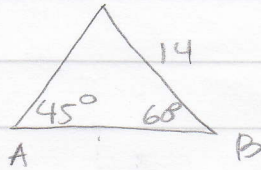


P347 WE

9-3#1

3.  $\angle A = 45^\circ$   $\angle B = 60^\circ \rightarrow \angle C = 180^\circ - 60^\circ - 45^\circ = 75^\circ$



A-A-S

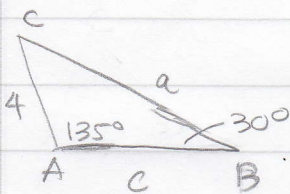
$$\frac{14}{\sin 45^\circ} = \frac{b}{\sin 60^\circ} \rightarrow b \sin 45^\circ = 14 \sin 60^\circ$$

$$b = \frac{14 \sin 60^\circ}{\sin 45^\circ} = \frac{14 \cdot \frac{\sqrt{3}}{2}}{\frac{\sqrt{2}}{2}}$$

$$b = \frac{14}{1} \cdot \frac{\sqrt{3}}{2} \cdot \frac{2}{\sqrt{2}} = \frac{14\sqrt{3}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{14\sqrt{6}}{2} = 7\sqrt{6}$$

$$\frac{14}{\sin 45^\circ} = \frac{c}{\sin 75^\circ} \rightarrow c = \frac{14 \cdot \sin 75^\circ}{\sin 45^\circ} \approx 19.1$$

5



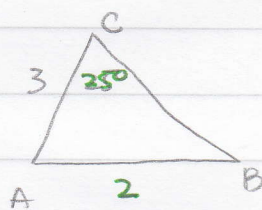
$$\frac{4}{\sin 30^\circ} = \frac{a}{\sin 135^\circ} \rightarrow a = \frac{4 \cdot \sin 135^\circ}{\sin 30^\circ}$$

$$a = \frac{4 \cdot \frac{\sqrt{2}}{2}}{\frac{1}{2}} = \frac{2\sqrt{2}}{\frac{1}{2}} = \frac{2\sqrt{2}}{1} \cdot \frac{2}{1} = 4\sqrt{2}$$

$$\angle C = 180^\circ - 135^\circ - 30^\circ = 15^\circ$$

$$\frac{4}{\sin 30^\circ} = \frac{c}{\sin 15^\circ} \rightarrow c = \frac{4 \sin 15^\circ}{\sin 30^\circ} \approx 2.07$$

7.



Angle-side-side  $\rightarrow$  be careful !!!

$$\frac{2}{\sin 25^\circ} = \frac{3}{\sin B} \rightarrow \sin B = \frac{3 \sin 25^\circ}{2}$$

$$\sin B \approx 0.6339273926$$

since is + in Q I & Q II

$$\text{ref } \angle I = \sin^{-1}(0.6339273926) \approx 39.3404765^\circ$$

$$\text{I: } B = 39.3^\circ$$

$$\text{II: } B = 180^\circ - 39.3^\circ = 140.7^\circ$$

$$C = 25^\circ$$

$$C = 25^\circ$$

$$A = 180^\circ - 39.3^\circ - 25^\circ \approx 115.7^\circ$$

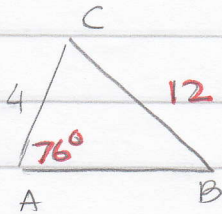
$$A = 180^\circ - 140.7^\circ - 25^\circ = 14.3^\circ$$

$$\frac{a}{\sin 115.7^\circ} = \frac{2}{\sin 25^\circ} \rightarrow a = \boxed{4.26}$$

$$\frac{a}{\sin 14.3^\circ} = \frac{2}{\sin 25^\circ} \rightarrow a \approx \boxed{1.17}$$

9-3 #2

9



Angle-Side-Side  $\rightarrow$  be careful

$$\frac{12}{\sin 76^\circ} = \frac{4}{\sin B} \rightarrow \sin B = \frac{4 \sin 76^\circ}{12} \approx 0.3234319088$$

$$\text{R4 } \angle = \sin^{-1}(0.3234319088) \approx 18.9^\circ$$

$$\text{I: } B = 18.9^\circ$$

$$A = 76^\circ$$

$$C = 180^\circ - 18.9^\circ - 76^\circ = 85.1^\circ$$

$$\text{II } B = 180 - 18.9^\circ = 161.1^\circ$$

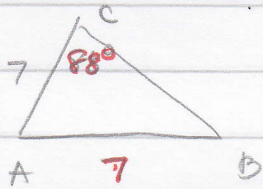
$$A = 76^\circ$$

$$C = 180^\circ - 161.1^\circ - 76^\circ = -57.1^\circ$$

$$\frac{12}{\sin 76^\circ} = \frac{c}{\sin 85.1^\circ}$$

$$c = \frac{12 \sin 85.1^\circ}{\sin 76^\circ} \approx \boxed{12.3}$$

11.



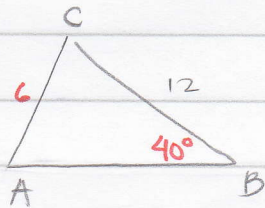
since  $b = c = 7$   $\triangle ABC$  is isosceles

$$m\angle B = m\angle C = 88^\circ$$

$$\rightarrow \angle A = 180^\circ - 88^\circ - 88^\circ = 4^\circ$$

$$\frac{a}{\sin 4^\circ} = \frac{7}{\sin 88^\circ} \rightarrow a = \frac{7 \sin 4^\circ}{\sin 88^\circ} \approx \boxed{0.489}$$

13



Angle-side-side  $\rightarrow$  be careful

$$\frac{6}{\sin 40^\circ} = \frac{12}{\sin A} \rightarrow \sin A = \frac{12 \sin 40^\circ}{6} \approx 1.28557...$$

not possible

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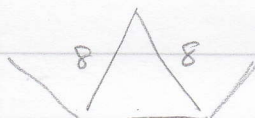
$$\begin{aligned}
 2a. \quad A &= \frac{1}{2} bc \sin A \\
 &= \frac{1}{2} (3)(8) \sin 120^\circ \\
 &= \frac{1}{2} (3)(8) \frac{\sqrt{3}}{2} = \boxed{6\sqrt{3}}
 \end{aligned}$$

$$\begin{aligned}
 (2b) \quad A &= \frac{1}{2} bc \sin A \\
 &= \frac{1}{2} (3)(8) \sin 60^\circ \\
 &= \frac{1}{2} (3)(8) \frac{\sqrt{3}}{2} = \boxed{6\sqrt{3}}
 \end{aligned}$$

$$\begin{aligned}
 8. \quad \angle S &= 125^\circ; r=6; t=15 \\
 A &= \frac{1}{2} rt \sin S \\
 &= \frac{1}{2} (6)(15) \sin 125^\circ \approx \boxed{36.9}
 \end{aligned}$$

$$\begin{aligned}
 10. \quad A &= 9 = \frac{1}{2} qr \sin P \\
 &= \frac{1}{2} (4)(9) \sin P \\
 9 &= 18 \sin P \rightarrow \sin P = \frac{9}{18} = \frac{1}{2} \\
 \text{Ref } \angle &= \sin^{-1}\left(\frac{1}{2}\right) = 30^\circ \\
 \text{I: } P &= \boxed{30^\circ} \quad \text{II: } P = 180^\circ - 30^\circ = \boxed{150^\circ}
 \end{aligned}$$

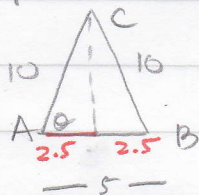
$$12. \quad \text{central } \angle = \frac{360}{12} = 30^\circ$$



$$\begin{aligned}
 \text{Area} &= 12 \left(\frac{1}{2}\right) (8)(8) \sin 30^\circ \\
 &= 12 \left(\frac{1}{2}\right) (8)(8) \left(\frac{1}{2}\right) \\
 &= \boxed{192 \text{ cm}^2}
 \end{aligned}$$

P365 CT

①

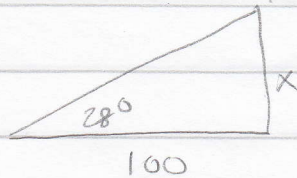


$$\cos \theta = \frac{2.5}{10} = \frac{1}{4} \rightarrow \theta = \cos^{-1}\left(\frac{1}{4}\right) \approx 75.5^\circ$$

$$m\angle A = m\angle B = 75.5^\circ$$

$$m\angle C = 180^\circ - 2(75.5^\circ) = \boxed{29^\circ}$$

2



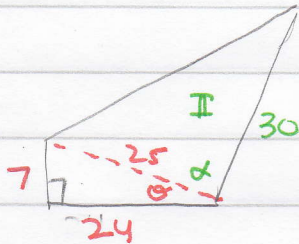
$$\tan 28^\circ = \frac{x}{100} \rightarrow x = 100 \tan 28^\circ \approx \boxed{53.2 \text{ m}}$$

3. Pentagon:  $5 \Delta$ 

$$\text{Central } \angle = \frac{360^\circ}{5} = 72^\circ$$

$$\text{Area of pentagon} = 5 \left[ \left( \frac{1}{2} \right) (4) (4) \sin 72^\circ \right] \approx \boxed{38.0 \text{ m}^2}$$

4.



$$\text{Area } \triangle \text{I} = \frac{1}{2} (24) (7) = 84$$

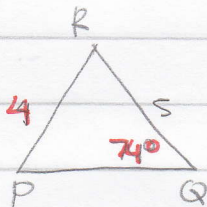
$$\sin \theta = \frac{7}{25} \rightarrow \theta \approx 16.26020471^\circ$$

$$\alpha = 120^\circ - 16.26020471^\circ \approx 103.7397953^\circ$$

$$\text{Area } \triangle \text{II} = \frac{1}{2} (25) (30) \sin 103.7397953^\circ \approx 364$$

$$\text{Total area} = 364 + 84 = \boxed{448 \text{ u}^2}$$

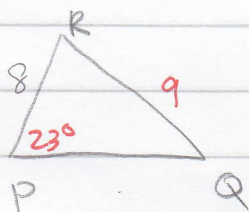
5.

Angle-side-side  $\rightarrow$  must check both Quadrants I & II

$$\frac{4}{\sin 74^\circ} = \frac{5}{\sin P} \rightarrow \sin P = \frac{5 \sin 74^\circ}{4} \approx 1.20157712$$

not possible  $\rightarrow$  no  $\Delta$ 

b



$$\frac{9}{\sin 23^\circ} = \frac{8}{\sin Q} \rightarrow \sin Q = \frac{8 \sin 23^\circ}{9} \approx 0.347316558$$

$$\text{Ref } \angle = \sin^{-1}(0.347316558) \approx 20.3^\circ$$

$$\text{I: } Q = 20.3^\circ$$

$$P = 23^\circ$$

$$R = 180^\circ - 20.3^\circ - 23^\circ = 136.7^\circ$$

1  $\Delta$ 

$$\text{II: } Q = 180^\circ - 20.3^\circ = 159.7^\circ$$

$$P = 23^\circ$$

$$R = 180^\circ - 159.7^\circ - 23^\circ = -2.7^\circ$$