



THIRD SPACE
LEARNING

Mathematics

Paper 1

(Calculator)

Foundation Tier

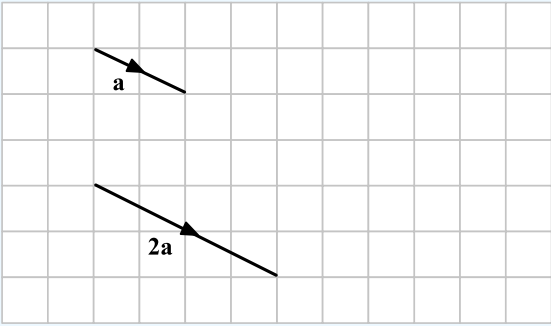
Mark Scheme

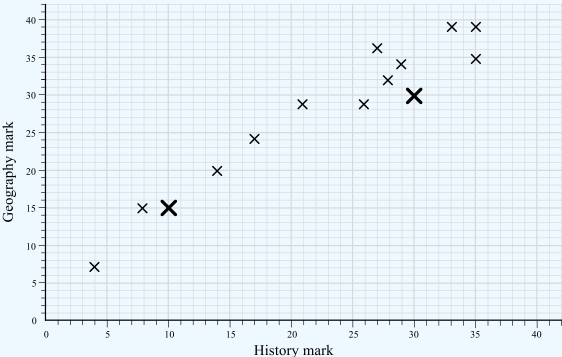
OCR GCSE

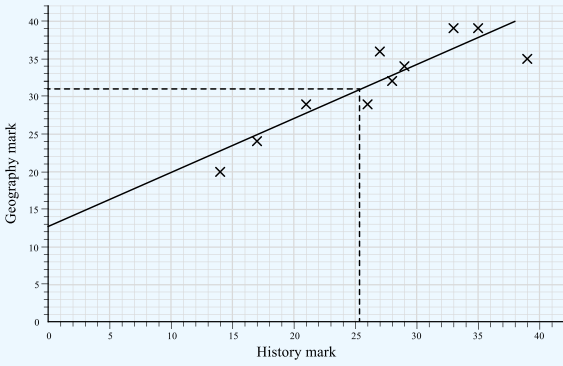
SET 5

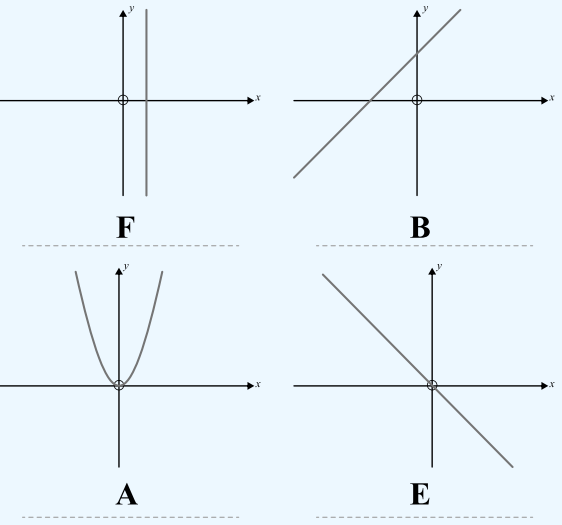
Question	Working	Answer	Notes								
Q1a		Any odd number									
Q1b		Any multiple of 9									
Q1c		49									
Q1d		Any prime number greater than 10									
Q2a	$\frac{1}{6}$	B									
Q2b	$P(1, 2, 3 \text{ or } 4) = \frac{4}{6}$	E									
Q3a		$\frac{77}{100}$									
Q3b		0.375									
Q3c		48%									
Q4a		38700									
Q4b		0.38									
Q5a		Pyramid or Square based pyramid									
Q5b	<table border="1"> <thead> <tr> <th>Property</th> <th>Shape/shapes</th> </tr> </thead> <tbody> <tr> <td>1 line of symmetry</td> <td><i>C</i></td> </tr> <tr> <td>2 lines of symmetry</td> <td><i>A, D</i></td> </tr> <tr> <td>Rotational symmetry order 2</td> <td><i>A, B, D</i></td> </tr> </tbody> </table>	Property	Shape/shapes	1 line of symmetry	<i>C</i>	2 lines of symmetry	<i>A, D</i>	Rotational symmetry order 2	<i>A, B, D</i>		1 mark for each row correct
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Question	Working	Answer	Notes
Q6a		$4b$	
Q6b		$9a$	
Q6c		y^3	
Q7	$69871 - 69543 = 328$ $328 \times 45 = 14760p$ $14760p = \text{£}147.60$	£147.60	M1 $69871 - 69543 = 328$ M1 Multiply by 45 or 0.45 M1 14760p or £147.60 A1 Correct answer in £
Q8a	$180 - 148 = 32$	32° because angles on a straight line add up to 180°	B1 32° B1 Correct reason
Q8b	$115 + 74 + 132 = 321$ $360 - 321 = 39$	39° because angles in a quadrilateral add up to 360°	B1 39° B1 Correct reason
Q9a	0711 to 0744	33 minutes	
Q9b	Leave house by 0803 Catch bus in Saron at 0811 Get off bus in Carmarthen at 0855 Arrive at office 0906		B1 Leave house by 0803 B1 Catch bus in Saron at 0811 Get off bus in Carmarthen at 0855 B1 Arrive at office 0906
Q10a		4.8km	
Q10b	$9\text{km} = 5.6 \text{ miles}$ $90\text{km per hour} = 56 \text{ miles per hour}$	Yes	M1 $9\text{km} = 5.6 \text{ miles}$ M1 $90\text{km per hour} = 56 \text{ miles per hour}$ A1 Yes he breaks the speed limit - correct conclusion following correct working

Question	Working	Answer	Notes
<p>Q11</p>	$3000 \times 5 = 15000$ $24 \times 16 = 384 \text{ tubes of toothpaste per box}$ $15000 \div 384 = 39.065$	<p>39</p>	<p>M1 $3000 \times 5 = 15000$ M1 $24 \times 16 = 384$ M1 $15000 \div 384 = 39.065$ A1 39 – must be whole number</p>
<p>Q12</p>	$a = 379 - 13^2 = 210$ $b = \frac{24 \times 32}{12.8} = 60$ $\frac{210}{60} = 3.5$	<p>3.5</p>	<p>M1 210 or 60 A1 cao</p>
<p>Q13</p>	$\frac{11 + 3 + 14}{50} = \frac{28}{50}$	<p>$\frac{28}{50}$</p>	<p>M1 $11 + 3 + 14 = 28$ or $1 - \frac{22}{50}$ seen A1 oe</p>
<p>Q14a</p>		<p>$\begin{pmatrix} 2 \\ -1 \end{pmatrix}$</p>	<p>B1 2 B1 -1</p>
<p>Q14b</p>			

Question	Working	Answer	Notes																				
<p>Q15</p>	<table border="1" data-bbox="286 256 835 416"> <thead> <tr> <th></th> <th>Margherita</th> <th>Hawaiian</th> <th>Pepperoni</th> <th>Total</th> </tr> </thead> <tbody> <tr> <th>Child</th> <td>42</td> <td>18</td> <td>22</td> <td>82</td> </tr> <tr> <th>Adult</th> <td>20</td> <td>36</td> <td>12</td> <td>68</td> </tr> <tr> <th>Total</th> <td>62</td> <td>54</td> <td>34</td> <td>150</td> </tr> </tbody> </table>		Margherita	Hawaiian	Pepperoni	Total	Child	42	18	22	82	Adult	20	36	12	68	Total	62	54	34	150	<p>22</p>	<p>M1 Sets up 2 way table M1 68 adults M1 36 adults/54 people chose hawaiian A1 22 children chose pepperoni</p>
	Margherita	Hawaiian	Pepperoni	Total																			
Child	42	18	22	82																			
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Total	62	54	34	150																			
<p>Q16a</p>		<p>$n > -1$</p>																					
<p>Q16b</p>	<p>$3p - 11 < p + 5$ $2p - 11 < 5$ $2p < 16$ $p < 8$</p>	<p>$p < 8$</p>	<p>M1 $2p - 11 < 5$ M1 $2p < 16$ A1 $p < 8$</p>																				
<p>Q17</p>	$\frac{50 \times 6 + 150 \times 16 + 250 \times 11 + 350 \times 10 + 450 \times 7}{6 + 16 + 11 + 10 + 7}$ $= \frac{12100}{50}$ $= 242$	<p>242</p>	<p>M1 Correct midpoints multiplied by frequencies M1 “12100” ÷ “50” (where their “12100” has come from five products within the group intervals and their “50” is $\sum f$) A1 cao</p>																				
<p>Q18</p>																							

Question	Working	Answer	Notes
Q18b		Positive correlation	
Q18c		31	<p>M1 For method to read off (e.g. line of best fit or a line up from 25)</p> <p>A1 for an answer in the range 26 - 36</p>
Q18d		Geography seems easier as the marks are generally higher	
Q19a	Difference = 5	$5n + 1$	<p>B2 for fully correct answer (Award B1 for $5n + k$, where $k \neq 1$, or k missing)</p>
Q19b	$n^2 + 3 = 172$ $n^2 = 169$ $n = 13$ 172 is 13th term 14th term: $14^2 + 3 = 199$	199	<p>M1 Attempt to solve $n^2 + 3 = 172$</p> <p>M1 Establish 14th term needed</p> <p>A1 cao</p>

Question	Working	Answer	Notes
<p>Q20</p>			
<p>Q21a</p>	<p>3 parts = 27 1 part = 9 5 parts = $5 \times 9 = 45$</p>		<p>M1 Divides by 3 to give 1 part A1 Multiplies by 5 to give 5 parts</p>
<p>Q21b</p>	<p>$\frac{3}{5}$ of 45 = 27 $\frac{2}{3}$ of 27 = 18 27 + 18 = 45 have popcorn $\frac{45}{72} \times 100 = 62.5\%$</p>	<p>62.5%</p>	<p>M1 $\frac{3}{5}$ of 45 = 27 M1 $\frac{2}{3}$ of 27 = 18 A1 $\frac{45}{72} \times 100 = 62.5\%$</p>
<p>Q22</p>	<p>$\tan(x) = \frac{6}{11}$ $x = \tan^{-1}\left(\frac{6}{11}\right)$ $x = 28.61045967$</p>	<p>$x = 28.6^\circ$</p>	<p>M1 $\tan(x) = \frac{6}{11}$ or $x = \tan^{-1}\left(\frac{6}{11}\right)$ A1 Correct answer, rounded to 3sf</p>

Question	Working	Answer	Notes
Q23a		10 million	
Q23b	$(10^3)^a \times (10^5)^b = 10^{3a} \times 10^{5b}$ $= 10^{3a+5b}$		M1 $(10^3)^a \times (10^5)^b$ A1 Correct working to reach $3a + 5b$
Q24	Try different values: $7000 \times 1.06^4 = 8837.34$ $7000 \times 1.06^5 = 9367.58$ $7000 \times 1.06^6 = 9929.63$	$n = 5$	M1 Tries at least 1 value for n A1 cao
Q25	$50^2 + 70^2 = 7400$ $\sqrt{7400} = 86.02(\dots)$ $86.02(\dots) + 50 + 70 = 206.02(\dots)$ $206.02(\dots) \times 2.50 = \text{£}515.058 \text{ (131}\dots)$	£515.06	M1 Attempts to use Pythagoras theorem M1 ft Their “86.02” + 50 + 70 (dep on previous M1) M1 ft Multiplies their “206.02” by 2.50 A1 cao
Q26	$15a + 10b = 55$ $8a - 10b = 60$ $23a = 115$ $a = 5$ $3 \times 5 + 2b = 11$ $15 + 2b = 11$ $2b = -4$ $b = -2$	$a = 5$ $b = -2$	M1 Correct method to eliminate either a or b M1 (dep) For substituting found value in one of the equations A1 Both values correct


Question	Working	Answer	Notes
Q27a	$\frac{1}{0.4} = 2.5$	2.5	
Q27b		$5.25 \leq x < 5.35$	B1 5.25 B1 5.35
Q28	Co-interior angle = $180 - 121 = 59$ Bearing = $360 - 59 = 301^\circ$	301°	M1 Correct sketch with bearing labelled or correct first step A1 cao
Q29	Scale factor: $18 \div 12 = 1.5$ $1.5(2x + 10) = 5x + 9$ $3x + 15 = 5x + 9$ $15 = 2x + 9$ $6 = 2x$ $x = 3$ Perimeter = $5 \times 3 + 9 + 3 \times 3 + 4 + 18$ $= 24 + 13 + 18$ $= 55\text{cm}$	55cm	B1 Scale factor: $18 \div 12 (= 1.5)$ M1 "Their 1.5" $\times (2x + 10) = 5x + 9$ A1 $x = 3$ M1 (dep at least M1 previously awarded) Substitutes their "x" to find perimeter A1 cao

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