Mark scheme

HCF and LCM with prime factors

Mathematics 0580 · Questions from Paper 1, Paper 2, Paper 3 and Pape…

Total marks

32

MARKS FOR EACH QUESTION

1	2	3	4	5	6	7	8	9	10	Total
2	2	2	3	2	2	4	3	4	8	**32**

Question 1 **[2]**

1	2 × 2 × 3 × 3 × 5 oe	**2**	**B1** for 2, 2, 3, 3, 5 or **M1** for correct factor tree/diagram/table.

Question 2 **[2]**

2	18	**2**	**B1** for answer 2 or 3 or 6 or 9 or **M1** for 2 × 3 × 3 oe as final answer or 36 = 2 × 2 × 3 × 3 and 54 = 2 × 3 × 3 × 3 or 2 correct factor trees or tables

Question 3 **[2]**

3	180	**2**	**B1** for 180*k* as final answer or **M1** for [20 =] 2 × 2 × 5 and [36 =] 2 × 2 × 3 × 3 or 2 correct factor trees or tables or lists or a list of multiples of both 20 and 36 with at least 3 of each or 2 × 2 × 3 × 3 × 5 oe

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Question 4 **[3]**

4(a)	3	**1**	
4(b)	360	**2**	**B1** for answer $360k$, $k > 1$ or **M1** for $2^3 \times 3^2 \times 5$ oe or for 24, 48, 72… **and** 45, 90, 135… seen

Question 5 **[2]**

5	$90x^4y^3$ final answer	**2**	**B1** for two correct parts from: 90, x^4 and y^3 or for $3\times5\times x\times y\times y\times y$ and $2\times3\times3\times x\times x\times x\times x\times y$ or for correct answer seen then spoilt

Question 6 **[2]**

6	18 30	**2**	**B1** for 2 numbers with HCF 6 or LCM 90 or for 2 numbers greater than 6 with product 540 OR **M1** for some multiples of 6 including 18 and 30 or for some factors of 90 including 18 and 30 or for a tree diagram/table showing prime factors of 540 or 6 **and** 90

Question 7 **[4]**

7 (a)	$2 \times 3 \times 5$	**2**	**B1** for 2, 3, 5 as prime factors
(b)	90	**2**	**B1** for $90k$ or for listing multiples of each up to 90 or $2 \times 3^2 \times 5$

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Question 8 **[3]**

8	11 34	**3**	**B2** for 154 or 2h 34 mins or **M1** for 154*k* or 2 × 7 × 11 or for [22 =]11 × 2 and [14 =] 7 × 2 or two correct factor trees/tables of both 22 and 14 OR **M2** for listing times or multiples for both bells to at least 11 34 or 154 or **M1** for listing 3 of each or one full list

Question 9 **[4]**

9(a)	3 cao	**1**	
9(b)	10 12	**3**	**B2** for 720 or 12 mins **OR** **M1** for 720*k* or 2 × 2 × 2 × 2 × 3 × 3 × 5 or [144 =] 2 × 2 × 2 × 2 × 3 × 3 and [120 =] 2 × 2 × 2 × 3 × 5 or correct factor trees or tables of both 120 and 144 **OR** **M2** for listing times/multiples of both 120 and 144 to at least 720 or 10 12 or **M1** for listing at least 3 of each or one full list

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Question 10 **[8]**

10(a)(i)	$2^2 \times 3^2 \times 5$ oe	**2**	**M1** for 3 correct prime factors in a tree or table seen before the first error or for 2, 3, 5 identified
10(a)(ii)	540	**2**	**M1** for $2^2 \times 3^3 \times 5$ or 2×3^3 shown or answer $540k$

10(b)	$X = 8575$ $Y = 6125$	**4**	**B3** for $X = 8575$ or $Y = 6125$ or **B2** for $a = 5$ or $b = 1$ soi or **B1** for $1225 = 5^2 \times 7^2$ or $42\,875 = 5^3 \times 7^3$ or **M1** for $a^2 \times 7^2$ [= 1225] or $a^3 \times 7^{b+2}$ [= 42 875]

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