

MARK SCHEME for the May/June 2010 question paper
for the guidance of teachers

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/03

Paper 3 (Core), maximum raw mark 40

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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- **M** marks are given for a correct method.
- **A** marks are given for an accurate answer following a correct method.
- **B** marks are given for a correct statement or step.
- **D** marks are given for a clear and appropriately accurate drawing.
- **P** marks are given for accurate plotting of points.
- **E** marks are given for correctly explaining or establishing a given result.

- ft follow through
- oe or equivalent
- soi seen or implied
- www without wrong working

1 (a)	$140 \div 7$ $\times 4$	M1 M1 [2]	
(b) (i)	35	B2 [2]	If B0, M1 for $80 \div 16 \times 7$, implied by 5×7 seen
(ii)	55	B2ft [2]	ft $(80 - \text{their (i)}) \div 9 \times 11$. If B0, M1 for $(80 - \text{their (i)}) \div 9 \times 11$
	67.42 final answer	B3 [3]	If B0, M1 for 60×1.06^2 oe (67.4 and 67.416 score M1A1) SC1 for 7.42 If 0 scored, B1 (independent) for rounding their seen amount (with more than 2 dp) to 2 dp
2 (a) (i)	-5	B1 [1]	
(ii)	$\frac{y+3}{2}$	M1 M1 [2]	M1 for correctly rearranging or M1 for correctly dividing by 2
(iii)	4.5 oe	B1ft [1]	Correct or ft (ii)
(b)	$(x) = 4, (y) = 5$	B3 [3]	If B0, M1 for sketch of two lines showing intersection or for correct elimination of one variable A1 each answer One correct answer without working scores 0
3 (a) (i)	Reflection $x = -1$	B1 B1 [2]	
(ii)	Rotation 90° clockwise oe, (centre) (0, 0)	B1 B1 B1 [3]	
(iii)	Correct triangle vertices (0, 0), (4, 2), (2, 6)	B2 [2]	If B0, SC1 for any other enlargement scale factor 2 2 mm accuracy

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4	(a)	Ruled lines giving angles of 72° , 162° and $54^\circ (\pm 2^\circ)$ Three correct labels	B2 B1 [3]	If B0, B1 for one correct angle. Dependent on B1
	(b) (i)	1	B1 [1]	
	(ii)	1.5	B1 [1]	
	(iii)	5 cao	B1 [1]	5 – 0 scores zero
	(iv)	1	B1 [1]	
	(v)	2	B1 [1]	
	(c) (i)	$\frac{9}{20}$ oe	B1 [1]	
	(ii)	0	B1 [1]	Accept $\frac{0}{20}$ or 0 over other denominator if consistent with (i) and (iii)
	(iii)	$\frac{7}{20}$ oe	B1 [1]	
5	(a) (i)	Two reasonable “hyperbola type” branches not crossing either axis	B2 [2]	If B0, B1 for one correct branch not crossing either axis
	(ii)	Reasonable cubic without turning points Crossing y -axis between -3 and -1 GRAPH	B1 B1 [2]	Independent but only one intersection with y -axis
	(b)	$x = 0, y = 0$	B1B1 [2]	If both axes stated, but no equations, allow SC1
	(c) (i)	$(-0.7454, -2.4142)$ $(1.3415, 0.4142)$	B1 B1 [2]	If B0, SC1 if all 4 correct to at least 3 sf
	(ii)	-0.7454 and 1.3415 ft	B1ft [1]	ft their x – co-ordinates from (i)
	(d)	Translation $\begin{pmatrix} 0 \\ -2 \end{pmatrix}$	B1 B1 [2]	No alternative words Allow description in place of vector
6	(a)	$(10, 3)$	B1 [1]	
	(b)	10	B3 [3]	If B0, M1 for lengths 8 and 6 seen (implied by next M) M1 for $(\text{their } 8)^2 + (\text{their } 6)^2$
	(c) (i)	$\frac{6}{8}$ oe	B2 ft[2]	Correct or ft their 8 and their 6. If B0, M1 for use of rise/run
	(ii)	$y = \frac{6}{8}x$ oe	B1ft [1]	ft their (i)

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7	(a) (i)	11h 52min	B2 [2]	If B0, B1 for 11 h or 52 min
	(ii)	96.9 ft	B3ft [3]	If B0, M1 for correctly converting answer to (a) into hours or minutes (but must be from hours and minutes) M1 for $1150 \div$ their time (even if not converted) 99.8 implies second M1
	(b)	14 ft	B3ft [3]	If B0, M1 for $1150 \div 95$ oe, M1 (depend on first M1 and a positive answer) subtracting their (a)(i) ft only 12h 6 or 7min – 11h <i>m</i> min and $m > 7$ or 12.10 to 12.11 – 11.86 to 11.87
8	(a)	7.819 – 7.82(0)	B2 [2]	If B0, M1 for $56 \div 360 \times \pi \times 16$ Allow the M's in (a) and (b) for 56 used instead of 28 consistently
	(b)	7.51(0) – 7.512	B3 [3]	If B0, M2 for $16\sin 28$ oe M1 for $\frac{1}{2} AB \div 8 = \sin 28$ oe
	(c)	15.3 (15.32 – 15.34)	B1ft [1]	ft their (a) + their (b)
9	(a)	(0)50	B1 [1]	
	(b)	54.8 (54.78....)	B2 [2]	If B0, M1 for $\tan = \frac{17}{12}$
	(c)	(0)85 (085.2...)	B2ft [2]	ft 140 – their (b) If B0, M1 for 140 – their (b) or for 40 + their (b) could be on diagram
10	(a)	804 (804.2 – 804.4)	B2 [2]	If B0, M1 for $4 \times \pi \times 8^2$
	(b)	2140 (2144 – 2145)	B2 [2]	If B0, M1 for $4 \div 3 \times \pi \times 8^3$
	(c) (i)	16800 – 16900	B2 [2]	If B0, M1 for their (b)(i) $\times 7.87$
	(ii)	16.8 – 16.9	B1ft [1]	ft their (b)(ii)(a) $\div 1000$
	(d)	12.88 – 12.9(0) ft	B2ft [2]	ft cube root of their (b) If B0, M1 for $(\text{length})^3 = \text{their (b)}$ oe
11	(a) (i)	90	B1 [1]	
	(ii)	38	B1 [1]	
	(iii)	45	B1 [1]	
	(b)	Angle $PBA \neq$ Angle BAQ oe	B1 [1]	E.g. accept “alternate angles are not equal”

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12 (a)	15.8(3...)	B2 [2]	If B0, M1 for $19 \div 120 \times 100$
(b)	$\frac{8}{15}$	B2 [2]	If B0, B1 for $\frac{64}{120}$ or $\frac{32}{60}$ or $\frac{16}{30}$
(c)	20.2 (20.16 – 20.17)	B2 [2]	If B0, M1 for any two of 5, 15, 25, 35 seen
(d) (i)	56, 103	B1B1[2]	
(ii)	Correct curve through (0, 0), (10, 19), (20, 56 ft), (30, 103 ft), (40, 120)	P2ft C1ft [3]	Three correct points (P1 for two correct points) Smooth curve (not ruled) through 5 points ft, but shape must be correct
(iii)	$21 < \text{med} \leq 21.5$	B1 [1]	