



Ratios (inc Scales)

Mark Scheme 5

Level	IGCSE
Subject	Maths (0580)
Exam Board	Cambridge International Examinations (CIE)
Paper Type	Extended
Topic	Number
Sub-Topic	Ratios (inc Scales)
Booklet	Mark Scheme 5

Time Allowed: 72 minutes

Score: /60

Percentage: /100

Grade Boundaries:

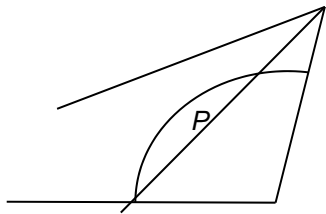
A*	A	B	C	D	E	U
>85%	75%	60%	45%	35%	25%	<25%

1	64 000	3	<p>M2 for $\frac{1.6 \times 20000^2}{100^2}$ oe</p> <p>or</p> <p>M1 for figs 64 in answer or $1 \text{ cm}^2 = 40\,000 \text{ m}^2$</p>
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2	<p>(a) (i) y</p> <p>(ii) $x + y$</p> <p>(iii) $x + 2y$</p> <p>(b) $-(\frac{1}{2}x + y)$ oe</p> <p>(c) (i) $\overline{MG} = 2x + 2y$</p> <p>(ii) $\overline{MH} = x + y$ or $\overline{HG} = x + y$</p> <p>$\overline{MG} = 2\overline{MH}$ oe</p>	<p>1</p> <p>1</p> <p>2</p> <p>2</p> <p>2</p> <p>M1</p> <p>A1</p>	<p>M1 for a correct unsimplified route or identifying \overline{OS}</p> <p>M for a correct unsimplified route or $\overline{GR} = -\frac{1}{2}x$ or $\overline{RG} = \frac{1}{2}x$</p> <p>M1 for a correct unsimplified route e.g. $2\overline{PQ}$</p> <p>Accept $\overline{HM} = -x - y$ or $\overline{GH} = -x - y$</p> <p>Dep on (c)(i) correct, arrows essential</p>
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3	<p>(a) $\frac{8}{8+15+9} \times 640$ oe</p> <p>(b) 300 and 180</p> <p>(c) 10 nfw</p> <p>(d) $\frac{7}{24}$</p>	<p>1</p> <p>2</p> <p>2</p> <p>3</p>	<p>With no errors seen</p> <p>B1 for each or SC1 for answers reversed</p> <p>M1 for $160 \div 15.25$ implied by 10.5 or 10.49... nfw</p> <p>M1 for $\frac{3}{8} + \frac{1}{3}$ oe</p> <p>M1dep on previous M1 for $1 - \text{their } (\frac{3}{8} + \frac{1}{3})$ oe</p>
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4	(a) (i)	$-\mathbf{b} + \mathbf{a}$	1	
	(ii)	$\mathbf{b} + \frac{1}{2}\mathbf{a}$	1	
	(b)	$[\overrightarrow{OX} =] \mathbf{b} + \frac{1}{3}(-\mathbf{b} + \mathbf{a})$ oe	M1	
		$\frac{1}{3}\mathbf{a} + \frac{2}{3}\mathbf{b}$ oe	A1	
	2 statements from: $\overrightarrow{OM} = \mathbf{b} + \frac{1}{2}\mathbf{a}$ oe or $[\overrightarrow{OX} =] \frac{2}{3}(\mathbf{b} + \frac{1}{2}\mathbf{a})$ o or $\overrightarrow{OX} = \frac{2}{3}\overrightarrow{OM}$ oe	B2	B1 for any one of these statements	

5	(a)	475 or 465 to 485	2	B for 9.3 to 9.7 [cm] seen
	(b)	Correct perpendicular bisector with two pairs of intersecting arcs	2	B1 for accurate with no/wrong arcs or M1 for correct intersecting arcs
	(c)	Compass drawn arc centre B radius 5.8	2	M1 for compass drawn arc centre B or B1 for 5.8 cm stated or used
		Accurate angle bisector at C with correct intersecting arcs	2	B1 for accurate with no/wrong arcs or M1 for correct intersecting arcs
			1	cao

6	(a) (i)	$\frac{13}{13+8+3} \times 12000$ with no subsequent errors	1	
	(ii)	4000	1	
	(b)	$2 \times 6500 + 5 \times \text{their(a)(ii)} + (12000 - 6500 - \text{their(a)(ii)})$ or $(13 \times 2 + 8 \times 5 + 3 \times 1) \times 500$	2	B for any two of 2×6500 , $5 \times \text{their(a)(ii)}$, $(12000 - 6500 - \text{their(a)(ii)})$ seen or $13 \times 2 + 8 \times 5 + 3 \times 1$
	(c)	37 500	3	M2 for $\frac{34500}{100-8} \times 100$ oe or M1 for 34500 associated with $(100 - 8)\%$
	(d)	$\frac{11}{26}$ cao	2	M1 for any correct simplified version of $\frac{2750}{6500}$
	(e)	89 500	1	

7	(a) (i)	[0]9 15 [am]	1	Any acceptable form of time
	(ii)	64.9 or 65.[0] or 64.92 to 64.98	2	M for $92 \div (1 \text{ and } 25 \text{ mins})$ or $92/85 \times 60$ oe or $92 \div (1.41 \text{ to } 1.42)$
	(iii)	11.76...or 11.8	1	
	(iv)	80	3	M2 for $92 \div 1.15$ oe or M1 for 115% associated with 92
	(b) (i)	$150 \div (11 + 16 + 3)$ or 150×3 oe then $\times 3$ or $\div 30$	M1	Correct first step
	(ii)	11 : 9 final answer	E1	Correct conclusion
			2	M1 for $8.25 : (15 - 8.25)$ oe For M1 e.g. allow $1 : 0.818$ [0.8181 to 0.8182] or $1.22 : 1$ [1.222...] After M0, SC1 for 9 : 11 as final answer

8	(a)		1	Arc must not continue outside rectangle. Radius of arc 4 cm \pm 1 mm. Ignore shading
	(b)	12.6		M1 for $\frac{1}{4} \times \pi \times 4^2$

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