# Mark scheme

## Factors, multiples and primes

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

Total marks

**33**

**MARKS FOR EACH QUESTION**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 2 | 2 | 2 | 4 | 3 | 3 | 2 | 3 | 8 | **33** |

### Question 1 [4]

| | | | |
|---|---|---|---|
| **1**(a) | 112 | **1** | |
| **1**(b) | 49 | **1** | |
| **1**(c) | 7 | **1** | |
| **1**(d) | 7 | **1** | |

### Question 2 [2]

| | | | |
|---|---|---|---|
| **2** | 1, 4, 25, 100 | 2 | **B1** for any two and none incorrect.<br>−1 each incorrect |

### Question 3 [2]

| | | | |
|---|---|---|---|
| **3** | 168 | **2** | **B1** for 168$k$ as final answer<br>or **M1** for [24 =] 2 × 2 × 2 × 3 **and** [28 =] 2 × 2 × 7<br>or 2 correct factor trees or tables<br>or a list of multiples of both 24 and 28 with at least 3 of each<br>or 2 × 2 × 2 × 3 × 7 |

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**Question 4** **[2]**

| | | | |
|---|---|---|---|
| **4** | 16 | **2** | **B1** for answer 2 or 4 or 8<br>or **M1** for $2 \times 2 \times 2 \times 2$ oe as final answer<br>or [48 =] $2 \times 2 \times 2 \times 2 \times 3$ and [80 =] $2 \times 2 \times 2 \times 2 \times 5$<br>or for 2 correct factor trees or tables |

**Question 5** **[4]**

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

**Question 6** **[3]**

| | | | |
|---|---|---|---|
| **6**(a) | 3 | **1** | |
| **6**(b) | 360 | **2** | **B1** for answer $360k$, $k > 1$<br><br>or **M1** for $2^3 \times 3^2 \times 5$ oe<br>or for 24, 48, 72… **and** 45, 90, 135… seen |

**Question 7** **[3]**

| | | | |
|---|---|---|---|
| **7**(a) | $3^4 \times 5^2$ | **2** | **B1** for 3,3,3,3,5,5<br>or **M1** for correct factor tree/diagram/list/table |
| **7**(b) | 25×81 or 225×9 | **1** | |

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**Question 8** **[2]**

| | | | |
|---|---|---|---|
| **8** | 18 30 | **2** | **B1** for 2 numbers with HCF 6 or LCM 90 or for 2 numbers greater than 6 with product 540<br>OR<br>**M1** for some multiples of 6 including 18 and 30<br>or for some factors of 90 including 18 and 30<br>or for a tree diagram/table showing prime factors of 540 or 6 **and** 90 |

**Question 9** **[3]**

| | | | |
|---|---|---|---|
| **9** | 9, 18, 36, 72, 144 | **3** | **B2** for 3 correct and no extras or 5 correct and 1 extra as the answer<br>or **B1** for two correct and no extras<br>or **M1** factors of 144 up to 72 or multiples of 9 up to 72 |

**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 $2 \times 3^3$ shown<br>or answer $540k$ |
| **10**(b) | $X = 8575$<br>$Y = 6125$ | **4** | **B3** for $X = 8575$ or $Y = 6125$<br>or<br>**B2** for $a = 5$ or $b = 1$ soi<br>or<br>**B1** for $1225 = 5^2 \times 7^2$ or $42\,875 = 5^3 \times 7^3$<br>or<br>**M1** for $a^2 \times 7^2$ [= 1225] or $a^3 \times 7^{b+2}$ [= 42 875] |

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