

INTERNATIONAL GCSE MATHEMATICS

9260/2C

Core Tier Paper 2C

Mark scheme

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2 4 B Y 9 2 6 0 / 2 C / M S

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Key to mark types and abbreviations

M	Method marks are awarded for a correct method which could lead to a correct answer.
A	Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
B	Marks awarded independent of method.
ft	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
SC	Special case. Marks awarded for a common misinterpretation which has some mathematical worth.
M dep	A method mark dependent on a previous method mark being awarded.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
oe	Or equivalent. Accept answers that are equivalent. eg accept 0.5 as well as $\frac{1}{2}$
[a, b]	Accept values between a and b inclusive.
[a, b)	Accept values $a \leq \text{value} < b$
3.14...	Accept answers which begin 3.14 eg 3.14, 3.142, 3.1416
Use of brackets	It is not necessary to see the bracketed work to award the marks.

Q	Answer	Mark	Comments
1	5 000 000 or 5 million or million(s)	B1	

Q	Answer	Mark	Comments
2	Pyramid	B1	accept pentahedron
	Additional Guidance		
	Ignore non-contradictory extra words		B1

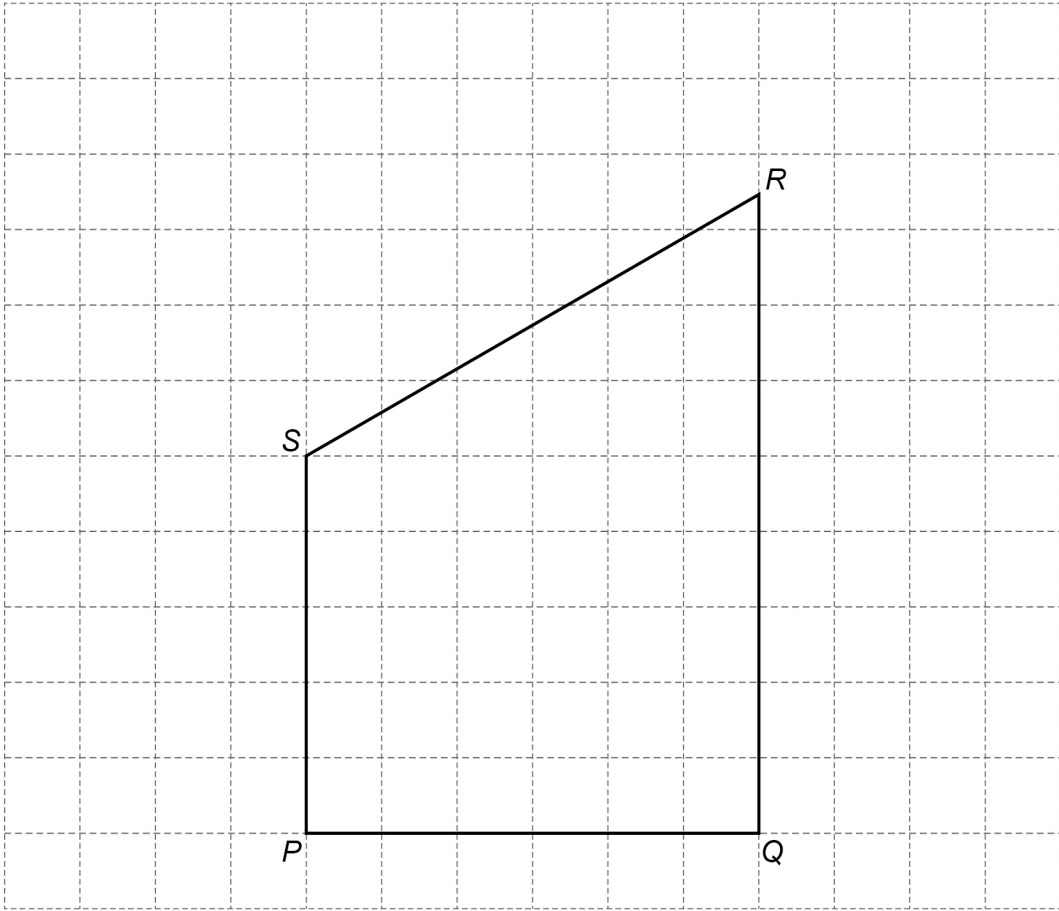
Q	Answer	Mark	Comments
3	15	B1	

Q	Answer	Mark	Comments
4	2	B1	

Q	Answer	Mark	Comments
5	1.07, 1.0704, 1.704, 1.74	B2	B1 one value out of place or descending order
	Additional Guidance		
	Ignore extra zeros which do not affect the value		

Q	Answer	Mark	Comments
6	Alternative method 1		
	$23 \times 36.5(0)$ or $839.5(0)$	M1	oe
	their $839.5(0) - 799.25$	M1dep	
	40.25	A1	
	Alternative method 2		
	$799.25 \div 23$ or 34.75	M1	oe implied by 1.75 oe
	$(36.5(0) - \text{their } 34.75) \times 23$ or 1.75×23	M1dep	
	40.25	A1	

Q	Answer	Mark	Comments
7	$x (+) 3x$ and $-y (+) 6y$ and $4x (+) 5y$	B2	B1 $3x (+) 6y$ or $x (+) 3x$ or $-y (+) 6y$
	Additional Guidance		
	Ignore any attempt to 'solve' the equation		
	For B1 and B2, expression can be seen within a string eg $x - y + 3x + 2y$ eg $x - y + 3x + 6y = 4x + 5y$		B1 B2
	Allow $x + 3x = (+)4x$ and $-y + 6y = (+)5y$ without $4x + 5y$ written		B2

Q	Answer	Mark	Comments
8	$PQ = [5.8, 6.2] \text{ cm}$ PQ is perpendicular to PS $PSR = [118^\circ, 122^\circ]$ QR is parallel to PS	B4	B3 three conditions met B2 two conditions met B1 one condition met
	Additional Guidance		
			
	If their shape is correct ignore labelling of vertices		B4
	If their shape is not correct and vertices are labelled, their labelling must be correct for any conditions met		
	For each condition, vertices must be joined with a straight line. Mark intention.		

Q	Answer	Mark	Comments
9	-7	B1	
	$-\frac{1}{2}$ or -0.5	B1ft	oe ft (their $-7 + 5$) $\div 4$

Q	Answer	Mark	Comments
10(a)	$\frac{13}{20}$	B1	

Q	Answer	Mark	Comments
10(b)	$\frac{25}{8}$	B1	

Q	Answer	Mark	Comments
11(a)	2 3 4 5 6 7	B2	B1 four or five correct values

Q	Answer	Mark	Comments
11(b)	Plots at least three points correctly	M1	ft their points from part (a) $\pm\frac{1}{2}$ small square
	Correct graph drawn through the six correct points	A1	$\pm\frac{1}{2}$ small square
	Additional Guidance		
	Correct graph drawn without plotting the correct points		M1A1
	Ignore line drawn before $x = -2$ and beyond $x = 3$		

Q	Answer	Mark	Comments
12(a)	Family	B1	
	Additional Guidance		
	40		B0
	Family = 40		B1

Q	Answer	Mark	Comments
12(b)	8 in key	B1	
	5 symbols in 'Family'	B1ft	correct or ft their key
	$3\frac{1}{4}$ symbols in 'Netball'	B1ft	correct or ft their key
	Additional Guidance		
	Mark intention for size		
	If numbers of symbols is correct, but order of length is incorrect		B2
	Quarter circle can be any orientation		

Q	Answer	Mark	Comments
13(a)	$180 \div 3$ or 60	M1	may be on diagram
	$(180 - 34) \div 2$ or 73	M1	may be on diagram
	$180 - \text{their } 60 - \text{their } 73$	M1dep	dep on M1M1
	47	A1	

Q	Answer	Mark	Comments	
13(b)	Ticks No and gives correct reason	B1	eg correct reasons this gives the exterior angle it should be 108 it should be $540 \div 5$ it should be $180 - (360 \div 5)$ it should be obtuse (not acute)	
	Additional Guidance			
	No and Method should be $180 \times (5 - 2) \div 5$		B1	
	No and $360 \div 5 = 72$ and the angle is more than 90		B1	
	No and That's not the interior angle formula		B0	

Q	Answer	Mark	Comments
14(a)	$\frac{c-7}{4}$	B1	oe

Q	Answer	Mark	Comments
14(b)	$8x^3$	B1	accept $(2x)^3$

Q	Answer	Mark	Comments
15(a)	7 in the intersection 9 in B only 36 in F only 72 outside the circles	B4	B3 3 correct values B2 2 correct values and 4 values that total 124 B1 1 or 2 correct values or 4 values that total 124
	Additional Guidance		
	Mark the diagram only		

Q	Answer	Mark	Comments
15(b)	$\frac{43}{124}$ or 0.346... or 0.347 or 0.35 or 34.6(...) % or 34.7 % or 35 %	B1ft	ft $\frac{\text{total of their two values in F}}{124}$ or $\frac{\text{total of their two values in F}}{\text{total of their four values}}$ oe fraction or decimal or percentage to at least 2sf
	Additional Guidance		
	Ignore attempts to simplify or convert a correct fraction		

Q	Answer	Mark	Comments
16	$14 + 6 + 14 + 6$ or 40 or $14 + 10 + 14 + 10$ or 48	M1	oe may be seen in a ratio implied by a ratio equivalent to 6 : 5 or 5 : 6
	40 and 48	A1	oe may be seen in a ratio implied by a ratio equivalent to 5 : 6
	5 : 6	A1ft	ft correct and full simplification of any unsimplified ratio with M1A0 awarded condone $1 : 1.2$ or $\frac{5}{6} : 1$ oe in the form $1 : n$ or $n : 1$
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	For A1ft their unsimplified ratio may be implied by their perimeters for <i>ABEF</i> and <i>BCDE</i>		
	Answer 5 : 6 with no incorrect working		M1A1A1

Q	Answer	Mark	Comments
17	$\sqrt{144}$ or 12 seen or $144 = 12 \times 12$	M1	implied by radius 6
	$\pi \times (\text{their } 12 \div 2)^2$ or $\pi \times 6^2$ or $\pi 6^2$	M1dep	oe allow [3.14, 3.142] for π
	[113, 113.112] or 36π	A1	

Q	Answer	Mark	Comments
18(a)	Alternative method 1: Total pay rise + total management bonus		
	$3300 \div 5$ or 660	M1	oe
	their $660 \div 3 \times 2$ or 440	M1dep	oe
	their 660×1270 or 838 200	M1dep	dep on 1st mark
	their $440 \times 1270 \div 4$ or 139 700	M2dep	oe M1dep dep on 1st and 2nd marks their 440×1270 oe or 558 800 or their $440 \div 4$ oe or 110 M1 $1270 \div 4$ oe or 317.5(0)
	977 900	A1	
	Alternative method 2: Total non-management + total management		
	$3300 \div 5$ or 660	M1	oe
	their $660 \div 3 (\times 2)$ or 220 or 440	M1dep	oe
	their $660 \div 3 \times 1270$ or 279 400	M1dep	oe
	their $660 \div 3 \times 2 \times 1270 \times 1.25$ or $440 \times 1587.5(0)$ or 698 500	M2dep	oe dep on 1st and 2nd marks M1 1270×1.25 oe or 1587.5(0)
	977 900	A1	
	Additional Guidance		
	Up to M5 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		

Q	Answer	Mark	Comments
18(b)	It should be greater	B1	

Q	Answer	Mark	Comments
19(a)	Joins (0, 0) to (20, 10)	B1	
	Horizontal line (20, 10) to (30, 10)	B1ft	ft (20, their 10)
	Joins (30, 10) to (60, 35)	B1ft	ft (30, their 10) SC2 for (20, 10), (30, 10) and (60, 35) plotted correctly without lines
	Additional Guidance		
	Mark intention		
	For first and last marks, the lines do not need to be straight but must start and finish at the correct points and must not decrease at any point		
	Ignore any lines that could be working for part (a) or part (b)		

Q	Answer	Mark	Comments
19(b)	35	B1ft	correct or ft total distance travelled for their non-decreasing graph at 60 minutes
	Additional Guidance		
	35 from any or no graph		B1
	If their graph extends beyond 60 minutes, read off at 60 minutes for ft		

Q	Answer	Mark	Comments
20	$\frac{8}{3}$ or $2\frac{2}{3}$	B2	B1 equivalent fraction or mixed number or same units eg 200 (and 75) or 0.075 (and 0.2)

Q	Answer	Mark	Comments
21	Alternative method 1		
	$544 \div (10 + 7)$ or 32	M1	implied by 320 or 224
	$10 \times \text{their } 32 - 7 \times \text{their } 32$ or 96	M1dep	oe implied by eg $32 \times \frac{3}{2}$
	48	A1	
	Alternative method 2		
	$544 \div (10 + 7)$ or 32	M1	implied by 320 or 224
	$10 \times \text{their } 32$ or 320 and $544 \div 2$ or 272	M1dep	
	48	A1	
	Alternative method 3		
	$544 \div (10 + 7)$ or 32	M1	implied by 320 or 224
	$7 \times \text{their } 32$ or 224 and $544 \div 2$ or 272	M1dep	
	48	A1	
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		

Q	Answer	Mark	Comments
22(a)	Alternative method 1		
	$\cos 37 = \frac{x}{19}$ or $(x =) 19 \times \cos 37$	M1	oe eg $\sin(90 - 37) = \frac{x}{19}$ or $\sin 53 = \frac{x}{19}$ or $19 \times \sin 53$ or $\frac{\sin 90}{19} = \frac{\sin 53}{x}$ accept [0.79, 0.8] for $\cos 37$ or $\sin 53$
	15.17... or 15.2	A1	allow 15 with M1 awarded
	Alternative method 2		
	$x^2 + (19 \times \sin 37)^2 = 19^2$ or $(x =) \sqrt{19^2 - (19 \times \sin 37)^2}$	M1	oe
	15.17... or 15.2	A1	allow 15 with M1 awarded

Q	Answer	Mark	Comments
22(b)	$\tan y = \frac{14}{11}$ or $\tan^{-1} 1.27... \text{ or } \tan^{-1} 1.3$	M1	oe eg $\sin y = \frac{14}{\sqrt{14^2 + 11^2}}$ $\cos y = \frac{11}{\sqrt{14^2 + 11^2}}$
	51.8...	A1	allow 52 with M1 awarded

Q	Answer	Mark	Comments
23(a)	Gradient of $y = 5x + 3$ is 5	M1	may come from using points on line
	$y = 5x + 4$ or correctly using points on line, eg using (1, 9) and (2, 14) $\frac{14 - 9}{2 - 1}$	M1	oe eg $y = \frac{10x + 8}{2}$
	Both gradients are 5 with M2 scored or The coefficients of x are the same with $y = 5x + 4$ seen	A1	may come from using points on line
	Additional Guidance		
	Accept eg slope or m or k for gradient		

Q	Answer	Mark	Comments
23(b)	$(y =) 5 \times -1 + 3$ or -2 or $(x =) (-8 - 3) \div 5$ or -2.2 or $y = 5x - 3$	M1	oe
	Below and $(y =) -2$ or Below and $(x =) -2.2$ or Below and $y = 5x - 3$	A1	oe

Q	Answer	Mark	Comments
24	$-2, -1, 0, 1, 2, 3, 4$ or $-1 \leq x < 6$ or $-1, 0, 1, 2, 3, 4, 5$	M1	
	$-2, -1, 0, 1, 2, 3, 4$ and $-1 \leq x < 6$ or $-2, -1, 0, 1, 2, 3, 4$ and $-1, 0, 1, 2, 3, 4, 5$	M1dep	implied by $-1 \leq x \leq 4$
	$-1, 0, 1, 2, 3, 4$	A1	SC2 $-1, 1, 2, 3, 4$

Q	Answer	Mark	Comments
25(a)	0.25 and 10^5 or $25\,000$ or $1\,500\,000\,000\,000\,000$ or $60\,000\,000\,000$	M1	oe correct value not in standard form eg 25×10^3
	2.5×10^4	A1	
	Additional Guidance		
	Condone $2.5 \cdot 10^4$		M1A1

Q	Answer	Mark	Comments
25(b)	$(c =) 3$	B1	
	$(d =) -2$	B1	

Q	Answer	Mark	Comments
26(a)	Positive	B1	
	Additional Guidance		
	Ignore any reference to the strength of the correlation		

Q	Answer	Mark	Comments
26(b)	Suitable line of best fit that does or would pass through (150, [504, 512]) and (180, [548, 558])	B1	
	Correct reading for their line of best fit	B1ft	ft straight line with positive gradient $\pm \frac{1}{2}$ square
	Additional Guidance		
	No line		B0B0