1	**Alternative method 1**		
	15^2 or 225 and $(16 \div 2)^2$ or 8^2 or 64	M1	oe
	$\sqrt{15^2 + (16 \div 2)^2}$ or $\sqrt{\text{their } 225 + \text{their } 64}$ or $\sqrt{289}$ or 17	M1dep	oe full trigonometric method leading to 17 scores M2 eg $\dfrac{15}{\sin\left(\tan^{-1}\frac{15}{8}\right)}$
	6 × their 17 + 3 × 16 or 102 + 48	M1dep	oe
	150	A1	SC2 $48 + 6\sqrt{161}$ or [124.08, 124.2]
	Alternative method 2		
	$(48 \div 2)^2$ or 24^2 or 576 and $(15 \times 3)^2$ or 45^2 or 2025	M1	oe eg $(16 \times 1.5)^2$ and $(3 \times 15)^2$
	$\sqrt{(48 \div 2)^2 + (3 \times 15)^2}$ or $\sqrt{\text{their } 576 + \text{their } 2025}$ or $\sqrt{2601}$ or 51	M1dep	oe full trigonometric method leading to 51 scores M2 eg $\dfrac{45}{\sin\left(\tan^{-1}\frac{15}{8}\right)}$ or $\dfrac{45}{\sin\left(\tan^{-1}\frac{45}{24}\right)}$
	2 × their 51 + 3 × 16 or 102 + 48	M1dep	oe
	150	A1	SC2 $48 + 6\sqrt{161}$ or [124.08, 124.2]
	Additional Guidance		
	$15^2 - 8^2$ or $45^2 - 24^2$		M1M0M0A0 (unless SC2 scored)
	Allow 61.9(2…) or 61.93 or 62 for $\tan^{-1}\frac{15}{8}$ but do not award A1 if premature approximation seen		

2	$\sqrt{2}$	B1	

3	**Alternative method 1**		
	16^2 or 256 and 30^2 or 900	M1	oe implied by 1156
	$\sqrt{16^2+30^2}$ or $\sqrt{256+900}$ or $\sqrt{1156}$ or 34	M1dep	oe eg $\sqrt{16^2+30^2-2\times16\times30\times\cos 90}$
	52 × their 34 or 1768	M1dep	oe if M1M0 their 34 can be any value other than 16, 30 or 52 dep on 1st M
	0.5 × 30 × 16 or 240	M1	oe eg 0.5 × 30 × 16 × sin 90
	2008	A1	SC3 2248
	Alternative method 2		
	$\tan^{-1}\frac{16}{30}$ or [28, 28.1] or $\tan^{-1}\frac{30}{16}$ or [61.9, 62]	M1	oe may be on diagram
	$\frac{30}{\cos(\text{their } [28, 28.1])}$ or $\frac{16}{\cos(\text{their } [61.9, 62])}$ or 34	M1dep	oe eg $\frac{16}{\sin(\text{their } [28, 28.1])}$ or $30\cos(\text{their } [28, 28.1]) + 16\cos(\text{their } [61.9, 62])$
	52 × their 34 or 1768	M1dep	oe if M1M0 their 34 can be any value other than 16, 30 or 52 dep on 1st M
	0.5 × 30 × 16 or 240	M1	oe eg 0.5 × 30 × 16 × sin 90
	2008	A1	SC3 2248

3 cont	**Additional Guidance**	
	Up to M4 may be awarded for correct work with no, or incorrect answer, even if this is seen amongst multiple attempts	
	The 4th mark in Alts 1 and 2 is not dependent on any other marks	
	34 or 1768 or 240 may be on the diagram	
	SC3 is for using 30 × 16 for the area of the triangle	
	Ignore units	

Q	Answer	Mark	Comments
4	**Alternative method 1 – using Pythagoras' theorem or 3, 4, 5 triangle**		
	$16 \div 4 \times 5$ or 20 (cm) or identifies triangle as 3, 4, 5	M1	oe length of c may be on diagram
	$\sqrt{(\text{their } 20)^2 - 16^2}$ or $\sqrt{400 - 256}$ or $\sqrt{144}$ or 4×3	M1dep	
	12 (cm)	A1	length of b may be on diagram
	96	A1ft	ft $\frac{1}{2} \times 16 \times$ their 12 with M2 awarded
	Alternative method 2 – using trigonometry and ½*ab* sin *C* formula		
	$16 \div 4 \times 5$ or 20 (cm)	M1	oe length of c may be on diagram
	$\cos^{-1}\left(\frac{16}{20}\right)$ or 36.8(…) or 36.9	M1dep	angle between sides a and c
	$\frac{1}{2} \times 16 \times 20 \times \sin(\text{their } 36.8(\ldots))$	M1dep	dep on M2
	96	A1	
	Additional Guidance		
	$\frac{1}{2} \times 16 \times 12 \times \sin 90$		M1M1M1

Q	Answer	Mark	Comments
5	24^2 or 576 **and** 31^2 or 961 or 1537	M1	ignore units
	$\sqrt{24^2+31^2}$ or $\sqrt{576+961}$ or $\sqrt{1537}$	M1dep	
	39.2(...)	A1	accept 39 with 1537 seen or M2 awarded
	Additional Guidance		
	M1 may be awarded for correct work, with no or incorrect answer, even if this is seen amongst multiple attempts		
	$31^2 - 24^2$		M1M0A0
	$\sqrt{385}$ without seeing 24^2 or 576 **and** 31^2 or 961		M0M0A0
	Answer only 39.2		M2A1
	Answer only 39		M0
	39.2 from only accurate drawing		M0M0A0
	39.2 from only trigonometry		M0M0A0
	39.2 from only cosine rule		M1M0A0