

PRIME FACTORS, HCF AND LCM

Pearson Edexcel - Thursday 4 June 2020 - Paper 2 (Calculator) Foundation Tier

1.

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 or for 2, 2, 3, 7	Condone the use of 1 Accept $2^2 \times 3 \times 7$
	A1		for $2 \times 2 \times 3 \times 7$ oe		
	(b)	420	M1	for at least 3 multiples of both 60 and 84 (can include 60 and 84) or 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 fit this factor tree in part (b) for M1 only
	A1		420 or $2 \times 2 \times 3 \times 5 \times 7$ oe		

Pearson Edexcel - Tuesday 21 May 2019 - Paper 1 (Non-Calculator) Foundation Tier

2.

24		18	M1	for listing factors of 72 and 90, at least 4 correct for each (with no more than 1 incorrect in each list), could be in factor pairs OR for the prime factors of 72 (2, 2, 2, 3, 3) or 90 (2, 3, 3, 5)	Factors of 72: 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72 Factors of 90: 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90 $2, 3^2$ is not enough, it must be a product
			A1	for 18 or 2×3^2 oe SC B1 for answer of 6 or 9 if M0 scored	

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3.

21	(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

Pearson Edexcel - Thursday 2 November 2017 - Paper 1 (Non-Calculator) Foundation Tier

4.

23		$2 \times 2 \times 3 \times 3$	M1	for complete method to find prime factors; could be shown on a complete factor tree with no more than 1 arithmetic error or 2,2,3,3,(1)
			A1	for $2 \times 2 \times 3 \times 3$ oe

Pearson Edexcel – Specimen 2 - Paper 1 (Non-Calculator) Foundation Tier

5.

25		$2^3 \times 3^2 \times 7$	M1	for at least 3 correct divisions by a prime factor (may be seen in a factor tree)
			M1	for 2, 2, 2, 3, 3, 7 (condone inclusion of 1); may be seen in a factor tree
			A1	

Pearson Edexcel – Specimen 2 - Paper 2 (Calculator) Foundation Tier

6.

21		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
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OCR Tuesday 11 June 2019 – Morning (Calculator) Foundation Tier

7.

6	a	30 60 90 120 150	2	B1 for four correct	For B1 ignore wrong values Condone extra correct values for 2 marks
	b	30 cao	1		

OCR Tuesday 6 November 2018 – Morning (Calculator) Foundation Tier

8.

4	(a)	(i)	Any even number	1		Accept more than one, if all even
		(ii)	1 or 5 or 25	1		Accept more than one, if all correct Condone 1×25 or 5×5
		(iii)	11 or 13 or 17 or 19	1		Accept more than one, if all correct
		(iv)	Any cube number	1		Accept more than one, if all correct Do not accept e.g. $2 \times 2 \times 2$ or 2^3
	(b)		7	2	M1 for 5, 7 and 7, 13	Could be a correct Venn diagram

OCR Monday 24 May 2018 – Morning (Calculator) Foundation Tier

9.

13	(a)		Showing that 9 is a common factor of 18 and 63	1		9 appearing in both lists of factors. $9 \times 2 = 18$ $9 \times 7 = 63$ or both 18 and 63 can be divided by 9 Venn diagram with 3 and 3 in the centre $18 = 2 \times 3 \times 3$ and $63 = 3 \times 3 \times 7$ oe Accept factor trees with 2,3 and 3 and 3,3,7 at the ends
			Showing there is no greater common factor	1		9 must be clearly identified as the highest factor it may be ringed or underlined. Do not accept 3^2 for 9. If listing factors we need to see a complete list for both 18 and 63 in order to award 2 marks
	(b)		126	2	M1 for listing at least 4 multiples of 18 or $2 \times 3 \times 3 \times 7$ or any common multiple of 18 and 63	could be from Venn diagram approach

OCR Thursday 2 November 2017– Morning (Calculator) Foundation Tier

10.

2	(a)	(i)	Any multiple of 13	1		Allow 13
		(ii)	41, 43 or 47	1		
	(b)		112	2	B1 for any common multiple of 16 and 28 or one complete, correct list of multiples leading to 112 or $2^4 \times 7$	16, 32, 48, 64, 80, 96, 112 or 28, 56, 84, 112

Pearson Edexcel –Sample Papers - Paper 2 (Calculator) Foundation Tier

11.

16		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
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OCR Thursday 25 May 2017 – Morning (Calculator) Foundation Tier

12.

18	(a)	$2 \times 5 \times 7^2$ oe	2	B1 for only 2, 5 and 7 identified or M1 for any correct factor pair of 490	Condone inclusion of 1 for B1 Not 1 and 490
	(b)	12 20 [pm]	4	SC3 for 1220 am OR B2 for LCM as 200 and M1 for 9:00 plus <i>their</i> LCM OR M1 for $25 = 5 \times 5$ and $40 = 2 \times 2 \times 2 \times 5$ and M1 for 9:00 plus <i>their</i> LCM OR B1 for listing [0]925, [0]950, 1015 and B1 for listing [0]940, 1020, 1100	

OCR Tuesday 13 June 2017 – Morning (Calculator) Foundation Tier

13.

19		12 and 30	3	<p>M2 for a complete factor list of 60 e.g. [1] 2,3,4,5,6,10,12,15,20,30 [60] or M1 for the list with at most two errors or [6] 12, 18, 24, 30 [36, ...] or B1 for 2 numbers with a HCF of 6 or LCM of 60</p>	<p>May be seen as products eg 2×30 Error, omission or repeat Eg 6 and 12, 12 and 18, 18 and 24 Eg 4 and 15, 10 and 12, 20 and 30</p>
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AQA Thursday 4 June 2020 – Morning (Calculator) Foundation Tier

14.

Q	Answer	Mark	Comments
24	15	B2	<p>B1 answer 3 or answer 5 or answer 3×5 or $(75 =) 3 \times 5 \times 5$ or $(75 =) 3 \times 5^2$ or $(105 =) 3 \times 5 \times 7$ or (1) 3 5 15 25 (75) or (1) 3 5 7 15 21 35 (105)</p>
	Additional Guidance		
	NB 15 from $3 + 5 + 7$ does not score unless working for B1 seen elsewhere		
	Prime factor responses for B1 may be seen in repeated division, on a factor tree or in a Venn diagram		
	eg1 3 5 5 in repeated division or factor tree for 75		B1
	eg2 3 5 7 inside one circle of a Venn diagram		B1
	eg3 3 5 inside the intersection of a Venn diagram		B1
	For products of prime factors, repeated division, factor trees and Venn diagrams, ignore inclusion of factors of 1		
A repeated division needs to reach the final prime factor but does not need to reach 1			
B1 can be awarded even if LCM is subsequently worked out			
List of factors may be seen as factor pairs			

AQA Tuesday 21 May 2019 – Morning (Non-Calculator) Foundation Tier

15.

9(a)	1, 2, 3, 6, 9, 18	B2	<p>B1 the 6 correct values, some or all repeated, with no incorrect values</p> <p>or</p> <p>5 or 6 correct values with up to 2 incorrect values</p> <p>or</p> <p>4 correct values with 0 or 1 incorrect values</p> <p>or</p> <p>3 correct values with 0 incorrect values</p>
	Additional Guidance		
	Use of products or 'coordinates' is B1 max for at least 2 correct products with 0 or 1 incorrect products eg 1×18 , 2×9 , 3×6 eg 1×18 , 2×9 , 3×6 , 4×4		B1 B1
	Lists with repeated values cannot score B2, but ignore repeated values in any format for B1 eg 1, 2, 3, 3 eg 1×18 , 2×9 , 3×6 , 18×1 , 9×2 , 6×3		B1 B1
	If a prime factor 'tree' or similar is used, factors must be identified		

9(b)	60	B2	<p>B1 any common multiple of 12 and 15 eg 120, 180</p> <p>B1 at least the first two multiples correct for each of 12 and 15 (ignore errors after first two)</p> <p>B1 $(12 =) 2(\times)2(\times)3$ and $(15 =) 5(\times)3$ and $2(\times)2(\times)5(\times)3 ((\times)3)$ (or the equivalent work seen in a correct Venn diagram)</p>
	Additional Guidance		
	Answer 60 with error(s) seen may be B0 or B1 but cannot be B2 These error(s) may occur after the 60 – but cannot be ignored		
	If they have listed both multiples and factors, they must choose multiples to score		
	For B2, 60 must be chosen and not just at the end of a list of multiples		

AQA Thursday 25 May 2017– Morning (Non-Calculator) Foundation Tier

16.

26	Any correct product of 36 using a prime factor	M1	2 and 18 2 and 2 and 9 3 and 12 3 and 3 and 4 2 and 3 and 6 May be on a factor tree or repeated division
	2 and 2 and 3 and 3	A1	oe May be on a factor tree or repeated division
	$2^2 \times 3^2$ or $3^2 \times 2^2$	A1	
	Additional Guidance		
	Allow any number of 1s included as factors for up to M1A1 only		
	$1 \times 2^2 \times 3^2$		M1A1A0
	$2^2 \cdot 3^2$		M1A1A1
	$2 + 2 + 3 + 3$		M1A1A0
	$2^2 + 3^2$		M1A1A0
	$2^2 3^2$ or $2^2, 3^2$		M1A1A0
	$2 \times 2 \times 3 \times 3$ and $2^2 \times 3^2$ on answer line but $2 \times 2 \times 3 \times 3 = 2^2 \times 3^2$ on answer line		M1A1A0 M1A1A1
	$2^2 \times 3^2 = 6^4$		M1A1A0
	6×6 with no prime factorisation		M0A0A0