GCSE 2004
November Series

ASSESSMENT and QUALIFICATIONS ALLIANCE

Mark Scheme

Mathematics B (3302)
Module 5 Paper 1 Tier I

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The following abbreviations are used on the mark scheme:

M	Method marks awarded for a correct method.
A	Accuracy marks awarded when following on from a correct method. It is not necessary always to see the method. This can be implied.
B	Marks awarded independent of method.
M dep	A method mark which is dependent on a previous method mark being awarded.
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.
oe	Or equivalent.
eeoo	Each error or omission.

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1	4 correct lines $\sqrt{64} = 8$ $4^3 = 64$ $\sqrt[3]{8} = 2$ $2^5 = 32$	B3	B2 for 3 correct B1 for 1 or 2 correct

2(a)	12^2 (–) 2×4^2	M1	oe
	112	A1	
	cm^2	B1	Units mark
(b)	$9x^2$	B1	or attempt to use their 112 and 144
	Attempt to calculate shaded area (= $7x^2$) or $\frac{\text{their } 112}{144}$	M1	$(3x \times 3x)$ (–) $2(x \times x)$
	$\frac{7}{9}$	A1	Note: $\frac{2}{9}$ score B1M1A0 (unshaded)

3(a)	4×5 (+) 3×-7	M1	20 (+) –21
	–1	A1	SC1 for 41
(b)	$\frac{5 - -7}{4}$	M1	oe
	3	A1	SC1 for $-\frac{1}{2}$ or $-\frac{2}{4}$

4(a)	Correct enlargement	B2	B1 for enlargement any scale factor (not 1) Accept any orientation
(b)	$36 \div 4$	M1	or 3×3 or $54 \div 6$
	9	A1	SC1 for their (SF in (a))^2 Accept ratio 1:9 or 9:1

5(a)	61	B1	
(b)	$360 \div 8$	M1	oe $180 - \frac{1080}{8}$
	45	A1	

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6(a)	($4x$ =) 3 – 7 or ($4x$ =) –4	M1	
	(x =) – 1	A1	Accept embedded answer unless contradicted on answer line
(b)	$3y + y$ or 9 + 11	M1	
	$4y = 20$	M1 dep	
	(y =) 5	A1	Accept embedded answer unless contradicted on answer line

7	Fully correct drawing (All **four** conditions satisfied **and** kite completed with ruled lines)	B3	B3 for RQ = 6 cm and RS = 6 cm (± 0.1 cm) **and** angles PRQ and PRS = 25° (± 1°) B2 if **two** or **three** of the conditions satisfied **and** QRS = 50° (± 2°) B1 **one** of the conditions satisfied **and** QRS = 50° (± 2°)

8(a)	$n - 1$, $n + 1$, $n + 8$	B2	B1 for 2 correct
(b)	$n - 1 + n + 1 + n + 8$ (+ n)	M1	ft provided each term in (a) contains an n
	$4n + 8$	A1	
(c)	$4n$ is a multiple of 4	B1	oe $4(n + 2)$ scores B2
	8 is a multiple of 4	B1	oe eg 52 ÷ 4 scores B1 (grid used)

9	$25x$ or $70y$ seen	M1	$x25$ (+) $y70$
	$25x + 70y$	A1	oe £($0.25x + 0.70y$) or £($0.25x + .7y$)

10	Arcs on PQ and QR and equal intersecting arcs	M1	Allow if arcs are drawn from points P and R
	Bisector accurate to ± 2°	A1	59.5 – 63.5

11(a)	Volume	B1	
(b)	Length	B1	

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12(a)	c^4	B1	
(b)	d^5	B1	
(c)	$\frac{1}{e}$ or e^{-7}	B1	
(d)	f^6	B1	
(e)	$6g^5h^5$	B2	B1 for two of 6, g^5, h^5 correct

13(a)	–2	B1	
(b)	7 points correctly plotted	B1 ft	
	Smooth curve through 7 points	B1 ft	
(c)	[2.2, 2.3]	B1 ft	Accept eg 2.3, 2
	[–2.2, –2.3]	B1 ft	Accept eg –2.3, 2

14(a)	4	B1	
(b)	(32 – 4 – 4 – 5 – 5) (÷ 2) or 14 or 16 – 4 – 5	M1	oe
	7	A1	

15	$6p^2 + 2pq - 15pq - 5q^2$	M1	For 3 correct terms
	$6p^2 + 2pq - 15pq - 5q^2$	A1	Fully correct
	$6p^2 - 13pq - 5q^2$	B1 ft	From 4 terms Do not ignore fw

16(a)	65	B1	
	$\frac{1}{2}$ angle at centre	B1	
(b)	115	B1 ft	ft 180 – their 65 provided reason given is not contradictory
	Opposite angles (of cyclic quad)	B1	or other valid explanation eg $x + y = 180$

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17(a)	2 and 3	B1	oe
(b)	3 and 4	B1	oe

18	$x + y = 15$ and $x - y = 3$ or at least 2 valid trials	M1	eg $8 - 7 \neq 3$, $8 + 7 = 15$ one valid trial $10 + 5 = 15$ 2nd valid trial
	(x =) 9 and (y =) 6	A1	Note: x and y may not be seen
	54	A1	54 on its own scores SC2

19(a)	$\frac{9}{6} = \frac{x}{3.6}$	M1	3.6×1.5 oe
	5.4	A1	
(b)	$\frac{6}{9} = \frac{x}{7.2}$	M1	$7.2 \div 1.5$ oe
	4.8	A1	