Gold Level

Mark Scheme 4

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Gold
Booklet	Mark Scheme 4

Time Allowed: **57 minutes**

Score: **/47**

Percentage: **/100**

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	65%	55%	45%	35%	25%	15%	<15%

1.	$\pi \times r \times 9 = 100$ oe		5	M1	
	$(r =) 3.53677\ldots$			A1	for 3.53 or for value rounding to 3.54 $(3.14 \to 3.53857\ldots)$
	$\sqrt{9^2 - "3.53\ldots"^2}$			M1	
	$(h =) 8.2759\ldots$			A1	for 8.27 or for value rounding to 8.28
		108		A1	for answer rounding to 108 $(\pi \to 108.40\ldots$ $3.14 \to 108.45\ldots)$ If both M1s scored , award 5 marks for an answer which rounds to 108
					Total 5 marks

2.	(a)		$8y^6$	2	B2	B1 for 8 B1 for y^6
	(b)	$2^p \times (2^3)^q = 2^p \times 2^{3q} = 2^{p+3q}$	$p + 3q$	2	B2	B1 for 2^{3q} seen
						Total 4 marks

3.	(a)(i)		$3\mathbf{a} + 3\mathbf{b}$ oe	3	B1	
	(ii)		$2\mathbf{a} + 2\mathbf{b}$ oe		B1	Accept eg $\frac{2}{3}(3\mathbf{a} + 3\mathbf{b})$
	(iii)		$\mathbf{a} + 2\mathbf{b}$ oe		B1	Accept eg $2\mathbf{a} + 2\mathbf{b} - \mathbf{a}$
	(b)	$\overrightarrow{DF} = 2\mathbf{a} + 4\mathbf{b}$ oe		2	M1	Also award for $\overrightarrow{EF} = \mathbf{a} + 2\mathbf{b}$ oe
			$\overrightarrow{DF} = 2\,\overrightarrow{DE}$ oe eg $\overrightarrow{DE} = \overrightarrow{EF}$		A1	Also award A1 for an acceptable explanation in words.
						Total 5 marks

Question Number	Working	Answer	Mark	Notes	
4. (a)	$\dfrac{12}{3}\times 3.5$ or $\dfrac{15}{3}\times 3.5 - 3.5$		2	M1	for $\dfrac{12}{3}$ or 4 or $\dfrac{15}{3}$ or 5
		14		A1	cao
(b)	scale factor $= \dfrac{15}{3}$ or 5 or $\dfrac{3}{15}$ or $\dfrac{1}{5}$		3	M1	for $\dfrac{15}{3}$ or 5 or $\dfrac{3}{15}$ or $\dfrac{1}{5}$
	$19 \div 5$ or $19\times\dfrac{1}{5}$			M1	Also award for $19 \div 4$ or $19\times\dfrac{1}{4}$ May be implied by 4.75
		3.8		A1	cao

Question Number	Working	Answer	Mark	Notes	
4. (c)	"5"^{2} or "25"		2	M1	for squaring their scale factor (must be one of 5, 4, $\dfrac{1}{5}$, $\dfrac{1}{4}$) or for $\left(\dfrac{19}{3.8}\right)^2$ oe or for complete correct method of finding vert ht (h cm) of $\triangle ABC$ and vert ht (H cm) of $\triangle PQR$ eg $\dfrac{1}{2}\times"3.8"\times h = 2$ $h = \dfrac{4}{"3.8"}$ (1.0526...) $H = \dfrac{4}{"3.8"}\times"5"$ (5.2631...)
		50		A1	for 50 or for answer which rounds to 50.0 ft only from their scale factor of 4 ie if M1 scored for 4^2 or 16, award A1 for an answer of 32
					Total 7 marks

Question Number		Working	Answer	Mark	Notes	
5.	(a)	$l = 15$ indicated on graph or 70-72 inc stated		2	M1	
			9		A1	Accept 8-10 inc
	(b)	20 and 60 or $20\frac{1}{4}$ and $60\frac{3}{4}$ indicated on cumulative frequency axis or stated or 6-6.5 and 11-11.5 stated		2	M1	
			4.5-6 inc		A1	An answer in the range 5-6 inc with **no** indication of method scores 2 marks BUT do not award A1 if an answer in the range 5-6 inc has **clearly** been obtained by finding the difference between two values, one or both of which are outside the ranges 6-6.5 and 11-11.5 For example, if working is 12 – 7 or 12 – 6 do not award A1.
						Total 4 marks

Question Number	Working		Answer	Mark	Notes	
6.	finds int angle of pentagon $\frac{(5-2)\times180}{5}$	finds ext angle of pentagon $\frac{360}{5}$		5	M1	for $\frac{(5-2)\times180}{5}$ or $\frac{360}{5}$	Award M1A1 for int angle of pentagon shown as 108° or ext angle shown as 72° on printed diagram or on candidate's own diagram
	108	72			A1	for 108 or 72	
	If there is *clear* evidence the candidate thinks the *interior* angle is 72° or the *exterior* angle is 108°, do not award the above two marks.						
	int angle of polygon = 144 or ext angle of polygon = 36				B1	for int angle of polygon = 144 or ext angle of polygon = 36	Award B1 for int angle of polygon shown as 144° or ext angle shown as 36° on printed diagram or candidate's own diagram
	$\frac{360}{36}$ or $\frac{180(n-2)}{n}=144$ oe				M1	for $\frac{360}{36}$ or $\frac{180(n-2)}{n}=144$ oe	
			10		A1	for 10 cao Award no marks for an answer of 10 with no working Award 5 marks for an answer of 10 if at least the first M1A1 are awarded	
						Total 5 marks	

Question Number	Working	Answer	Mark	Notes
7.	$(OB =)\ 8\sin 30°$ or 4		4	M1
	$(BD =)\ 2 \times$ "4" or 8			M1
	A complete correct method eg $(BC =)\ "8"\cos 63°$			M1
		3.63		A1 for ans rounding to 3.63 (3.63192…)
				Total 4 marks

Question Number	Working	Answer	Mark	Notes
8.	1.2×1.17 or $\dfrac{120}{100} \times \dfrac{117}{100}$ or 1.404 oe or 140.4		3	M2 M1 for 1.2 or $\dfrac{120}{100}$ or 1.17 or $\dfrac{117}{100}$
		40.4		A1 Also award for 40 if M2 scored
				Total 3 marks

Question Number	Working	Answer	Mark	Notes
9. (a)		$81a^8b^4$	2	B2 B1 for 81 B1 for a^8b^4
(b)		$3c^4$	2	B2 B1 for 3 B1 for c^4
				Total 4 marks

Question Number	Working	Answer	Mark	Notes			
10.	$\angle COE = x$		6	B1	May be stated, marked on diagram or part of an equation	B1 for each correct expression for an angle up to a max of 2	Award all 3 B marks if M1 or M2 scored.
	$\angle OCD = 2x$ or $69 - x$ or $34\frac{1}{2} + \frac{1}{2}x$	Accept $x + y = 69$ or $y - \frac{1}{2}x = 34\frac{1}{2}$ (where $\angle OCD = \angle ODC = y$)		B1			
	$\angle ODC = 2x$ or $69 - x$ or $34\frac{1}{2} + \frac{1}{2}x$			B1			
	$\angle COD = 180 - 4x$ or $111 - x$						
	$3x = 69$			M2	M1for a correct unsimplified equation in x eg $69 + 180 - 4x + x = 180$ $69 = 2x + x$ $69 - x = 2x$ $55.5 + 55.5 + 2x + x = 180$ $111 - x + 2x + 2x = 180$ $34\frac{1}{2} + \frac{1}{2}x = 2x$		
		23		A1	cao Award 6 marks for an answer of 23 if M1 or M2 scored		
							Total 6 marks