

# Prime Factors, HCF and LCM

# November 2024 Paper 3

Question	Answer	Mark	Mark scheme	Additional guidance
16 (a)	$2 \times 3^2 \times 7$	M1	for a complete factor tree with no more than one arithmetic error <b>or</b> 2, 3, 3, 7	Condone the inclusion of 1 for this mark
(b)	42	M1	for a complete factor tree for 210 (or 126 if not credited in part (a)) with no more than one arithmetic error  <b>or</b> for listing factors of 126 or 210, at least 4 correct for either (with no more than 1 incorrect in either list), could be in factor pairs  <b>or</b> for the prime factors of 210 (2, 3, 5, 7) (or 126 if not credited in part (a))	Condone the inclusion of 1 for this mark  1, 2, 3, 6, 7, 9, 14, 18, 21, 42, 63, 126 1, 2, 3, 5, 6, 7, 10, 14, 15, 21, 30, 35, 42, 70, 105, 210  Prime factors may be seen in a diagram eg a Venn diagram
		A1	accept $2 \times 3 \times 7$  SCB1 for answer of 2 or 3 or 6 or 7 or 14 or 21 if M0 scored	

# November 2022 Paper 1

Question	Answer	Mark	Mark scheme	Additional guidance
19	$2^2 \times 5^3$	M1	for a complete method to find prime factors; could be shown on a complete factor tree with no more than one error or by division by prime factors with no more than one error	Condone the inclusion of 1 for the method marks
		M1	for complete factorisation, eg 2, 2, 5, 5, 5	Could be shown on a fully correct factor tree
		A1	for $2^2 \times 5^3$	



## June 2024 Paper 2

Question	Answer	Mark	Mark scheme	Additional guidance
21 (a)	$2 \times 3 \times 3 \times 5$	M1	for a complete method to find prime factors; could be shown on a complete factor tree with no more than one error <b>or</b> by division by prime factors with no more than one error <b>or</b> for 2, 3, 3, 5	Condone the inclusion of 1 for this mark
(b)	36	B1	for 36	Accept $2 \times 3^2 \times 5$ Accept $2^2 \times 3^2$ or $2 \times 2 \times 3 \times 3$

## June 2023 Paper 2

Question	Answer	Mark	Mark scheme	Additional guidance
21	$2 \times 2 \times 3 \times 5$	M1	for a complete method to find prime factors, could be shown on a complete factor tree, with no more than one error or by division by prime factors with no more than one error	Condone the inclusion of 1 for the method mark
		A1	for $2 \times 2 \times 3 \times 5$ oe	Accept $2^2 \times 3 \times 5$

## June 2022 Paper 3

Question	Answer	Mark	Mark scheme	Additional guidance
21	168	M1	for a list of at least 3 multiples of each number or for factors 3,2,2,2 oe and 7,2,2,2 oe (could be shown in a factor tree or Venn diagram or table)	Condone the use of 1 as a factor
		A1	cao	

## June 2020 Paper 2

Question	Answer	Mark	Mark scheme	Additional guidance
21 (a)	$2 \times 2 \times 3 \times 7$	M1	for a complete method to find prime factors, could be shown on a factor tree, with no more than one arithmetic error <b>or</b> for 2, 2, 3, 7	Condone the use of 1
		A1	for $2 \times 2 \times 3 \times 7$ oe	Accept $2^2 \times 3 \times 7$
(b)	420	M1	for at least 3 multiples of both 60 and 84 (can include 60 and 84) <b>or</b> finds the prime factors of both 84 (may be seen in (a)) and 60, may be seen in factor trees	60, 120, 180, 240, 300, 360, 420 84, 168, 252, 336, 420 $60 = 2 \times 2 \times 3 \times 5$ or $2^2 \times 3 \times 5$ If factor tree in (a) is incorrect ft this factor tree in part (b) for M1 only
		A1	420 or $2 \times 2 \times 3 \times 5 \times 7$ oe	

# June 2024 Paper 3

Question	Answer	Mark	Mark scheme	Additional guidance
22	21	M1          A1	<p>for a complete factor tree for 63 or 105 with no more than one arithmetic error</p> <p><b>or</b> for listing at least 4 correct factors (with no more than 1 incorrect) of 63 or 105, could be in factor pairs</p> <p><b>or</b> for the prime factors of 63 (3, 3, 7) or 105 (3, 5, 7)</p> <p>cao</p> <p>SCB1 for answer of 3 or 7 or <math>3 \times 7</math> if M0 scored</p>	<p>Condone the inclusion of 1 for this mark</p> <p>May be seen in different ways, 1, 3, 7, 9, 21, 63 1, 3, 5, 7, 15, 21, 35, 105</p> <p>Prime factors may be seen in a diagram eg a Venn diagram</p>

## November 2021 Paper 2

Question	Answer	Mark	Mark scheme	Additional guidance
22 (a)	12	M1	for a correct factor tree for either 60 <b>or</b> 84 with no more than one arithmetic error <b>or</b> for listing factors of 60 <b>or</b> 84, at least 4 correct for either (with no more than 1 incorrect in either list), could be in factor pairs <b>or</b> for the prime factors of 60 (2, 2, 3, 5) <b>or</b> 84 (2, 2, 3, 7)	Condone the use of 1 in any factor tree 60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60 84: 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84
		A1	for 12 or $2 \times 2 \times 3$ oe SC B1 for answer of 4 or 6, if M0 scored	2,2,3 is not enough, it must be a product
(b)	120	M1	for a correct factor tree for either 24 <b>or</b> 40 with no more than one arithmetic error <b>or</b> for at least 3 multiples of both 24 and 40 (can include 24 and 40) <b>or</b> for the prime factors of either 24 (2, 2, 2, 3 ) <b>or</b> 40 (2, 2, 2, 5) <b>or</b> for a common multiple from their lists ( $\neq$ 120 )	Condone the use of 1 in any factor tree 24: 24, 48, 72, 96, 120, ... 40: 40, 80, 120, ... For the list not containing 120, accept the first 3 correct multiples or one error in the first 4 multiples
		A1	for 120 or $2 \times 2 \times 2 \times 3 \times 5$ oe	

## June 2023 Paper 3

Question	Answer	Mark	Mark scheme	Additional guidance
24 (a)	63	B1	for 63, accept $3 \times 3 \times 7$ or $3^2 \times 7$	
(b)	15 876	M1  A1	for at least two of $2^2, 3^4, 7^2$ <b>or</b> shows at least 3 multiples of 2268, eg 2268, 4536, 6804 and at least 3 multiples of 441, eg 441, 882, 1323  for 15 876 or $2^2 \times 3^4 \times 7^2$ oe	(A $\Rightarrow$ ) $2^2 \times 3^4 \times 7$ scores 0 marks

