

Mark Scheme

Q1.

Question	Working	Answer	Notes
		10.4	<p>P1 starts process by using cosine rule to find CD eg $(CD)^2 = 4.9^2 + 3.8^2 - 2 \times 4.9 \times 3.8 \times \cos 80$ ($= 31.98..$)</p> <p>P1 uses sine rule to find angle ACD or angle ADC eg $\frac{\sin C}{3.8} = \frac{\sin 80}{5.655}$ or $\frac{\sin D}{4.9} = \frac{\sin 80}{5.655}$</p> <p>P1 uses sine rule to find BC or BD eg $\frac{BD}{\sin 25} = \frac{5.655}{\sin 33.6}$</p> <p>P1 process to find area eg $1/2 ab \sin C$ A1 for 10.4 to 10.43</p>

Q2.

PAPER: IMA0_2H				
Question	Working	Answer	Mark	Notes
	$AC^2 = 5^2 + 3^2$ $AC = \sqrt{25 + 9}$ ($= 5.83$) $\frac{5}{5.83} = \frac{DB}{3}$ $DB = \frac{5}{5.83} \times 3$ ($= 2.57$) $5 + 3 + 5.83 + 2.57 =$ OR $AC = \sqrt{25 + 9}$ ($= 5.83$) $\tan A = \frac{3}{5}$ $A = 30.96$ $\sin 30.96 = \frac{DB}{5}$ $DB = 5 \times \sin 30.96$ ($= 2.57$) $5 + 3 + 5.83 + 2.57 =$	16.4	5	<p>M1 for $(AC^2) = 5^2 + 3^2 = 34$ M1 for $\sqrt{25 + 9}$ or $\sqrt{34}$ ($= 5.83$) M1 for $\frac{5}{5.83} = \frac{DB}{3}$ or $DB \times AC = 5 \times 3$ M1 for $(DB) = \frac{5}{5.83} \times 3$ A1 for 16.4 to 16.41 OR M1 for $(AC^2) = 5^2 + 3^2 = 34$ M1 for $\sqrt{25 + 9}$ or $\sqrt{34}$ ($= 5.83$) M1 for using a correct trig ratio in an attempt to find angle A or angle C, e.g. $\tan A = \frac{3}{5}$, $\sin A = \frac{3}{5.83}$, $\cos C = \frac{3}{5.83}$ M1 for using DB in a correct trig ratio, e.g. $\sin 30.96 = \frac{DB}{5}$ A1 for 16.4 to 16.41</p>

Q3.

Question	Working	Answer	Mark	Notes
	$AB = 5 \sin 36 = \frac{5}{\sin 36}$ $AD = \frac{5}{\sin 36}$ Or $\sin 36 = \frac{5}{BC}$ $BC = \frac{5}{\sin 36}$ $AD = BC$ OR $\cos 54 = \frac{5}{BC}$ $BC = \frac{5}{\cos 54}$	8.51	4	B1 $AB = 5$ M1 $\sin 36 = \frac{5}{AD}$ or $\sin 36 / 5 = \sin 90 / AD$ M1 $AD = \frac{5}{\sin 36}$ or $AD = \frac{5 \sin 90}{\sin 36}$ A1 8.5 – 8.51 OR M1 $\sin 36 = \frac{5}{BC}$ or $\sin 36 / 5 = \sin 90 / BC$ M1 $BC = \frac{5}{\sin 36}$ or $BC = \frac{5 \sin 90}{\sin 36}$ B1 $AD = BC$ A1 8.5 – 8.51 OR B1 angle $DCB = 54$ or angle $DBC = 36$ M1 $\cos 54 = \frac{5}{BC}$ M1 $BC = \frac{5}{\cos 54}$ A1 8.5 – 8.51 NB other methods such as tan + Pythagoras must be complete methods and will earn M2

Q4.

	Working	Answer	Mark	Notes
(a)		5, -4, -3	2	B2 for 5, -4 and -3 (B1 for 5 or -4 or -3)
(b)		correct curve	2	B2 for fully correct curve (B1 ft for at least 5 points plotted correctly)

Q5.

	Working	Answer	Mark	Notes
(a)		-2 -1 0 1 2 3 4 8 3 0 -1 0 3 8	2	B2 for 8, -1, 0, 8 (B1 for at least two of 8, -1, 0, 8)
(b)		Correct curve	2	M1 (ft) for at least 5 points plotted correctly A1 for a fully correct curve
(c)	$x^2 - 2x - 3 = 0$ OR $(x - 3)(x + 1) = 0$	3 and -1	2	M1 for the straight line $y = 3$ drawn to intersect the "graph" from (a) A1 for both solutions OR M1 for identifying $y = 3$ from the table A1 for both solutions OR M1 for $(x \pm 3)(x \pm 1)$ A1 for both solutions

Q6.

Question	Working	Answer	Mark	Notes
(a)(i)		-0.4 to -0.5 4.4 to 4.5	3	B1 for value in range -0.4 to -0.5 and value in range 4.4 to 4.5 NB: condone values given as part of coordinates.
(ii)		-1.0 to -1.2 5.0 to 5.2		M1 for $x^2 - 4x - 2 = 4$ or line $y = 4$ drawn on graph or points marked with a y coord. of 4 or a value in range -1.0 to -1.2 or a value in range 5.0 to 5.2 A1 for value in range -1.0 to -1.2 and value in range 5.0 to 5.2; do not accept coordinates.
(b)		-1.6 to -1.8 4.6 to 4.8	3	M1 for $x + y = 6$ drawn on graph A2 for value in range -1.6 to -1.8 and value in range 4.6 to 4.8 (A1 for one correct value or both values given as coordinates)

Q7.

	Working	Answer	Mark	Notes
		A and $y = x^2 + 4$ B and $y = x^3$ C and $y = 2^x$	3	B3 for all correct (B2 for 2 correct) (B1 for 1 correct)

Q8.

PAPER: 1MA0 2H				
Question	Working	Answer	Mark	Notes
(a)		Circle drawn	2	B2 fully correct circle drawn (B1 for circle drawn with centre (0,0) or circle drawn with radius 4) OR M1 at least 5 correct points calculated and plotted A1 fully correct circle drawn
(b)		$x = 1.4, y = 3.8$ $x = -2.2, y = -3.4$	3	M1 for $y = 2x + 1$ drawn or for elimination of one variable A1 for one correct pair of values given or for $x = 1.4, -2.2 (\pm 0.2)$ or fit from graph provided 2 marks in (a) A1 for second correct pair of values given (± 0.2) or fit from graph provided 2 marks in (a)

Q9.

Question	Working	Answer	Mark	Notes
(a)	Table of values $x = -1 \ 0 \ 1 \ 2 \ 3$ $y = 2 \ 2 \ 6 \ 10 \ 14$ OR Using $y = mx + c$, gradient = 4, y intercept = 2	Line from $(1, 2)$ to $(3, 14)$	3	<p>(Table of values) M1 for at least 2 correct attempts to find points by substituting values of x. M1 ft for plotting at least 2 of their points (any points plotted from their table must be correct) A1 for correct line between 1 and 3</p> <p>(No table of values) M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $y = 4x + 2$ drawn (ignore any additional incorrect segments) (M1 for at least 3 correct points with no more than 2 incorrect points) A1 for correct line between -1 and 3</p> <p>(Use of $y = mx + c$) M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $y = 4x + 2$ drawn (ignore any additional incorrect segments) (M1 for line drawn with gradient 4 OR line drawn with a y intercept of 2) A1 for correct line between 1 and 3</p> <p>B1 Correct equation given. B1 Correct gradient given.</p> <p>Note – 0.25 could be written as $-\frac{1}{4}$ oe</p>
(b)(i)		$y = 4x + c, c \neq 2$	1	
(ii)		- 0.25	1	

Q10.

Question	Working	Answer	Mark	AO	Notes
(a)	$3x + 5y = 4$ $10x - 5y = 35$ $13x = 39$	$x = 3, y = -1$	M	1.3b	M1 for correct method to eliminate one variable
			M	1.3b	M1 for correct method to find second variable
			A	1.3b	A1 for $x = 3$ and $y = -1$
(b)	$x + 5 > 8$ $x > 3$ $2x - 3 < 7$ $2x < 10$ $x < 5$	$x = 4$	B	1.3b	B1 for $x > 3$ or for $x < 5$
			B	1.3b	B1 for $x > 3$ and for $x < 5$
			B	1.3b	B1 for $x = 4$ from $x > 3$ and $x < 5$

Q11.

Question	Working	Answer	Mark	Notes
(a)	$2a + 2t = 5t + 7$ $2a = 3t + 7$ $2a - 7 = 3t$	$\frac{2a - 7}{3}$	3	M1 for expansion of bracket eg $2 \times a + 2 \times t$ or divide all terms by 2 M1 for attempt at rearrangement of t term eg $-2t$ each side; $2a = 3t + ?$ but with separate terms. A1 $\frac{2a - 7}{3}$ oe but must have one term in t . NB: for $\frac{2}{3}$ accept working to 2 dp: 0.67, 0.66, 2.33 or better
(b)		$x = \frac{2}{3}$ $y = -1 \frac{1}{2}$	3	M1 for correct process to eliminate either x or y (condone one arithmetic error) M1 (dep on 1 st M1) for correct substitution of their found variable or other acceptable method A1 cao for both $x = \frac{2}{3}$ and $y = -1 \frac{1}{2}$ oe SC: B1 for $x = \frac{2}{3}$ or $y = -1 \frac{1}{2}$ oe NB: for $\frac{2}{3}$ accept working to 2 dp: 0.67 or 0.66 or better

Q12.

Question	Working	Answer	Mark	Notes
	$\frac{1}{2} \times 2x \times x \times (x + 10)$	$V = x^3 + 10x^2$	3	M1 for $\frac{1}{2} \times 2x \times x \times (x + 10)$ A1 for $x^3 + 10x^2$ or $x^2(x + 10)$ B1 for $V =$ cubic expression in x

Q13.

PAPER: IMA0/1H				
Question	Working	Answer	Mark	Notes
		$9x^2 + 7x - 2$	4	M1 for finding an expression for a missing length eg $4x - 1 - x - x (=2x - 1)$ or $x + 2 - 2x (=2 - x)$ M1 for a correct expression for one area from the cross-section, eg. $x \times 2x$ or $(4x - 1)(x + 2 - 2x)$ or for one volume of cuboid(s), eg. $x \times 2x \times (x + 1)$ M1 for a complete method to find the volume A1 for $9x^2 + 7x - 2$ or $(9x - 2)(x + 1)$ oe