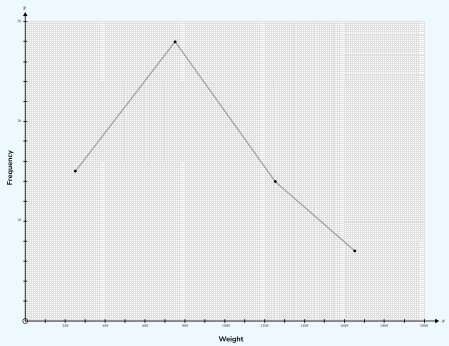
THIRD SPACE LEARNING

Paper 3 (Calculator) Mark Scheme Higher

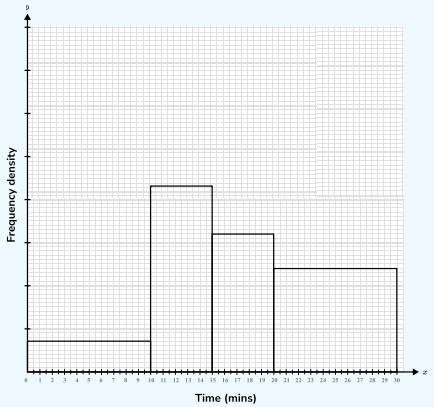
Edexcel

Question	Working	Answer	Notes
Q1a	30÷12 = 2.5 120×2.5 = 300g butter 150×2.5 = 375g sugar 2×2.5 = 5 eggs 160×2.5 = 400g flour	No she does not have enough flour	M1 2.5 seen M1 At least 2 quantities correctly calculated A1 No with a correct explanation
Q1bi		120:150	A1 cao
Q1bii		1:1.25	M1 Any correct simplification of the ratio A1 cao
Q2			M1 At least three points plotted correctly M1 All four points plotted correctly A1 Points joined with straight lines
Q3a	40÷1 = 40km/h 30÷0.5 = 60km/h 60÷2 = 30km/h	B	M1 Calculating at least 1 speed correctly A1 cao
Q3b	130÷3.5 = 37.1km/h	Yes	M1 Attempt at using total speed and total time A1 Yes with relevant working
Q3c	225÷60 = 3.75	3.75 hours	A1 cao

Question	Working	Answer	Notes
Q4a	$1200 \times 0.8 = £960$	£960	M1 20% of 1200 = 240 or 1200×0.8 seen A1 cao
Q4b	£480=80% £60=10% £600=100%	£600	M1 £480=80% seen A1 cao
Q5a	$x^2 + y = 16y + 8w$ $x^2 - 8w = 15y$ $y = \frac{x^2 - 8w}{15}$	$y = \frac{x^2 - 8w}{15}$	M1 Expanding bracket and moving both y terms to the same side A1 cao
Q5b	$y = \frac{(-4)^2 - 8 \times -7}{15} = \frac{16 + 56}{15} = 4.8$	4.8	M1 Substituting -4 and -7 into their formula A1 oe
Q6a	$\frac{-3 - -4}{4 - 0} = \frac{1}{4}$	$\frac{1}{4}$	M1 Picking two points and using $\frac{y_2 - y_1}{x_2 - x_1}$ A1 oe
Q6b		$y = \frac{1}{4}x - 4$	B1 for the correct y-intercept -4 A1 oe
Q7	$5 \times 4 \times 10 \times 5 = 1000$	1000	M1 Multiplying 4 numbers M1 At least 3 of those numbers correct A1 cao
Q8a		$\begin{pmatrix} 12 \\ -16 \end{pmatrix}$	A1 cao
Q8b	$\begin{pmatrix} 3 \\ -4 \end{pmatrix} - 2\begin{pmatrix} -2 \\ -7 \end{pmatrix} = \begin{pmatrix} 3 - -4 \\ -4 - -14 \end{pmatrix} = \begin{pmatrix} 7 \\ 10 \end{pmatrix}$	$\begin{pmatrix} 7 \\ 10 \end{pmatrix}$	
Q9a	180 - 78 - 58 = 44	All of the angles are equal	B1 Correct explanation with supporting evidence

Question	Working	Answer	Notes
Q9b	$18 \div 8 = 2.25$ $11 \times 2.25 = 24.75\text{cm}$	24.75cm	M1 Scale factor 2.25 seen A1 cao
Q10a	$sin(x) = \frac{10.5}{12}$ $x = sin^{-1}(\frac{10.5}{12}) = 16.0^{\circ}$	61.0°	B1 for the right angle ABC M1 Use of sin(x)= $\frac{O}{H}$ A1 cao
Q10bi		61.0°	B1 cao
Q10bii		Alternate segment theorem	B1 cao
Q11	P2020: 1.4(380-90)=406 P2021: 1.4(406-90)=442.4 P2022: 1.4(442.4-90)=493.36	493	M1 Applying iterative formula once A1 cao
Q12	P(Y+R): $\frac{6}{14} \times \frac{8}{13} = \frac{48}{182}$ P(R+Y): $\frac{8}{14} \times \frac{6}{13} = \frac{48}{182}$ Total probability: $\frac{48}{182} + \frac{48}{182} = \frac{96}{182}$	$\frac{96}{182}$	M1 $\frac{6}{14}$ and $\frac{8}{14}$ and at least one of $\frac{6}{13}$ or $\frac{8}{13}$ seen M1 $\frac{6}{14} \times \frac{8}{13} = \frac{48}{182}$ M1 $\frac{8}{14} \times \frac{6}{13} = \frac{48}{182}$ A1 oe
Q13a		The initial number of trees	B1 Correct explanation
Q13b		10%	B1 cao

Question	Working	Answer	Notes
Q13c	1 year: 22500 2 years: 20250 3 years: 18225 4 years: 16402.5 5 years: 14762.25 6 years: 13286.025 7 years: 11957.4225	7 years	M1 Correctly calculating the number of trees in two consecutive years A1 cao
Q14a	$(5x^2 + 18x - 8)(2x + 3)$ $10x^3 + 15x^2 + 36x^2 + 54x - 16x - 24$ $10x^3 + 51x^2 + 38x - 24$	$10x^3 + 51x^2 + 38x - 24$	M1 Correctly expanding 2 brackets M1 Correctly multiplying by third bracket A1 Fully simplified answer
Q14b		$(2x+5y)(2x-5y)$	M1 Two terms that multiply to $4x^2$ or $-25y^2$ A1 cao
Q15	R:G = 3:5 = 12:20 G:B = 4:7 = 20:35 R:G:B = 12:20:35 536÷67 = 8 Red cars: 12×8 = 96	96	M1 Converting ratios to a common number for green cars M1 Dividing 536 by 67 A1 cao
Q16a		He has done 2×2 = 4	B1 Correct explanation
Q16b	$\sqrt{8} = \sqrt{2^3} = 2^{\frac{3}{2}}$ $2 \times 2^{\frac{2}{3}} = 2^{\frac{5}{2}}$	$2^{\frac{5}{2}}$	M1 $\sqrt{8} = \sqrt{2^3} = 2^{\frac{3}{2}}$ A1 cao

Question	Working	Answer	Notes
Q17a	$43 \div 5 = 8.6$ Height of 20 minutes to 30 minutes bar is 4.8 $10 \times 4.8 = 48$	48	M1 $43 \div 5 = 8.6$ M1 Bar height 4.8 seen A1 cao
Q17b	Frequency density: $14 \div 10 = 1.4$ 		A1 Correct bar on histogram
Q18	Upper bound for area: 3.85m Lower bound for length: 2.35m Upper bound for width: $\frac{3.85}{2.35} = 1.638m$	1.638m	M1 Upper bound for area correct M1 Dividing upper bound for area by lower bound for length A1 cao

Question	Working	Answer	Notes
Q19	$y = 3x - 5$ $x^2 + (3x - 5)^2 = 25$ $x^2 + 9x^2 - 30x + 25 = 25$ $10x^2 - 30x = 0$ $10x(x - 3) = 0$ $x = 0$ or $x = 3$ When $x = 0$, $y = 3$ $0 - 5 = -5$ When $x = 3$, $2 = 3$ $3 - 5 = 4$ (0, -5) and (3, 4)	(0, -5) and (3, 4) x = 0 and y = -5 Or x = 3 and y = 4	M1 Substituting $3x - 5$ into $x^2 + y^2 = 25$ M1 Correctly expanding $(3x - 5)^2$ M1 Simplifying to $10x^2 - 30x = 0$ M1 Solving for x M1 Substituting and finding values of y
Q20a	$\sqrt{3^2 - 1^2} = \sqrt{8}$	$\sqrt{8}$	M1 Correctly applying Pythagoras' theorem A1 Correct exact answer
Q20b	$cos(x) = \frac{0.5}{\sqrt{8}}$ $x = cos^{-}1(\frac{0.5}{\sqrt{8}}) = 79.8^{\circ}$	79.8°	M1 Using 0.5 and $\sqrt{8}$ M1 Using $cos(x) = \frac{A}{H}$ A1 cao
Q20c	Height of trapezium: $\sqrt{3^2 - 0.5^2} = 2.9580$ Area of trapezium: $\frac{1}{2}(4 + 5) \times 2.9580 = 13.3m^2$	$13.3m^2$	M1 Using Pythagoras' theorem to calculate height of trapezium A1 cao

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