



THIRD SPACE
LEARNING

Mathematics

Paper 2

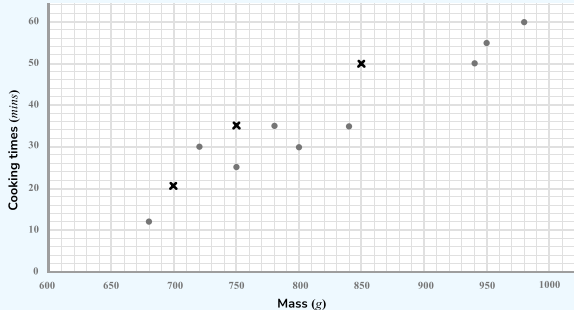
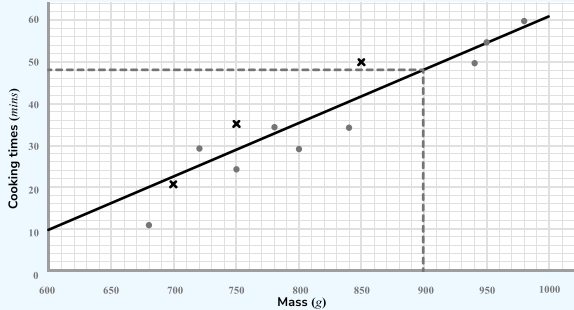
(Calculator)

Higher Tier

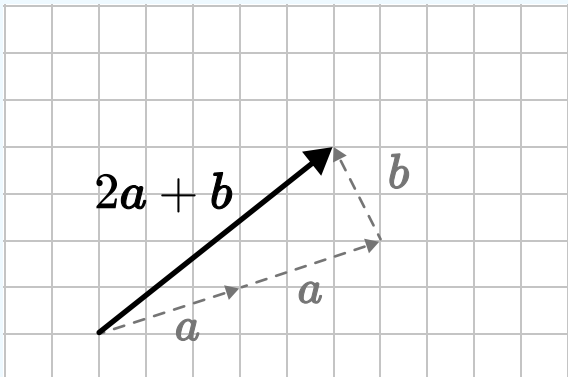
Mark Scheme

Edexcel GCSE

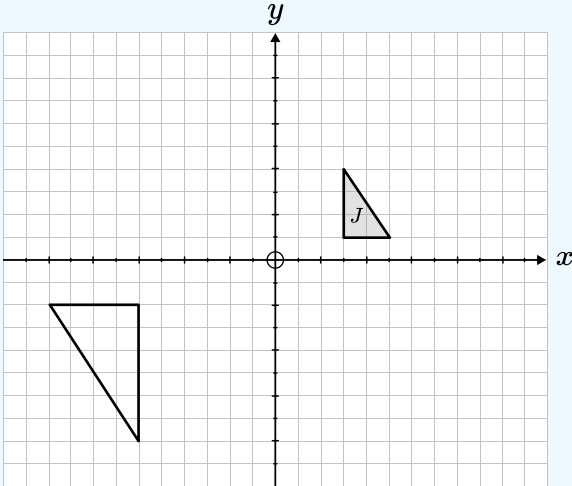
SET 2

Question	Working	Answer	Notes
Q1a			<p>M1 One point plotted correctly</p> <p>A1 All three points correct</p>
Q1b			B1 Positive (correlation)
Q1c		48 minutes	<p>M1 Line of best fit drawn</p> <p>A1 Answer in range 46 - 50 minutes</p>
Q2	<p>Area of trapezium: $\frac{1}{2} \times (6 + 9) \times 4 = 30\text{cm}^2$</p> <p>40% of 30 = 12</p> <p>Area of rectangle = 30 + 12 = 42cm^2</p> <p>42 ÷ 4 = 10.5cm</p>	10.5cm	<p>A1 Area of trapezium = 30cm^2</p> <p>M1 <i>ft</i> 40% of their area correct</p> <p>M1 Area of rectangle = 42cm^2</p> <p>A1 cao</p>

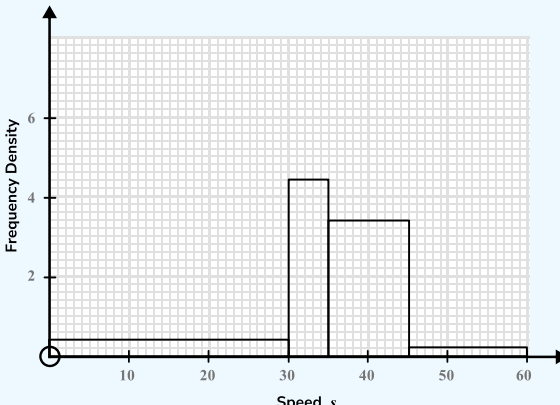
Question	Working	Answer	Notes
Q3	$500 \div 5 = 100g$ to make 4 doughnuts $100 \times 3 = 300g$ to make 12 doughnuts $30 \times 4 = 1200g$ to make 4 boxes of doughnuts $1200g < 1.5kg$ so she has enough.	Yes	M1 Attempt to use proportion to find the amount for flour for 12 or 48 doughnuts M1 300g for 12 doughnuts M1 1200g or 1.2kg seen A1 Correct statement following correct working
Q4	$9a + 6b = 60$ $8a - 6b = 25$ $17a = 85$ $a = 5$ $3 \times 5 + 2b = 20$ $15 + 2b = 20$ $2b = 5$ $b = 2.5$	$a = 5$ $b = 2.5$	M1 Convert both equations to make coefficients of a or b equal and attempt to add or subtract equations (correct operation based on the equations) A1 $a = 5$ or $b = 2.5$ A1 Both values correct
Q5	$AC^2 = 13^2 - 5^2 = 144$ $AC = 12cm$ $\tan(x) = \frac{12}{10}$ $x = \tan^{-1}\left(\frac{12}{10}\right)$ $x = 50.19442891$	50.2°	M1 $13^2 - 5^2$ seen or implied A1 $AC = 12cm$ M1 $\tan(x) = \frac{\text{their } AC}{10}$ oe A1 cao

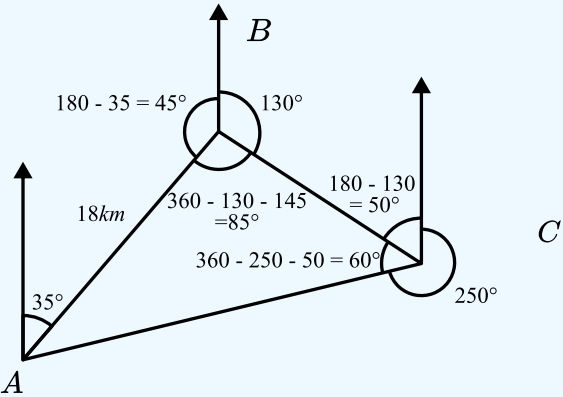
Question	Working	Answer	Notes						
Q6	<table><tr><td>$y = \frac{1}{2}x + 3$</td><td>B</td></tr><tr><td>$y = x^3$</td><td>D</td></tr><tr><td>$y = \frac{1}{x}$</td><td>C</td></tr></table>	$y = \frac{1}{2}x + 3$	B	$y = x^3$	D	$y = \frac{1}{x}$	C		A1 per correct response
$y = \frac{1}{2}x + 3$	B								
$y = x^3$	D								
$y = \frac{1}{x}$	C								
Q7			M1 Vector <i>a</i> or <i>b</i> drawn on grid M1 Vector 2 <i>a</i> seen or implied A1 Correct vector 2 <i>a</i> + <i>b</i> Or M1 $2\begin{pmatrix} 3 \\ 1 \end{pmatrix} + \begin{pmatrix} -1 \\ 2 \end{pmatrix}$ M1 $\begin{pmatrix} 5 \\ 4 \end{pmatrix}$ A1 Correct vector drawn						
Q8	$6 \times 350 = \text{£}2100$ $150 \times 2 \times 2 = \text{£}600$ $\text{£}2100 + \text{£}2400 + \text{£}600 = \text{£}5100$ $\text{£}5100 \div \text{£}1200 = 4.25$ $0.25 \text{ years} = 3 \text{ months}$	4 years 3 month	M1 $6 \times 350 = \text{£}2100$ M1 $\text{£}5100$ seen M1 Their total cost divided by $\text{£}1200$ A1 Correct answer in years and months						
Q9	$5ny = 3m + 4$ $5ny - 4 = 3m$ $\frac{5ny - 4}{3} = m$	$m = \frac{5ny - 4}{3}$	M1 Correct first step A1 cao						

Question	Working	Answer	Notes
Q10a	$2.8 \div 3.5 \times 100 = \text{£}80$	£80	M1 Divide by 3.5 or by 0.035 A1 cao
Q10b	$\text{£}130 \times 1.035 \times 1.035 \times 1.035 = \text{£}144.13$	£144.13	M1 1.035 seen M1 Attempt to increase by 3.5% three times using a compound method A1 cao
Q11	<p>Izzy: probability is $\frac{1}{6}$</p> <p>Jim: possible combinations are $1 + 5, 2 + 4, 3 + 3, 4 + 2$ and $5 + 1$.</p> <p>Each combination has a probability of $\frac{1}{6} \times \frac{1}{6} = \frac{1}{36}$ $5 \times \frac{1}{36} = \frac{5}{36}$</p>	Izzy	<p>M1 Probability for Izzy correct</p> <p>M1 5 combinations for Jim identified</p> <p>M1 $\frac{1}{36}$ or $\frac{5}{36}$ seen</p> <p>A1 Correct answer following correct working</p>
Q12a	$2 \times 1^2 + 1 = 3$ $2 \times 2^2 + 1 = 9$ $2 \times 3^2 + 1 = 19$	3, 9, 19	<p>M1 At least one value correct</p> <p>A1 All three correct</p>

Question	Working	Answer	Notes
Q12b	3, 5, 7, 9, 11 The n th term is $2n + 1$ 1, 4, 9, 16, 25 The n th term is n^2	$\frac{2n + 1}{n^2}$	M1 $2n + 1$ or n^2 seen M1 Numerator or denominator correct A1 cao
Q13	Katie: $9^4 = 6561$ Nelly: $10^4 = 10000$ $10000 - 6561 = 3439$	3439	M1 Number of combinations for Katie or Nelly correct M1 <i>ft</i> an attempt to subtract their answers above A1 cao
Q14	Upper bound for one side is 3.85cm $5 \times 3.85 = 19.25\text{cm}$	19.25cm	M1 Upper bound for one side 3.85cm A1 cao
Q15			M1 An enlargement of scale factor -2 A1 Correct position

Question	Working	Answer	Notes
Q16	2 litres in the ratio 11 : 29 $2000 \div 40 = 50$ $50 \times 11 = 550\text{ml}$, $50 \times 29 = 1450\text{ml}$ In jug A: 600ml in ratio 1 : 3 $600 \div 4 = 150$ $1 \times 150 = 150\text{ml}$, $3 \times 150 = 450\text{ml}$ Jug B: $550 - 150 = 400\text{ml}$ syrup $1450 - 450 = 1000\text{ml}$ sparkling water Ratio is $400 : 1000 = 2 : 5$	2 : 5	M1 550ml syrup and 1450ml sparkling water in final mixture M1 150ml syrup and 450ml sparkling water in jug A M1 400ml syrup and 1000ml sparkling water in jug B A1 2:5 oe
Q17a	$4x^2 - 8x - 7 = 0$ $x = \frac{8 \pm \sqrt{(-8)^2 - (4 \times 4 \times -7)}}{2 \times 4}$ $= \frac{8 \pm \sqrt{176}}{8}$ $= 2.66 \text{ or } -0.66$	$x = 2.66$ or $x = -0.66$	M1 Rearranging equation so that one side is 0 M1 Correctly substituting values into quadratic formula A1 Two correct solutions
Q17b	$2^{2x-3} = 2^5$ $2x - 3 = 5$ $x = 4$	$x = 4$	M1 Simplifying LHS to 2^{2x-3} M1 Using the fact that $32 = 2^5$ A1 cao

Question	Working	Answer	Notes															
Q18a	<table><thead><tr><th>Speed, (<i>s</i> mph)</th><th>Frequency</th><th>Frequency Density</th></tr></thead><tbody><tr><td>$0 \leq s < 30$</td><td>12</td><td>0.4</td></tr><tr><td>$30 \leq s < 35$</td><td>22</td><td>4.4</td></tr><tr><td>$35 \leq s < 45$</td><td>34</td><td>3.4</td></tr><tr><td>$45 \leq s < 60$</td><td>3</td><td>0.2</td></tr></tbody></table> 	Speed, (<i>s</i> mph)	Frequency	Frequency Density	$0 \leq s < 30$	12	0.4	$30 \leq s < 35$	22	4.4	$35 \leq s < 45$	34	3.4	$45 \leq s < 60$	3	0.2		M1 Frequency densities correctly calculated M1 <i>ft</i> their frequency densities used to plot histogram A1 Fully correct histogram
Speed, (<i>s</i> mph)	Frequency	Frequency Density																
$0 \leq s < 30$	12	0.4																
$30 \leq s < 35$	22	4.4																
$35 \leq s < 45$	34	3.4																
$45 \leq s < 60$	3	0.2																
Q18b	Most cars are under 40 <i>mph</i> . Not many are under 30 <i>mph</i> or up to 60 <i>mph</i> .	40 <i>mph</i>	B1 cao															
Q19a	$V = \frac{1}{3} \times \pi \times 5^2 \times 12 = 314.159...$	314.2 <i>cm</i> ³	M1 Attempt to substitute values into formula for volume of a cone A1 cao															
Q19b	Area scale factor 4 so length scale factor $\sqrt{4} = 2$ Volume scale factor $2^3 = 8$ Volume is $8 \times 314.159... = 2513.274...$	2513 or 2514 <i>cm</i> ³	M1 Length scale factor 2 seen or implied M1 Volume scale factor 2^3 or 8 seen or implied A1 correctly rounded from their working (use of 314.2 gives 2514 <i>cm</i> ³ or 314.1592654.. gives 2513 <i>cm</i> ³)															

Question	Working	Answer	Notes
Q20	$2n^2 + 8n + n^2 - 8n + 16 = 3n^2 + 16$ n^2 is always greater than or equal to 0 so $3n^2$ is always greater than or equal to 0. Adding 16 means it is always positive.		M1 Brackets expanded correctly to give $2n^2 + 8n + n^2 - 8n + 16$ M1 Simplified to $3n^2 + 16$ A1 Correct statement following correct working
Q21	 $\frac{x}{\sin(85)} = \frac{18}{\sin(60)}$ $x = \frac{18}{\sin(60)} \times \sin(85) = 20.7km$	20.7km	M1 A roughly correct sketch with the given bearings reasonably correctly drawn M1 Angle ABC = 85° M1 Angle BCA = 60° M1 <i>ft</i> Use of sine rule with their values correctly substituted A1 cao

Help ease the pressure with a personalised revision programme for each of your target KS4 students

Our one to one GCSE revision programme is designed to help your target students reach their potential in their GCSE maths exams.

Our specialist maths tutors work one to one with each student, focusing on securing core KS4 content and building familiarity with the kinds of questions they'll be tackling in their GCSE exams.

Get in touch today:

✉ hello@thirdspacelearning.com

🔍 thirdspacelearning.com

☎ 0203 771 0095