14), (15), (18), (20), (21), (24), (26), (28), (30), (36), (37), (42), \\ (2, 4), (2, 6), (2, 10), (2, 12), (2, 14), (2, 18), (2, 28), (2, 30), (2, 42), (3, 3), (3, 6), (3, 9), (3, 12), (3, 15), (3, 21), (4, 4), (4, 12), (5, 10), (6, 6), (6, 12) \end{array} \right\}$$

$G$	$\Psi_{\mathbb{Q}}(12, G) \setminus \{G\} \supseteq$
$()$	$\left\{ \begin{array}{l} (4), (6), (7), (8), (9), (10), (12), (13), (15), (21), (26), (30), (37), (2, 4), (2, 6), \\ (2, 10), (2, 14), (2, 18), (2, 28), (2, 30), (3, 3), (3, 6), (3, 9), (3, 15), (4, 4), (4, 12), (5, 10), (6, 6) \end{array} \right\}$
$(2)$	$\{(12), (14), (18), (24), (28), (36), (42), (2, 6), (2, 12), (2, 14), (2, 18), (2, 28), (2, 42), (3, 6), (3, 12), (6, 6), (6, 12)\}$
$(3)$	$\{(12), (21), (24), (30), (2, 12), (2, 30), (3, 15), (3, 21), (4, 12), (6, 6)\}$
$(4)$	$\{(24), (2, 12), (3, 12), (6, 12)\}$
$(5)$	$\{(20), (2, 30), (3, 15), (5, 10)\}$
$(6)$	$\{(36), (42), (2, 18), (2, 42), (3, 12), (6, 6), (6, 12)\}$
$(7)$	$\{(28)\}$
$(8)$	$\{\}$
$(9)$	$\{(36)\}$
$(10)$	$\{\}$
$(12)$	$\{(6, 12)\}$
$(2, 2)$	$\{(2, 12), (6, 6), (6, 12)\}$
$(2, 4)$	$\{\}$
$(2, 6)$	$\{(6, 12)\}$
$(2, 8)$	$\{\}$

$$g_{\mathbb{Q}}(12) \geq 6 \quad \#\mathcal{G}_{\mathbb{Q}}(12) \geq 134 \quad M_{\mathbb{Q}}(12) \geq 18176$$



$G$	$\mathcal{H}_{\mathbb{Q}}(12, E)$	Label
()	(2, 4)	196b2
()	(2, 28)	1922c1
()	(4)	26b2
()	(4, 4)	338a1
()	(4, 12)	162a2
()	(8)	338b1
()	(12)	486a1
()	(2, 4), (3, 3)	196a1
()	(3, 3), (4, 12)	1296j1
()	(4), (2, 6)	19a2
()	(4), (2, 10)	75a2
()	(4), (2, 14)	208d1
()	(4), (2, 18)	54a2
()	(4), (3, 3)	484a1
()	(4), (3, 9)	1728e3
()	(4), (6, 6)	300a1
()	(4), (7)	361a1
()	(4), (10)	11a2
()	(4), (13)	147b2
()	(4), (21)	27a2
()	(4), (26)	2890d1
()	(4), (37)	1225e1
()	(8), (3, 3)	1296h1
()	(8), (4, 12)	162d2
()	(12), (21)	108a2
()	(4), (2, 6), (3, 3)	176c1
()	(4), (2, 6), (3, 9)	1734j1
()	(4), (2, 10), (5, 10)	275b2
()	(4), (2, 18), (3, 9)	432e3
()	(4), (6), (2, 6)	6627e1
()	(4), (6) <sup>2</sup>	1210d1
()	(4), (7), (6, 6)	1728f1
()	(4), (7), (21)	441b2
()	(4), (9), (3, 3)	361b1
()	(4), (10), (2, 10)	99d2
()	(4), (10), (3, 3)	1600v1
()	(4), (10) <sup>2</sup>	18176b2
()	(4), (21), (2, 6)	162b4
()	(4), (21), (3, 3)	5184u3
()	(7), (12), (6, 6)	432b1
()	(8), (3, 3), (4, 12)	1296h2
()	(4), (2, 6) <sup>2</sup> , (3, 6)	175b2
()	(4), (6) <sup>2</sup> , (10)	338d1
()	(4), (6), (9), (2, 6)	121b1

$G$	$\mathcal{H}_{\mathbb{Q}}(12, E)$	Label
()	(4), (7), (2, 6), (3, 3)	225a1
()	(4), (7), (9), (6, 6)	675a1
()	(4), (9), (2, 6), (3, 3)	175b1
()	(4), (10), (2, 6), (3, 3)	400b3
()	(4), (10), (15), (2, 6)	50a2
()	(4), (15), (2, 30), (3, 3)	1600q1
()	(4), (21), (2, 6), (3, 3)	1296e2
()	(4), (30), (2, 6), (3, 3)	50b3
()	(7), (9), (12), (6, 6)	432a1
()	(7), (12), (2, 6), (3, 3)	3600bd2
()	(4), (7) <sup>2</sup> , (2, 6), (3, 3)	441a1
()	(4), (7), (9), (2, 6), (3, 3)	432a2
()	(4), (7), (21), (2, 6), (3, 3)	441a2
()	(4), (10), (15), (2, 6), (3, 3)	50b4
()	(4), (30), (2, 6), (2, 10), (3, 15)	50a4
()	(7) <sup>2</sup> , (12), (2, 6), (3, 3)	7056bc2
()	(7), (9), (12), (2, 6), (3, 3)	432a4
()	(12) <sup>2</sup> , (2, 6), (3, 3), (4, 4)	4050g2
()	(4), (15), (30), (2, 6), (2, 10), (3, 3)	400b1
(2)	(2, 14)	441d1
(2)	(2, 28)	49a1
(2)	(6, 6)	80b1
(2)	(6, 12)	30a3
(2)	(12)	84a3
(2)	(18)	256a1
(2)	(28)	49a4
(2)	(2, 6), (3, 6)	80b2
(2)	(2, 12), (3, 12)	240b1
(2)	(2, 12), (6, 6)	1040g4
(2)	(2, 14), (6, 6)	144a3
(2)	(2, 18), (6, 6)	98a1
(2)	(3, 12), (6, 6)	84a4
(2)	(12), (2, 42)	36a3
(2)	(12), (6, 6)	20a3
(2)	(14), (6, 6)	144a2
(2)	(28), (2, 14)	49a2
(2)	(28), (2, 28)	49a3
(2)	(2, 12) <sup>2</sup> , (6, 6)	960o4
(2)	(2, 18) <sup>2</sup> , (6, 6)	98a5
(2)	(12), (2, 6), (3, 6)	80b4
(2)	(12), (2, 6), (3, 12)	240b3
(2)	(12), (2, 12), (6, 6)	130a4
(2)	(12), (2, 14), (6, 6)	144a1
(2)	(12) <sup>2</sup> , (6, 6)	960o7

$G$	$\mathcal{H}_{\mathbb{Q}}(12, E)$	Label
(2)	(14), (2, 6), (3, 6)	576a2
(2)	(24), (2, 12), (3, 12)	960o1
(2)	(42), (3, 12), (6, 6)	36a4
(2)	(2, 12), (3, 12) <sup>2</sup> , (6, 6)	30a7
(2)	(12), (2, 18) <sup>2</sup> , (6, 6)	14a3
(2)	(12) <sup>2</sup> , (2, 6), (3, 6)	150c4
(2)	(18), (2, 6), (2, 18), (3, 6)	112c1
(2)	(2, 12) <sup>2</sup> , (3, 12) <sup>2</sup> , (6, 6)	90c4
(2)	(12), (18), (2, 6), (2, 18), (3, 6)	98a6
(2)	(18), (36), (2, 6), (2, 18), (3, 6)	98a2
(2)	(24), (2, 12), (3, 12) <sup>2</sup> , (6, 6)	90c5
(3)	(2, 12)	196b1
(3)	(4, 12)	162a1
(3)	(12)	19a3
(3)	(24)	162d1
(3)	(12), (3, 21)	27a1
(3)	(12), (6, 6)	19a1
(3)	(12), (21)	27a4
(3)	(12), (30)	50a1
(3)	(12), (2, 30), (3, 15)	50a3
(3)	(12), (21) <sup>2</sup>	441b1
(4)	(6, 12)	150c1
(4)	(2, 12), (3, 12)	720j5
(4)	(24), (6, 12)	90c1
(4)	(24), (2, 12), (3, 12)	960o5
(5)	(20)	11a3
(5)	(20), (5, 10)	11a1
(5)	(20), (2, 30), (3, 15)	50b1
(6)	(2, 42)	36a1
(6)	(6, 6)	20a1
(6)	(6, 12)	30a1
(6)	(3, 12), (6, 6)	84a2
(6)	(3, 12) <sup>2</sup> , (6, 6)	30a4
(6)	(36), (2, 18), (6, 6)	14a4
(6)	(42), (3, 12), (6, 6)	36a2
(7)	(28)	26b1
(9)	(36)	54b3
(12)	(6, 12)	90c3
(2, 2)	(6, 6)	240b6
(2, 2)	(6, 12)	960o2
(2, 2)	(2, 12), (6, 6)	150c6
(2, 2)	(2, 12) <sup>3</sup>	210a6
(2, 2)	(2, 12) <sup>2</sup> , (6, 6)	720j2
(2, 2)	(2, 12) <sup>2</sup> , (6, 12)	30a6

$G$	$\mathcal{H}_{\mathbb{Q}}(12, E)$	Label
(2, 2)	$(2, 12)^3, (6, 6)$	150c2
(2, 6)	$(6, 12)$	30a2

$$d = 14$$

$$\Psi_{\mathbb{Q}}(14) \supseteq \{(7)\}$$

$G$	$\Psi_{\mathbb{Q}}(14, G) \setminus \{G\} \supseteq$
()	\{(7)\}
(2)	\{\}
(3)	\{\}
(4)	\{\}
(5)	\{\}
(6)	\{\}
(7)	\{\}
(8)	\{\}
(9)	\{\}
(10)	\{\}
(12)	\{\}
(2, 2)	\{\}
(2, 4)	\{\}
(2, 6)	\{\}
(2, 8)	\{\}

$$g_{\mathbb{Q}}(14) \geq 1 \quad \#\mathcal{G}_{\mathbb{Q}}(14) \geq 1 \quad M_{\mathbb{Q}}(14) \geq 208$$

$G$	$\mathcal{H}_{\mathbb{Q}}(14, E)$	Label
()	(7)	208d2

$$d = 15$$

$$\Psi_{\mathbb{Q}}(15) \supseteq \{(10), (22), (50)\}$$

$G$	$\Psi_{\mathbb{Q}}(15, G) \setminus \{G\} \supseteq$
()	\{(10), (22)\}
(2)	\{\}
(3)	\{\}
(4)	\{\}
(5)	\{(50)\}
(6)	\{\}
(7)	\{\}
(8)	\{\}
(9)	\{\}
(10)	\{\}
(12)	\{\}
(2, 2)	\{\}
(2, 4)	\{\}
(2, 6)	\{\}
(2, 8)	\{\}

$$g_{\mathbb{Q}}(15) \geq 1 \quad \#\mathcal{G}_{\mathbb{Q}}(15) \geq 3 \quad M_{\mathbb{Q}}(15) \geq 121$$

$G$	$\mathcal{H}_{\mathbb{Q}}(15, E)$	Label
()	(10)	11a2
()	(22)	121a2
(5)	(50)	11a3



$$d = 16$$

$$\Psi_{\mathbb{Q}}(16) \supseteq \left\{ \begin{array}{l} (5), (8), (10), (12), (15), (16), (17), (20), (21), (24), (30), (32), (40), (48), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), \\ (2, 20), (2, 24), (2, 30), (2, 32), (3, 3), (3, 6), (3, 12), (3, 15), (4, 4), (4, 8), (4, 12), (4, 16), (4, 20), (5, 5), (5, 15), (6, 6), (6, 12), (8, 8) \end{array} \right\}$$

$G$	$\Psi_{\mathbb{Q}}(16, G) \setminus \{G\} \supseteq$
(1)	{(5), (15), (17), (21), (3, 3), (3, 15), (5, 5), (5, 15)}
(2)	{(8), (10), (12), (16), (20), (24), (30), (32), (40), (48), (2, 6), (2, 8), (2, 10), (2, 12), (2, 16), (2, 20), (2, 24), (2, 30), (2, 32), (3, 6), (3, 12), (4, 4), (4, 8), (4, 12), (4, 16), (4, 20), (6, 6), (6, 12), (8, 8)}
(3)	{(5, 15)}
(4)	{(16), (20), (24), (32), (40), (48), (2, 12), (2, 16), (2, 20), (2, 24), (2, 32), (3, 12), (4, 8), (4, 12), (4, 16), (4, 20), (6, 12), (8, 8)}
(5)	{}
(6)	{(24), (48), (2, 24), (4, 12), (6, 12)}
(7)	{}
(8)	{(32), (48), (2, 24), (2, 32), (4, 16), (8, 8)}
(9)	{}
(10)	{(40), (2, 30)}
(12)	{(48)}
(2, 2)	{(2, 8), (2, 10), (2, 12), (2, 16), (2, 20), (2, 24), (2, 32), (4, 4), (4, 8), (4, 12), (4, 16), (4, 20), (6, 6), (6, 12), (8, 8)}
(2, 4)	{(2, 16), (2, 24), (2, 32), (4, 8), (4, 12), (4, 16), (8, 8)}
(2, 6)	{(2, 24), (4, 12)}
(2, 8)	{(2, 32), (4, 16), (8, 8)}

$$g_{\mathbb{Q}}(16) \geq 10 \quad \#\mathcal{G}_{\mathbb{Q}}(16) \geq 336 \quad M_{\mathbb{Q}}(16) \geq 277440$$

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
()	(3, 3)	245a1
()	(3, 15)	338d1
()	(5)	608b1
()	(5, 5)	6975a1
()	(5, 15)	225a1
()	(15)	75a2
()	(17)	14450n2
()	(21)	208d1
()	(5), (3, 3)	361a1
()	(5), (15)	121b1
()	(15), (3, 3)	1369e1
()	(15), (5, 5)	3600bc1
()	(15) <sup>2</sup>	338d2
(2)	(8)	36a3
(2)	(24)	144a3
(2)	(2, 6), (4, 8)	200b1
(2)	(2, 8), (4, 12)	576a2
(2)	(2, 24), (4, 12)	36a4
(2)	(8), (2, 6)	46a1
(2)	(8), (2, 12)	2352t3
(2)	(8), (2, 24)	1040g2
(2)	(8), (2, 30)	450a3
(2)	(8), (4, 12)	80b1
(2)	(8), (6, 6)	2205a2
(2)	(24), (2, 12)	84a4
(2)	(24), (4, 12)	80b2
(2)	(2, 6), (2, 8), (4, 4)	128a2
(2)	(2, 6), (2, 16), (4, 8)	3362a1
(2)	(2, 6), (4, 8) <sup>2</sup>	294f2
(2)	(2, 8), (2, 24) <sup>2</sup>	720j3
(2)	(2, 24) <sup>3</sup>	960o7
(2)	(2, 24) <sup>2</sup> , (4, 12)	30a3
(2)	(8), (2, 6), (2, 8)	128a1
(2)	(8), (2, 6), (2, 20)	1014c1
(2)	(8), (2, 6), (3, 6)	1568d1
(2)	(8), (2, 6), (4, 4)	52a1
(2)	(8), (2, 6), (4, 8)	768a2
(2)	(8), (2, 8), (4, 12)	130a4
(2)	(8), (2, 12) <sup>2</sup>	14a3
(2)	(8), (4, 4), (6, 6)	173280f2
(2)	(8), (6, 12) <sup>2</sup>	98a3
(2)	(8), (12), (6, 6)	4107a1
(2)	(8), (20), (2, 6)	66c3
(2)	(16), (2, 24), (4, 12)	960e3

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2)	(48), (2, 24), (4, 12)	960o3
(2)	(2, 6), (2, 8) <sup>2</sup> , (4, 4)	200b2
(2)	(2, 6), (2, 8) <sup>2</sup> , (4, 8)	16810b1
(2)	(2, 6), (2, 8), (3, 6), (4, 4)	4225j1
(2)	(2, 8), (2, 12) <sup>2</sup> , (4, 4)	900b2
(2)	(2, 8), (2, 12), (4, 4), (6, 6)	223494n1
(2)	(2, 8), (2, 24) <sup>2</sup> , (4, 12)	150c7
(2)	(2, 12) <sup>2</sup> , (4, 8), (6, 6)	256a1
(2)	(8), (2, 6), (2, 8) <sup>2</sup>	867b1
(2)	(8), (2, 6), (2, 20) <sup>2</sup>	1014c2
(2)	(8), (2, 6), (3, 6), (4, 4)	126350bb1
(2)	(8), (2, 12) <sup>2</sup> , (4, 4)	20a3
(2)	(8), (2, 12) <sup>2</sup> , (6, 12)	3136k3
(2)	(8), (2, 12), (3, 12), (6, 6)	726a2
(2)	(8), (2, 16), (4, 8), (6, 6)	49a1
(2)	(8), (12), (2, 6), (3, 6)	2205a1
(2)	(8), (12), (2, 12) <sup>2</sup>	726a1
(2)	(8), (12) <sup>2</sup> , (6, 6)	1210a1
(2)	(8), (30), (2, 6), (2, 20)	14400cg3
(2)	(10), (2, 20), (4, 8), (6, 12)	288d4
(2)	(12) <sup>2</sup> , (2, 6), (4, 8)	7200bn4
(2)	(16), (2, 6), (2, 8) <sup>2</sup>	294f1
(2)	(16), (2, 24) <sup>2</sup> , (4, 12)	150c8
(2)	(24), (2, 12) <sup>2</sup> , (4, 4)	650j1
(2)	(24), (2, 12) <sup>2</sup> , (6, 12)	98a4
(2)	(30), (40), (2, 6), (2, 20)	450a4
(2)	(2, 8), (2, 12) <sup>2</sup> , (4, 4), (6, 6)	2304c1
(2)	(2, 8), (2, 12) <sup>2</sup> , (4, 8), (6, 6)	256a2
(2)	(8), (10), (2, 10), (4, 4), (6, 6)	7200a2
(2)	(8), (10), (2, 10), (4, 4), (6, 12)	288a1
(2)	(8), (12), (2, 6), (3, 6), (4, 4)	173280f1
(2)	(8), (30), (2, 6), (2, 20) <sup>2</sup>	150b3
(2)	(10), (2, 6), (2, 10), (3, 6), (4, 8)	2304h2
(2)	(10), (2, 6), (2, 10), (3, 6), (8, 8)	256b1
(2)	(12) <sup>2</sup> , (2, 6), (2, 8) <sup>2</sup>	153c4
(2)	(12) <sup>2</sup> , (2, 6), (2, 8), (4, 4)	153c1
(2)	(12) <sup>2</sup> , (2, 6), (2, 8), (4, 8)	289a3
(2)	(12) <sup>2</sup> , (2, 6), (4, 8) <sup>2</sup>	320a4
(2)	(12) <sup>2</sup> , (16), (2, 6), (4, 8)	200c4
(2)	(12), (24), (2, 6), (2, 8), (4, 16)	277440dv8
(2)	(12), (24), (2, 6), (2, 16), (4, 8)	441c1
(2)	(16) <sup>2</sup> , (2, 6), (2, 8), (4, 4)	768c1
(2)	(24), (2, 8), (2, 12) <sup>2</sup> , (4, 4)	130a3
(2)	(24), (2, 8), (2, 12), (2, 24), (4, 4)	30a7

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2)	$(24)^2, (2, 8)^2, (4, 12)$	30a8
(2)	$(8), (2, 6), (2, 10)^2, (3, 6), (4, 4)$	800d1
(2)	$(8), (2, 12)^4, (3, 12)$	112c3
(2)	$(8), (10), (2, 6), (2, 10), (3, 6), (4, 4)$	1568a1
(2)	$(8), (10), (2, 10), (2, 12), (4, 4), (6, 6)$	576f1
(2)	$(8), (10), (2, 10), (2, 12), (4, 4), (6, 12)$	288a2
(2)	$(8), (10), (12), (2, 10), (4, 4), (6, 6)$	576f2
(2)	$(8), (20), (2, 6), (2, 10), (3, 6), (4, 4)$	800d2
(2)	$(10), (12)^2, (2, 20), (4, 8), (6, 6)$	576h1
(2)	$(10), (16), (2, 6), (2, 10), (3, 6), (8, 8)$	256b2
(2)	$(12)^2, (2, 6), (2, 8)^3$	33a4
(2)	$(12)^2, (2, 6), (2, 8)^2, (4, 4)$	120b1
(2)	$(12)^2, (2, 6), (2, 8), (2, 16), (4, 8)$	40a2
(2)	$(12)^2, (2, 6), (2, 16)^2, (4, 8)$	600a5
(2)	$(12)^2, (16), (2, 6), (2, 8), (4, 4)$	33a2
(2)	$(12)^2, (16), (2, 6), (2, 8), (4, 8)$	17a3
(2)	$(12)^2, (16)^2, (2, 6), (4, 8)$	360a1
(2)	$(12)^2, (20), (2, 20), (4, 8), (6, 6)$	800a4
(2)	$(12), (16)^2, (24), (2, 6), (4, 16)$	1200j6
(2)	$(12), (16), (24), (2, 6), (2, 16), (4, 8)$	144b6
(2)	$(12), (24), (2, 6), (2, 8), (2, 16)^2$	147a3
(2)	$(12), (24), (2, 6), (2, 8), (2, 16), (4, 8)$	576i4
(2)	$(12), (24), (2, 6), (2, 16)^2, (4, 8)$	306c1
(2)	$(12), (24), (2, 6), (2, 16)^2, (4, 16)$	225c6
(2)	$(12), (24), (2, 6), (2, 16)^2, (8, 8)$	192d6
(2)	$(12), (24), (2, 6), (2, 16), (2, 32), (4, 8)$	45a1
(2)	$(12), (24), (32), (2, 6), (2, 16), (4, 8)$	63a1
(2)	$(12), (24), (32)^2, (2, 6), (4, 16)$	25200dz1
(2)	$(12), (48), (2, 6), (2, 32)^2, (4, 16)$	3150bk1
(2)	$(16)^2, (2, 6), (2, 8), (3, 6), (4, 4)$	49a2
(2)	$(16), (24), (2, 8), (2, 12), (2, 24), (4, 4)$	90c5
(2)	$(24)^2, (2, 6), (4, 16)^2, (8, 8)$	2880r6
(2)	$(24)^2, (2, 8)^3, (4, 12)$	90c4
(2)	$(24)^2, (2, 8)^2, (2, 12), (4, 4)$	210a3
(2)	$(10), (2, 6), (2, 8)^2, (2, 10), (3, 6), (4, 8)$	2304h1
(2)	$(10), (12)^2, (16), (4, 20), (6, 6), (8, 8)$	64a4
(2)	$(12)^2, (2, 6), (2, 8), (2, 16)^2, (4, 8)$	144b5
(2)	$(12)^2, (2, 6), (2, 16)^2, (4, 8)^2$	72a3
(2)	$(12)^2, (16), (2, 6), (2, 8), (2, 16), (4, 4)$	306c4
(2)	$(12)^2, (16), (2, 6), (2, 16)^2, (4, 8)$	192d1
(2)	$(12)^2, (16)^2, (2, 6), (2, 8), (4, 4)$	320a1
(2)	$(12)^2, (16)^2, (2, 6), (2, 8), (4, 8)$	306c6
(2)	$(12)^2, (16)^2, (2, 6), (4, 8)^2$	63a6
(2)	$(12)^2, (16)^2, (2, 6), (4, 8), (4, 16)$	4410r6

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2)	$(12)^2, (16)^3, (2, 6), (4, 8)$	600d1
(2)	$(12)^2, (32), (2, 6), (2, 16)^2, (4, 8)$	45a3
(2)	$(12), (16)^2, (24), (2, 6), (2, 16)^2$	585f6
(2)	$(12), (16)^2, (24), (32), (2, 6), (4, 16)$	75b6
(2)	$(12), (16), (24), (2, 6), (2, 8), (2, 16)^2$	120a6
(2)	$(12), (16), (24), (2, 6), (2, 8), (2, 16), (4, 8)$	192c4
(2)	$(12), (16), (24), (2, 6), (2, 16)^2, (4, 8)$	126b1
(2)	$(12), (16), (24), (2, 6), (2, 16)^2, (8, 8)$	24a6
(2)	$(12), (16), (24), (32), (2, 6), (2, 8), (4, 16)$	510e7
(2)	$(12), (16), (24), (32), (2, 6), (2, 16), (4, 8)$	1344g1
(2)	$(12), (24), (2, 6), (2, 8), (2, 16)^2, (4, 8)$	126b5
(2)	$(12), (24), (2, 6), (2, 8), (2, 16)^2, (4, 16)$	48a4
(2)	$(12), (24), (32), (2, 6), (2, 8), (2, 16), (4, 8)$	1344g4
(2)	$(12), (24), (32), (2, 6), (2, 16), (2, 32), (4, 8)$	75b1
(2)	$(12), (24), (32)^2, (2, 6), (2, 8), (4, 16)$	1470k3
(2)	$(12), (24), (32)^2, (2, 6), (2, 16), (4, 8)$	630c1
(2)	$(10), (12), (2, 6), (2, 8), (2, 16), (2, 20), (3, 12), (4, 8)$	64a2
(2)	$(10), (20)^2, (2, 8), (2, 10), (2, 12), (3, 12), (4, 4)$	288d3
(2)	$(12)^2, (2, 6), (2, 8), (2, 16)^3, (4, 8)$	24a5
(2)	$(12)^2, (2, 6), (2, 16)^4, (4, 8)$	6720c6
(2)	$(12)^2, (2, 6), (2, 16)^3, (4, 8)^2$	15a5
(2)	$(12)^2, (16), (2, 6), (2, 8)^2, (2, 16), (4, 4)$	45a7
(2)	$(12)^2, (16), (2, 6), (2, 8), (2, 16)^2, (4, 8)$	120a5
(2)	$(12)^2, (16), (2, 6), (2, 16)^2, (4, 8)^2$	48a2
(2)	$(12)^2, (16)^2, (2, 6), (2, 8)^2, (4, 4)$	525b6
(2)	$(12)^2, (16)^2, (2, 6), (2, 8), (2, 16), (4, 4)$	45a8
(2)	$(12)^2, (16)^2, (2, 6), (2, 8), (2, 16), (4, 8)$	21a5
(2)	$(12)^2, (16)^2, (2, 6), (2, 16)^2, (4, 8)$	1050c6
(2)	$(12)^2, (16)^3, (2, 6), (2, 8), (4, 4)$	525b5
(2)	$(12)^2, (16)^3, (2, 6), (2, 8), (4, 8)$	231a5
(2)	$(12)^2, (16)^3, (2, 6), (4, 8)^2$	21a6
(2)	$(12)^2, (16)^4, (2, 6), (4, 8)$	2925g6
(2)	$(12)^2, (16)^4, (2, 6), (8, 8)$	6150n6
(2)	$(12)^2, (16), (32), (2, 6), (2, 8), (2, 16), (4, 4)$	585f1
(2)	$(12)^2, (32), (2, 6), (2, 8), (2, 16)^2, (4, 8)$	225c3
(2)	$(12)^2, (32)^2, (2, 6), (2, 16)^2, (4, 8)$	1200j1
(2)	$(12), (16)^2, (24), (2, 6), (2, 16)^2, (8, 8)$	45a6
(2)	$(12), (16), (24), (32), (2, 6), (2, 8), (2, 16), (4, 8)$	294c5
(2)	$(12), (16), (24), (32)^2, (2, 6), (2, 8), (4, 16)$	1680p1
(2)	$(12), (16), (24), (32)^2, (2, 6), (2, 16), (4, 8)$	4800cd8
(2)	$(12), (24), (32)^2, (2, 6), (2, 8), (2, 16), (4, 8)$	4800cd7
(2)	$(10), (12), (20)^2, (2, 6), (2, 8), (2, 10), (3, 12), (4, 4)$	288d2
(2)	$(10), (12), (40), (2, 6), (2, 8), (2, 16), (2, 20), (3, 12), (4, 8)$	32a3
(2)	$(12)^2, (2, 6), (2, 16)^4, (4, 8)^2$	1470k6

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2)	$(12)^2, (16)^2, (2, 6), (2, 8)^2, (2, 16), (4, 4)$	441c5
(2)	$(12)^2, (16)^2, (2, 6), (2, 16)^2, (4, 8)^2$	630c6
(2)	$(12)^2, (16)^4, (2, 6), (4, 8)^2$	975a6
(2)	$(12)^2, (16)^2, (32), (2, 6), (2, 8), (2, 16), (4, 4)$	225c8
(2)	$(12)^2, (16)^2, (32), (2, 6), (2, 16)^2, (4, 8)$	3150bk6
(2)	$(12)^2, (16), (32), (2, 6), (2, 8)^2, (2, 16), (4, 4)$	225c7
(2)	$(12)^2, (16), (32), (2, 6), (2, 8), (2, 16)^2, (4, 8)$	1230f7
(2)	$(12), (16), (24), (32)^2, (2, 6), (2, 8), (2, 16), (4, 8)$	6720cd1
(2)	$(10), (12)^2, (20)^2, (2, 6), (2, 8), (2, 10), (3, 6), (4, 4)$	800a2
(2)	$(12)^2, (16)^2, (32), (2, 6), (2, 8)^2, (2, 16), (4, 4)$	1470k7
(2)	$(12)^2, (16), (32)^2, (2, 6), (2, 8), (2, 16)^2, (4, 8)$	240d1
(2)	$(12)^2, (20)^3, (2, 6), (2, 8), (2, 10), (3, 6), (4, 4)$	800a3
(3)	$(5, 15)$	225b1
(4)	$(16)$	150c3
(4)	$(2, 24), (4, 16)$	294c1
(4)	$(16), (2, 12)$	33a3
(4)	$(16), (2, 24)$	2352v4
(4)	$(16), (4, 12)$	40a4
(4)	$(2, 12), (2, 16), (4, 8)$	289a1
(4)	$(16), (2, 12), (4, 16)$	277440dv7
(4)	$(16), (2, 24)^2$	720j8
(4)	$(16), (2, 24), (4, 12)$	1050k1
(4)	$(16), (2, 24), (8, 8)$	192c6
(4)	$(48), (2, 24), (4, 12)$	960o8
(4)	$(2, 12), (2, 16)^2, (4, 8)$	40a3
(4)	$(2, 12), (2, 16)^2, (4, 16)$	72a1
(4)	$(16), (2, 12), (2, 16)^2$	2880be6
(4)	$(16), (2, 12), (2, 16), (4, 8)$	17a4
(4)	$(16), (2, 12), (4, 8)^2$	17a1
(4)	$(16), (2, 24)^2, (4, 12)$	90c1
(4)	$(2, 12), (2, 16)^3, (4, 8)$	63a5
(4)	$(2, 12), (2, 16)^2, (4, 8)^2$	75b8
(4)	$(16), (2, 12), (2, 16)^2, (4, 8)$	1287e5
(4)	$(16), (2, 12), (2, 16)^2, (8, 8)$	3264h6
(4)	$(16), (2, 12), (2, 16), (2, 32), (4, 8)$	225c1
(4)	$(16), (2, 12), (2, 16), (4, 8)^2$	144b4
(4)	$(16), (2, 24), (2, 32)^2, (4, 16)$	1470k1
(4)	$(16), (20), (4, 20), (6, 12), (8, 8)$	32a1
(4)	$(24)^2, (2, 12), (2, 16)^2$	240a6
(4)	$(24)^2, (2, 12), (2, 16), (4, 8)$	240a5
(4)	$(16), (2, 12), (2, 16)^2, (4, 8)^2$	1008k6
(4)	$(24)^2, (2, 12), (2, 16)^2, (4, 8)$	231a1
(4)	$(24)^2, (2, 12), (2, 16)^2, (4, 16)$	24a4
(4)	$(24)^2, (2, 12), (2, 16)^2, (8, 8)$	816h6

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(4)	$(24)^2, (2, 12), (2, 16), (4, 8)^2$	24a3
(4)	$(24)^2, (2, 24), (4, 16)^2, (8, 8)$	240d6
(4)	$(24)^2, (32), (2, 12), (2, 16), (4, 8)$	21a4
(4)	$(20), (2, 12), (2, 16)^2, (2, 20), (3, 12), (4, 8)$	64a3
(4)	$(24)^2, (2, 12), (2, 16)^3, (4, 8)$	120a1
(4)	$(24)^2, (2, 12), (2, 16)^2, (4, 8)^2$	120a4
(4)	$(24)^2, (2, 12), (2, 16)^2, (4, 8), (4, 16)$	1680p6
(4)	$(24)^2, (32), (2, 12), (2, 16)^2, (4, 8)$	48a5
(4)	$(24)^2, (32), (2, 12), (2, 16), (2, 32), (4, 8)$	15a7
(4)	$(24)^2, (32), (2, 12), (2, 16), (4, 8)^2$	42a4
(4)	$(24)^2, (32)^2, (2, 12), (2, 16), (4, 8)$	195a1
(4)	$(24)^2, (32)^3, (2, 12), (4, 16)$	1230f4
(4)	$(20), (40), (2, 12), (2, 16)^2, (2, 20), (3, 12), (4, 8)$	32a4
(4)	$(24)^2, (2, 12), (2, 16)^4, (4, 8)$	195a6
(4)	$(24)^2, (2, 12), (2, 16)^4, (8, 8)$	510e6
(4)	$(24)^2, (32)^3, (2, 12), (2, 16), (4, 8)$	510e1
(4)	$(24)^2, (32)^2, (2, 12), (2, 16)^2, (4, 8)^2$	240d7
(4)	$(24)^2, (32)^2, (2, 12), (2, 16)^2, (4, 8), (4, 16)$	210e6
(6)	$(24)$	14a4
(6)	$(2, 24), (4, 12)$	36a2
(6)	$(24), (2, 24)$	130a2
(6)	$(24), (4, 12)$	20a1
(6)	$(2, 24)^3$	90c7
(6)	$(2, 24)^2, (4, 12)$	30a1
(6)	$(24), (6, 12)^2$	14a1
(6)	$(48), (2, 24), (4, 12)$	90c8
(8)	$(32), (2, 24)$	21a3
(8)	$(32), (2, 24), (4, 16)$	42a1
(8)	$(32), (2, 24), (8, 8)$	48a6
(8)	$(32), (2, 24), (2, 32)^2, (4, 16)$	1230f1
(8)	$(32), (2, 24), (4, 16)^2, (8, 8)$	15a4
(8)	$(48)^2, (2, 24), (2, 32)^2, (4, 16)$	210e1
(10)	$(40), (2, 30)$	66c1
(12)	$(48)$	90c3
(2, 2)	$(2, 8)^2$	960o6
(2, 2)	$(2, 12), (8, 8)$	576d2
(2, 2)	$(2, 24), (8, 8)$	72a4
(2, 2)	$(2, 8)^3$	153c2
(2, 2)	$(2, 8)^2, (2, 12)$	33a1
(2, 2)	$(2, 8)^2, (2, 24)$	63a2
(2, 2)	$(2, 8)^2, (4, 8)$	320a2
(2, 2)	$(2, 8), (2, 12), (4, 8)$	525b3
(2, 2)	$(2, 8), (2, 24)^2$	720j6
(2, 2)	$(2, 12)^2, (8, 8)$	3264h3

$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2, 2)	(2, 12), (2, 16), (8, 8)	192d2
(2, 2)	(2, 12), (4, 8) <sup>2</sup>	200c2
(2, 2)	(2, 24) <sup>3</sup>	150c6
(2, 2)	(2, 8) <sup>3</sup> , (4, 4)	120b2
(2, 2)	(2, 8) <sup>3</sup> , (4, 12)	240b2
(2, 2)	(2, 8) <sup>2</sup> , (2, 12), (2, 16)	600a3
(2, 2)	(2, 8) <sup>2</sup> , (2, 12), (4, 8)	990c2
(2, 2)	(2, 8) <sup>2</sup> , (2, 12), (4, 16)	1200j2
(2, 2)	(2, 8) <sup>2</sup> , (2, 24), (4, 12)	30a6
(2, 2)	(2, 8) <sup>2</sup> , (2, 24), (4, 16)	630c2
(2, 2)	(2, 8), (2, 12), (4, 8) <sup>2</sup>	306c3
(2, 2)	(2, 12) <sup>2</sup> , (2, 16), (8, 8)	45a4
(2, 2)	(2, 12) <sup>2</sup> , (4, 8) <sup>2</sup>	600a2
(2, 2)	(2, 12) <sup>2</sup> , (4, 16), (8, 8)	6150n3
(2, 2)	(2, 12), (2, 16) <sup>2</sup> , (8, 8)	144b3
(2, 2)	(2, 12), (4, 8) <sup>3</sup>	289a2
(2, 2)	(2, 8) <sup>2</sup> , (2, 12), (2, 16) <sup>2</sup>	441c2
(2, 2)	(2, 8) <sup>2</sup> , (2, 12), (2, 16), (4, 8)	525b2
(2, 2)	(2, 8) <sup>2</sup> , (2, 12), (2, 16), (4, 16)	45a2
(2, 2)	(2, 8) <sup>2</sup> , (2, 24), (2, 32), (4, 16)	75b2
(2, 2)	(2, 8), (2, 12), (2, 16), (4, 8) <sup>2</sup>	126b2
(2, 2)	(2, 10), (2, 12), (4, 20), (6, 6), (8, 8)	64a1
(2, 2)	(2, 10), (2, 12), (4, 20), (6, 12), (8, 8)	32a2
(2, 2)	(2, 12) <sup>3</sup> , (2, 16), (8, 8)	24a2
(2, 2)	(2, 12) <sup>3</sup> , (4, 8) <sup>2</sup>	240a2
(2, 2)	(2, 12) <sup>2</sup> , (2, 16) <sup>2</sup> , (8, 8)	192c3
(2, 2)	(2, 12) <sup>2</sup> , (2, 16), (4, 8) <sup>2</sup>	63a4
(2, 2)	(2, 12) <sup>2</sup> , (4, 8) <sup>3</sup>	17a2
(2, 2)	(2, 12) <sup>2</sup> , (4, 8) <sup>2</sup> , (4, 16)	225c2
(2, 2)	(2, 12) <sup>2</sup> , (4, 16) <sup>2</sup> , (8, 8)	1200j4
(2, 2)	(2, 12), (2, 16) <sup>3</sup> , (8, 8)	630c5
(2, 2)	(2, 12), (2, 16), (4, 8) <sup>3</sup>	147a4
(2, 2)	(2, 12), (2, 24), (4, 16) <sup>2</sup> , (8, 8)	75b3
(2, 2)	(2, 8) <sup>2</sup> , (2, 10), (2, 20), (4, 8), (6, 6)	800a1
(2, 2)	(2, 8) <sup>2</sup> , (2, 12), (2, 16) <sup>3</sup>	975a2
(2, 2)	(2, 8) <sup>2</sup> , (2, 12), (2, 16) <sup>2</sup> , (4, 8)	960g2
(2, 2)	(2, 8) <sup>2</sup> , (2, 12), (2, 16) <sup>2</sup> , (4, 16)	6150n2
(2, 2)	(2, 12) <sup>3</sup> , (2, 16) <sup>2</sup> , (8, 8)	42a3
(2, 2)	(2, 12) <sup>3</sup> , (2, 16), (4, 8) <sup>2</sup>	21a2
(2, 2)	(2, 12) <sup>3</sup> , (4, 8) <sup>3</sup>	231a3
(2, 2)	(2, 12) <sup>2</sup> , (2, 16) <sup>3</sup> , (8, 8)	75b5
(2, 2)	(2, 12) <sup>2</sup> , (2, 16) <sup>2</sup> , (4, 8) <sup>2</sup>	40a1
(2, 2)	(2, 12) <sup>2</sup> , (2, 16), (4, 8) <sup>2</sup> , (4, 16)	3150bk4
(2, 2)	(2, 12) <sup>2</sup> , (2, 24), (4, 16) <sup>2</sup> , (8, 8)	510e5



$G$	$\mathcal{H}_{\mathbb{Q}}(16, E)$	Label
(2, 2)	$(2, 12), (2, 16)^2, (4, 8)^3$	585f5
(2, 2)	$(2, 8)^2, (2, 10), (2, 12), (2, 20), (4, 8), (6, 6)$	576h2
(2, 2)	$(2, 8)^2, (2, 10), (2, 12), (2, 20), (4, 8), (6, 12)$	288d1
(2, 2)	$(2, 8)^2, (2, 12), (2, 16)^3, (4, 8)$	975a5
(2, 2)	$(2, 12)^3, (2, 16), (4, 8)^2, (4, 16)$	240d2
(2, 2)	$(2, 12)^2, (2, 16)^4, (8, 8)$	6720cd4
(2, 2)	$(2, 12)^2, (2, 16)^2, (4, 8)^2, (4, 16)$	130050bu2
(2, 2)	$(2, 12), (2, 16)^3, (4, 8)^3$	45a5
(2, 2)	$(2, 12)^3, (2, 16)^4, (8, 8)$	15a2
(2, 2)	$(2, 12)^3, (2, 16)^3, (4, 8)^2$	195a5
(2, 2)	$(2, 12)^3, (2, 16)^2, (4, 8)^2, (4, 16)$	1230f5
(2, 2)	$(2, 12)^3, (2, 16)^5, (8, 8)$	210e5
(2, 4)	$(2, 16)^2, (4, 12)$	195a3
(2, 4)	$(2, 16)^2, (8, 8)$	24a1
(2, 4)	$(2, 16), (2, 24), (8, 8)$	42a2
(2, 4)	$(2, 16)^2, (4, 8)^2$	120a2
(2, 4)	$(2, 16), (2, 24), (4, 8)^2$	21a1
(2, 4)	$(2, 24), (4, 8)^2, (4, 16)$	510e2
(2, 4)	$(2, 16)^2, (4, 8)^3$	231a2
(2, 4)	$(2, 16)^2, (4, 12), (4, 16), (8, 8)$	510e3
(2, 4)	$(2, 24)^2, (4, 16)^2, (8, 8)$	1230f2
(2, 4)	$(2, 24), (4, 12), (4, 16)^2, (8, 8)$	15a1
(2, 4)	$(2, 16)^2, (4, 12), (4, 16)^2, (8, 8)$	240d4
(2, 4)	$(2, 16), (2, 24), (2, 32), (4, 8)^2, (4, 16)$	15a3
(2, 4)	$(2, 24)^2, (4, 12), (4, 16)^2, (8, 8)$	210e3
(2, 6)	$(2, 24)^2$	90c6
(2, 6)	$(2, 24)^3, (4, 12)$	30a2
(2, 8)	$(2, 32)^2, (4, 16)^2, (8, 8)$	210e2

$$d = 18$$

$$\Psi_{\mathbb{Q}}(18) \supseteq \left\{ \begin{array}{l} (6), (7), (9), (12), (14), (18), (19), (21), (26), (27), (28), (30), (36), (42), (45), (2, 6), (2, 14), (2, 18), \\ (2, 26), (2, 36), (2, 42), (3, 6), (3, 9), (3, 12), (3, 18), (3, 21), (4, 12), (4, 28), (6, 6), (6, 18), (7, 7), (9, 9) \end{array} \right\}$$

$G$	$\Psi_{\mathbb{Q}}(18, G) \setminus \{G\} \supseteq$
()	$\left\{ \begin{array}{l} (6), (7), (9), (12), (14), (18), (19), (21), (26), (27), (28), (30), (42), (2, 6), (2, 14), (2, 18), \\ (2, 26), (2, 42), (3, 6), (3, 9), (3, 12), (3, 18), (3, 21), (4, 12), (4, 28), (6, 6), (6, 18), (7, 7), (9, 9) \end{array} \right\}$
(2)	$\{(18), (36), (2, 18), (3, 18), (6, 18)\}$
(3)	$\{(18), (27), (42), (45), (2, 18), (2, 42), (3, 6), (3, 9), (3, 12), (3, 18), (3, 21), (6, 6), (6, 18), (9, 9)\}$
(4)	$\{(36), (2, 36)\}$
(5)	$\{(30), (45)\}$
(6)	$\{(36), (2, 18), (3, 18), (6, 18)\}$
(7)	$\{\}$
(8)	$\{\}$
(9)	$\{(3, 18)\}$
(10)	$\{\}$
(12)	$\{(2, 36)\}$
(2, 2)	$\{(2, 18), (2, 36)\}$
(2, 4)	$\{\}$
(2, 6)	$\{(2, 36)\}$
(2, 8)	$\{\}$

$$g_{\mathbb{Q}}(18) \geq 6 \quad \#\mathcal{G}_{\mathbb{Q}}(18) \geq 101 \quad M_{\mathbb{Q}}(18) \geq 254016$$

$G$	$\mathcal{H}_{\mathbb{Q}}(18, E)$	Label
()	(2, 14)	294a1
()	(2, 26)	147b1
()	(4, 28)	338b1
()	(6, 18)	108a2
()	(9)	300a1
()	(14)	26b2
()	(18)	432b1
()	(19)	361a2
()	(26)	147c1
()	(28)	338a1
()	(2, 6), (2, 18)	196a1
()	(2, 6), (3, 18)	486c2
()	(2, 18), (6, 6)	300b2
()	(3, 9), (6, 6)	196b2
()	(6), (2, 18)	361b1
()	(6), (9)	50b3
()	(6), (18)	175b1
()	(6), (27)	432e3
()	(6, 6), (9, 9)	243a1
()	$(7)^2$	2450a1
()	(9), (2, 6)	196a2
()	(9), (2, 18)	1728e2
()	(9), (4, 12)	1296h2
()	(9), (6, 6)	324a2
()	$(9)^2$	175b2
()	(9), (12)	1296h1
()	(9), (18)	432a1
()	(14), (7, 7)	2450ba1
()	(18), (2, 6)	361b3
()	(27), (2, 6)	1728j3
()	(2, 6), (3, 6), (3, 9)	676c2
()	(6), (9), (2, 14)	254016dv3
()	(6), (9), (2, 18)	1728j2
()	(6), (9), (2, 42)	5184u1
()	$(6), (9)^2$	1734j2
()	(6), (9), (14)	1296e3
()	(6), (9), (18)	432e1
()	(6), (9), (42)	1296e1
()	(6), (18), (27)	432a2
()	(9), (2, 6), (3, 6)	44a2
()	(9), (3, 12), (4, 12)	162d2
()	$(9)^2, (2, 6)$	15552ch1
()	(9), (14), (2, 6)	5184u4
()	(9), (18), (2, 6)	1728e1

$G$	$\mathcal{H}_{\mathbb{Q}}(18, E)$	Label
()	(9), (42), (2, 6)	5184bd2
()	(27), (2, 6), (3, 18)	54a2
()	(28) <sup>2</sup> , (2, 14)	16562be2
()	(2, 6), (3, 6), (3, 9) <sup>2</sup>	486f2
()	(6), (9), (14), (21)	1296e2
()	(9), (12), (2, 6), (3, 12)	162a2
()	(9), (21), (2, 6), (2, 14)	5184u2
()	(9), (30), (2, 6), (3, 6)	50a4
()	(6), (9), (21), (42), (2, 14)	7938u3
()	(9), (14), (21), (2, 6), (3, 6)	162b4
()	(9), (42), (2, 6), (3, 6), (3, 21)	162c2
()	(18) <sup>2</sup> , (2, 6), (3, 6), (3, 9)	19a2
()	(9), (42), (2, 6), (2, 14), (3, 6), (3, 21)	162b2
()	(18) <sup>2</sup> , (2, 6), (3, 6), (3, 9) <sup>2</sup>	54b2
()	(27) <sup>2</sup> , (2, 18) <sup>2</sup> , (3, 9), (6, 6)	27a2
(2)	(2, 18)	80b1
(2)	(3, 18)	14a3
(2)	(6, 18)	36a3
(2)	(18)	20a3
(2)	(36)	30a3
(2)	(18), (2, 18)	98a3
(2)	(18) <sup>2</sup>	98a4
(3)	(3, 6)	44a1
(3)	(3, 12)	162a1
(3)	(6, 6)	324a1
(3)	(6, 18)	108a1
(3)	(2, 18), (3, 18)	486f1
(3)	(2, 18), (6, 6)	486a2
(3)	(3, 6), (3, 9)	676c1
(3)	(3, 9), (6, 6)	225b1
(3)	(6, 6), (9, 9)	243a2
(3)	(6, 18), (9, 9)	27a1
(3)	(42), (3, 6)	162b3
(3)	(45), (3, 6)	50a3
(3)	(2, 42), (3, 6), (3, 21)	162b1
(3)	(3, 6), (3, 9) <sup>2</sup>	486c1
(3)	(3, 9) <sup>3</sup>	19a1
(3)	(3, 9) <sup>2</sup> , (3, 18)	54a1
(3)	(42), (3, 6), (3, 21)	162c1
(3)	(2, 18), (3, 9) <sup>2</sup> , (3, 18)	54b1
(3)	(18), (2, 18), (3, 6), (3, 9)	19a3
(3)	(18), (2, 18), (3, 6), (3, 9) <sup>2</sup>	54a3
(3)	(27), (2, 18) <sup>2</sup> , (3, 9), (6, 6)	27a4
(4)	(2, 36)	150c3

$G$	$\mathcal{H}_{\mathbb{Q}}(18, E)$	Label
(4)	(36)	90c1
(5)	(30), (45)	50b1
(6)	(2, 18)	20a1
(6)	(3, 18)	14a4
(6)	(6, 18)	36a1
(6)	(2, 18), (3, 18)	36a2
(6)	$(36)^2, (2, 18)$	30a1
(6)	$(2, 18), (3, 18)^3$	14a1
(9)	(3, 18)	54b3
(12)	(2, 36)	90c3
(2, 2)	(2, 18)	30a6
(2, 2)	(2, 36)	960o6
(2, 6)	(2, 36)	90c6

$$d = 20$$

$$\Psi_{\mathbb{Q}}(20) \supseteq \{(5), (10), (11), (15), (20), (22), (25), (33), (2, 10), (2, 22), (5, 5), (5, 10), (5, 15)\}$$

$G$	$\Psi_{\mathbb{Q}}(20, G) \setminus \{G\} \supseteq$
( )	$\{(5), (11), (15), (25), (33), (5, 5), (5, 15)\}$
(2)	$\{(10), (20), (22), (2, 10), (2, 22), (5, 10)\}$
(3)	$\{(15), (5, 15)\}$
(4)	$\{\}$
(5)	$\{(25), (5, 5), (5, 15)\}$
(6)	$\{\}$
(7)	$\{\}$
(8)	$\{\}$
(9)	$\{\}$
(10)	$\{(5, 10)\}$
(12)	$\{\}$
(2, 2)	$\{\}$
(2, 4)	$\{\}$
(2, 6)	$\{\}$
(2, 8)	$\{\}$

$g_{\mathbb{Q}}(20) \geq 3$	$\#\mathcal{G}_{\mathbb{Q}}(20) \geq 26$	$M_{\mathbb{Q}}(20) \geq 18176$
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$G$	$\mathcal{H}_{\mathbb{Q}}(20, E)$	Label
()	(5)	99d1
()	(5, 5)	38b2
()	(5, 15)	50b3
()	(11)	361a1
()	(15)	400b3
()	(25)	99d3
()	(33)	121b2
()	(5), (25)	18176b1
()	(15), (5, 5)	50a2
()	(25), (5, 5)	275b1
()	(33) <sup>2</sup>	121b1
()	(25) <sup>2</sup> , (5, 5)	11a2
(2)	(2, 10)	198e3
(2)	(2, 22)	49a1
(2)	(5, 10)	150b3
(2)	(10)	198e1
(2)	(22)	49a2
(2)	(2, 10), (5, 10)	150b1
(2)	(20), (2, 10)	450a2
(2)	(20), (5, 10)	66c3
(3)	(5, 15)	50a1
(3)	(15)	450b4
(5)	(5, 5)	38b1
(5)	(5, 15)	50b1
(5)	(25), (5, 5)	11a3
(10)	(5, 10)	66c1

$$d = 21$$

$$\Psi_{\mathbb{Q}}(21) \supseteq \{(7), (14), (21), (43), (2, 14)\}$$

$G$	$\Psi_{\mathbb{Q}}(21, G) \setminus \{G\} \supseteq$
( )	\{(7), (14), (43), (2, 14)\}
(2)	\{(14)\}
(3)	\{(21)\}
(4)	\{\}
(5)	\{\}
(6)	\{\}
(7)	\{\}
(8)	\{\}
(9)	\{\}
(10)	\{\}
(12)	\{\}
(2, 2)	\{\}
(2, 4)	\{\}
(2, 6)	\{\}
(2, 8)	\{\}

$g_{\mathbb{Q}}(21) \geq 1$	$\#\mathcal{G}_{\mathbb{Q}}(21) \geq 6$	$M_{\mathbb{Q}}(21) \geq 1922$
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$G$	$\mathcal{H}_{\mathbb{Q}}(21, E)$	Label
()	(2, 14)	1922c2
()	(7)	162b4
()	(14)	26b2
()	(43)	1849a1
(2)	(14)	49a1
(3)	(21)	162b3

UNIVERSIDAD AUTÓNOMA DE MADRID, DEPARTAMENTO DE MATEMÁTICAS, MADRID, SPAIN  
*E-mail address:* `enrique.gonzalez.jimenez@uam.es`

UNIVERSITY OF ZAGREB, BIJENIČKA CESTA 30, 10000 ZAGREB, CROATIA  
*E-mail address:* `fnajman@math.hr`