

HCF and LCM Past Paper Questions (MS)



Q1.

| Question | Working | Answer | Mark | Notes |
|----------|---------|--------------------------------|--------------|---|
| | | $2 \times 2 \times 2 \times 7$ | M1 A1 | for complete method to find prime factors; could be shown on a complete factor tree with no more than 1 arithmetic error accept $2^3 \times 7$ |

Q2.

| Question | Answer | Mark | Mark scheme | Additional guidance |
|----------|---------------------|------|---|----------------------------|
| | Two correct factors | B1 | for 2 correct factors from 1, 2, 3, 4, 6, 12 and no incorrect factors | Accept one correct product |

Q3.

| Question | Answer | Mark | Mark scheme | Additional guidance |
|----------|----------|------|--------------|-----------------------------|
| | 10 or 12 | B1 | for 10 or 12 | Accept both 10 and 12 given |

Q4.

| Paper 1MA1:3F | | | | |
|---------------|---------|--------|--------|--|
| Question | Working | Answer | Notes | |
| (i) | | 12 | B1 cao | |
| (ii) | | 2 or 5 | B1 | |

Q5.

| Question | Working | Answer | Mark | Notes |
|----------|---------|----------|------|-----------------|
| (i) | | 4 or 5 | 1 | B1 for 4 or 5 |
| (ii) | | 30 or 40 | 1 | B1 for 30 or 40 |
| (iii) | | 29 | 1 | B1 cao |



Q6.

| Question | Answer | Mark | Mark scheme | Additional guidance |
|----------|--------|------|-------------|---------------------|
| | 14 | B1 | cao | |

Q7.

| | Working | Answer | Mark | Notes |
|-------|---------|---|------|---|
| (i) | | 5,15 or 5,125 or 15,125 or 30,50 or 30,60 or 30,90 or 30,100 or 50,60 or 50,90 or 50,100 or 60,90 or 60,100 or 90,100 | 4 | B1 for 2 numbers, from the list, whose sum is an even number. |
| (ii) | | 60 or 100 | | B1 for 60 or 100 or both |
| (iii) | | 5 or 15 | | B1 for 5 or 15 or both |
| (iv) | | 125 | | B1 cao |

Q8.

| Paper 1MA1: 2F | | | |
|----------------|---------|--------|--|
| Question | Working | Answer | Notes |
| | | 12 | M1 Starts to list factors of writes at least one number in terms of prime factors or identifies a common factor other than 1 A1 cao |

Q9.

| PAPER: 1MA0_1F | | | | |
|----------------|---------|---|------|--|
| Question | Working | Answer | Mark | Notes |
| | | $2 \times 2 \times 3 \times 3 \times 5$ | 3 | M1 for continual prime factorisation (at least two consecutive steps correct) or at least two stages of a factor tree correct M1 for a fully correct factor tree or list 2, 2, 3, 3, 5 A1 for $2 \times 2 \times 3 \times 3 \times 5$ or $2^2 \times 3^2 \times 5$ |



Q10.

| | Working | Answer | Mark | Notes |
|--|-----------------------------|--------------------------------|------|---|
| | 5 525 5 105 3 21 7 | $3 \times 5 \times 5 \times 7$ | 3 | M1 for continual prime factorisation (at least first 2 steps correct) or first two stages of a factor tree correct M1 for fully correct factor tree or list 3, 5, 5, 7 A1 $3 \times 5 \times 5 \times 7$ or $3 \times 5^2 \times 7$ |

Q11.

| Question | Working | Answer | Notes |
|----------|---------|--------|--|
| | | 8 | M1 for finding the HCF of any two of the three numbers or for 2^5 and 3×2^4 and $2^3 \times 3^2$ A1 cao |

Q12.

| Question | Answer | Mark | Mark scheme | Additional guidance |
|----------|--------|------|---|---|
| (a) | 280 | M1 | for listing at least 3 multiples of both 40 and 56 OR finds the prime factors of both 40 and 56 | 40, 80, 120, ... 56, 112, 168, ... OR 2,2,2,5 and 2,2,2,7 |
| | | A1 | cao | |
| (b) | 60 | B1 | 60 or $2^2 \times 3 \times 5$ oe | $2^2, 3, 5$ not enough ie must be a product |

Q13.

| 5MB2H 01 November 2015 | | | | |
|------------------------|---------|-----------|------|--|
| Question | Working | Answer | Mark | Notes |
| | | 7.21 (am) | 3 | M1 for listing multiples 9,18,27,36 and 12,24,36 (condone 1 arithmetic error) or method to find LCM M1 for identifying 36 as LCM A1 cao OR M1 for listing times 6.54, 7.03, 7.12, 7.21 or for listing times 6.57, 7.09, 7.21 (condone one arithmetic error) M1 for listing times 6.54, 7.03, 7.12, 7.21 and 6.57, 7.09, 7.21 (condone one arithmetic error) A1 cao |



Q14.

| Question | Working | Answer | Mark | Notes |
|----------|---------|--------|------|---|
| | | 24 | 2 | M1 for list of at least 3 multiples of 8 and 2 multiples of 12 or correct method to write either 8 or 12 as product of prime factors A1 cao |

Q15.

| Question | Answer | Mark | Mark scheme | Additional guidance |
|----------|--------|------|---|---|
| | 1080 | M1 | for method to write one number as a product of prime factors (condone one division error in method chosen), eg. one complete factor tree or 2, 2, 3, 3, 3 or 2, 2, 2, 3, 5 or for listing at least 5 multiples of either number (condone one error) or for any common multiple ($\neq 1080$), eg. 12960 ($= 108 \times 120$) | Accept first 5 multiples if all correct or one error in first 6 multiples |
| | | M1 | for method to write both numbers as a product of prime factors (condone a total of one division error) eg. two complete factor trees or 2, 2, 3, 3, 3 and 2, 2, 2, 3, 5 or lists of multiples of the two numbers, at least 5 of each, one of which includes 1080 | For the list not containing 1080, accept first 5 multiples if all correct or one error in first 6 multiples |
| | | A1 | cao SC B2 for any product that would lead to 1080, eg $2^3 \times 3^3 \times 5$ or $12 \times 9 \times 10$ | |

Q16.

| Question | Working | Answer | Mark | Notes |
|----------|---------|-------------------------|------|--|
| (a) | | $2^3 \times 3 \times 7$ | M1 | for continual prime factorisation (at least two consecutive steps correct) or for at least two stages of a factor tree correct |
| | | | M1 | for a fully correct factor tree or list of 2, 2, 2, 3, 7 |
| | | | A1 | for $2 \times 2 \times 2 \times 3 \times 7$ or $2^3 \times 3 \times 7$ |
| (b) | | 12 | M1 | for attempt to list factors of 168 and 180 with at least 4 of each correct and none incorrect or correct prime factorisation of 180, e.g. $2 \times 2 \times 3 \times 3 \times 5$ or $2^2 \times 3^2 \times 5$ |
| | | | A1 | cao |

Q17.



| PAPER: 1MA0 1F | | | | |
|----------------|--|--|------|---|
| Question | Working | Answer | Mark | Notes |
| (i) | 20, 40, 60 12, 24, 36, 48, 60 $20 = 4 \times 5 = 2 \times 2 \times 5$ $12 = 4 \times 3 = 2 \times 2 \times 3$ | 3 and 5 or any multiple of 3, 5 | 4 | M1 attempts multiples of both 20 and 12 (at least 3 of each shown but condone errors if intention is clear) or identifies 60 or a multiple of 60 M1 (dep on M1) for a division by 20 or 12 or counts up 'multiples' or identifies a common multiple (implied if one answer is correct or answers reversed) A1 cheese slices (packets) 3, burgers (boxes) 5 or any multiple of 3, 5 OR M1 for expansion of either 20 or 12 into factors M1 for demonstration that both expansions include 4 (or 2×2) A1 cao for cheese slices (packets) 3, burgers (boxes) 5 |
| (ii) | | 60 | | B1 for 60 or ft from their correct answer to (i) or ft "common multiple" |

Q18.

| Question | Working | Answer | Mark | Notes |
|----------|--|----------|------|---|
| | Acton after 24, 48, 72, 96, 120 Barton after 20, 40, 60, 80, 100, 120 LCM of 20 and 24 is 120 9:00 am + 120 minutes OR Acton after 24, 48, 1h 12m, 1h 36m, 2h Barton after 20, 40, 1h, 1h 20m, 1h 40m, 2h LCM is 2 hours 9:00 am + 2 hours OR Times from 9:00 am when each bus leaves the bus station Acton at 9: 24, 9: 48, 10: 12, 10:36, 11:00 Barton at 9: 20, 9: 40, 10: 00, 10:20, 10:40, 11:00 OR $20 = 2 \times 2 \times 5$ $24 = 2 \times 2 \times 2 \times 3$ $2 \times 2 \times 2 \times 3 \times 5 = 120$ | 11:00 am | 3 | M1 for listing multiples of 20 and 24 with at least 3 numbers in each list ; multiples could be given in minutes or in hours and minutes (condone one addition error in total in first 3 numbers in lists) A1 identify 120 (mins) or 2 (hours) as LCM A1 for 11:00 (am) or 11(am) or 11 o'clock OR M1 for listing times after 9am when each bus leaves the bus station, with at least 3 times in each list (condone one addition error in total in first 3 times after 9am in lists) A1 for correct times in each list up to and including 11:00 A1 for 11:00 (am) or 11(am) or 11 o'clock OR M1 for correct method to write 20 and 24 in terms of their prime factors 2, 2, 5 and 2, 2, 2, 3 (condone one error) A1 identify 120 as LCM A1 for 11:00 (am) or 11(am) or 11 o'clock |



Q19.

| | Working | Answer | Mark | Notes |
|--|--|-----------------|------|--|
| | LCM (80, 50) = 400 Matt $400 \div 50 = 8$ Dan $400 \div 80 = 5$ OR $50 = 2 \times 5 (\times 5)$ $80 = 2 \times 5 (\times 2 \times 2 \times 2)$ | Matt 8 Dan 5 | 3 | M1 lists multiples of both 80 (seconds) and 50 (seconds) (at least 3 of each but condone errors if intention is clear, can be in minutes and seconds) or use of 400 seconds oe. M1 (dep on M1) for a division of "LCM" by 80 or 50 or counts up "multiples" (implied if one answer is correct or answers reversed) A1 Matt 8 and Dan 5 SC B1 for Matt 7, Dan 4 OR M1 for expansion of both 80 and 50 into prime factors. M1 demonstrates that both expansions include 10 oe A1 Matt 8 and Dan 5 SC B1 for Matt 7, Dan 4 |

Q20.

| Question | Working | Answer | Mark | Notes |
|----------|---------|---------|------|--|
| | | 9 30 am | 3 | P1 lists multiples of 24 and 20 with at least 3 numbers in each list or expansion of 24 and 20 into factors A1 identifies 120 (mins) or 2 (hours) as LCM A1 for 9 30 am oe |