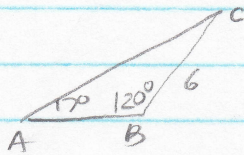


Review QA

1.



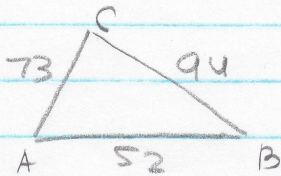
A-A-S

$$\angle C = 180^\circ - 120^\circ - 17^\circ = 43^\circ$$

$$\frac{c}{\sin 43^\circ} = \frac{6}{\sin 17^\circ} \rightarrow c = \frac{6 \sin 43^\circ}{\sin 17^\circ} \approx 14.0$$

2

S-S-S



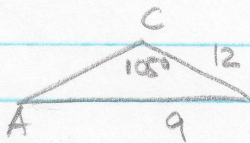
Since side a is the longest, $\angle A$ is the largest. So $\angle B$ & $\angle C$ must be acute.

$$73^2 = 52^2 + 94^2 - 2(52)(94)\cos B$$

$$\cos B = \frac{6211}{9776} \approx 0.6353314239$$

$$B = \cos^{-1}(0.6353314239) \approx 50.6^\circ$$

3

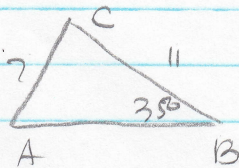


Angle-Side-Side \rightarrow must split

$$\frac{9}{\sin 105^\circ} = \frac{12}{\sin A} \rightarrow \sin A = \frac{12 \sin 105^\circ}{9} \approx 1.2879$$

$$A = \sin^{-1}(1.2879) \rightarrow \text{not possible}$$

4



Angle-Side-Side \rightarrow must split

$$\frac{7}{\sin 35^\circ} = \frac{11}{\sin A} \rightarrow \sin A = \frac{11 \sin 35^\circ}{7} \approx 0.9013$$

Acute: $A = \sin^{-1}(0.9013) \approx 64.3^\circ$

OBTUSE: $A = 180^\circ - \sin^{-1}(0.9013) \approx 115.7^\circ$

$B = 35^\circ$ (given)

$B = 35^\circ$ (given)

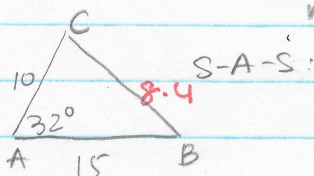
$C = 180^\circ - 64.3^\circ - 35^\circ = 80.7^\circ$

$C = 180^\circ - 115.7^\circ - 35^\circ = 29.3^\circ$

There are 2 possible Δ s

$m\angle A = 64.3^\circ$ OR $m\angle A = 115.7^\circ$

5



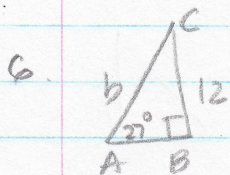
S-A-S

$$a^2 = 10^2 + 15^2 - 2(10)(15)\cos 32^\circ$$

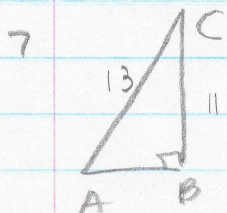
$$a \approx 8.4$$

Since c is the longest side, $\angle C$ is the largest so $\angle B$ is acute

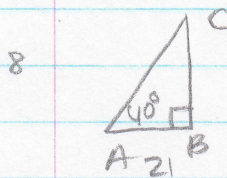
$$\frac{10}{\sin B} = \frac{8.4}{\sin 32^\circ} \rightarrow \sin B = 0.6309 \rightarrow \angle B = \sin^{-1}(0.6309) \approx 39.1^\circ$$



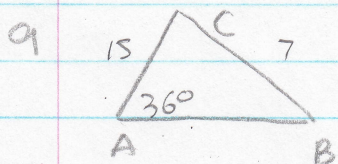
$$\sin 27^\circ = \frac{12}{b} \rightarrow b = \frac{12}{\sin 27^\circ} \approx 26.4$$



$$\cos C = \frac{11}{13} \rightarrow C = \cos^{-1}\left(\frac{11}{13}\right) \approx 32.2^\circ$$



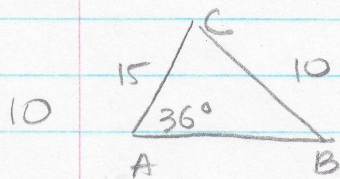
$$\tan 40^\circ = \frac{a}{21} \rightarrow a = 21 \tan 40^\circ \approx 17.6$$



Angle-Side-Side \rightarrow must split

$$\frac{7}{\sin 36^\circ} = \frac{15}{\sin B} \rightarrow \sin B = \frac{15 \sin 36^\circ}{7} \approx 1.2595$$

$B = \sin^{-1}(1.2595) \rightarrow$ not possible



Angle-Side-Side \rightarrow must split

$$\frac{10}{\sin 36^\circ} = \frac{15}{\sin B} \rightarrow \sin B = \frac{15 \sin 36^\circ}{10} \approx 0.8817$$

Acute: $\angle B = \sin^{-1}(0.8817) \approx 61.845^\circ$ OBTUSE: $B = 180^\circ - \sin^{-1}(0.8817) \approx 118.155^\circ$

$\angle A = 36^\circ$ (given)

$A = 36^\circ$ (given)

$C = 180^\circ - 61.845^\circ - 36^\circ = 82.155^\circ$

$C = 180^\circ - 118.155^\circ - 36^\circ = 25.845^\circ$

$$\frac{c}{\sin 82.155^\circ} = \frac{10}{\sin 36^\circ}$$

$$\frac{c}{\sin 25.845^\circ} = \frac{10}{\sin 36^\circ}$$

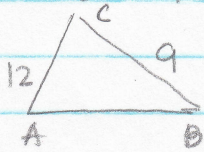
$$c = \frac{10 \sin 82.155^\circ}{\sin 36^\circ} \approx 16.854$$

$$c = \frac{10 \sin 25.845^\circ}{\sin 36^\circ} \approx 7.417$$

$$\text{Area} = \frac{1}{2}(15)(16.854) \sin 36^\circ \approx 74.3 \text{ u}^2$$

$$\text{Area} = \frac{1}{2}(15)(7.417) \sin 36^\circ \approx 32.7 \text{ u}^2$$

11. Area = 48 = $\frac{1}{2}(12)(a) \sin C$



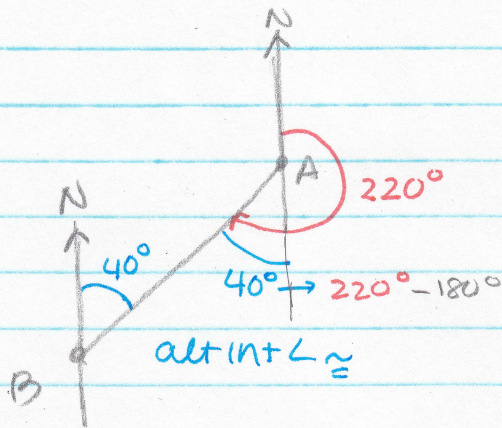
$$\sin C = \frac{48}{54} \rightarrow$$

C can be acute or obtuse.

Acute: $C = \sin^{-1}\left(\frac{48}{54}\right) \approx 62.7^\circ$

Obtuse: $C = 180^\circ - \sin^{-1}\left(\frac{48}{54}\right) \approx 117^\circ$

12



Bearing from B to A =

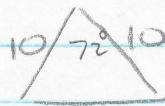
$$040^\circ$$

↑

3 digits.

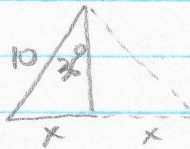
13

Pentagon \rightarrow central $C = 360^\circ \div 5 = 72^\circ$



$$\text{Area of } \triangle = \frac{1}{2}(10)(10) \sin 72^\circ \approx 47.55$$

$$\text{Area of pentagon (5 } \triangle\text{s)} = 5(47.55) = 237.76 \text{ u}^2$$

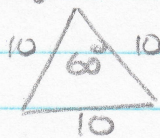


$$\sin 36^\circ = \frac{x}{10} \rightarrow x = 10 \sin 36^\circ = 5.88$$

$$\text{side of pentagon} = 2(5.88) = 11.76$$

$$\text{Perimeter} = 5(11.76) = 58.78$$

14. Hexagon \rightarrow central $C = 360^\circ \div 6 = 60^\circ$



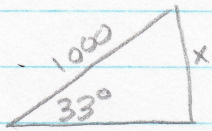
$$\text{Area } \triangle = \frac{1}{2}(10)(10) \sin 60^\circ = 50 \cdot \frac{\sqrt{3}}{2} = 25\sqrt{3}$$

$$\text{Area of hexagons: } 6(25\sqrt{3}) = 150\sqrt{3} \approx 259.8 \text{ cm}^2$$

side of hexagon = 10 (equilateral \triangle)

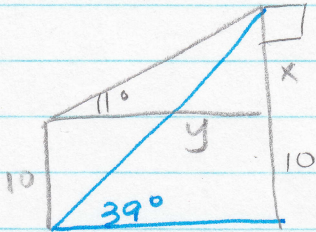
$$\text{perimeter} = 6(10) = 60 \text{ cm}$$

15



$$\sin 33^\circ = \frac{x}{1000} \rightarrow x = 1000 \sin 33^\circ = 545 \text{ ft}$$

16



$$\tan 11^\circ = \frac{x}{y} \rightarrow x = y \tan 11^\circ$$

$$\tan 39^\circ = \frac{x+10}{y} \rightarrow x+10 = y \tan 39^\circ$$

$$x = y \tan 39^\circ - 10$$

$$y \tan 11^\circ = y \tan 39^\circ - 10$$

$$10 = y \tan 39^\circ - y \tan 11^\circ$$

$$10 = y (\tan 39^\circ - \tan 11^\circ)$$

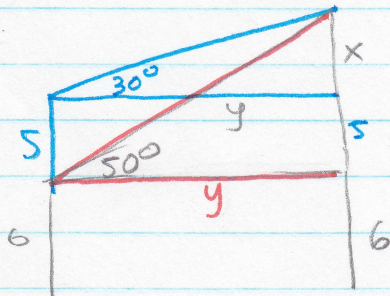
$$y = \frac{10}{\tan 39^\circ - \tan 11^\circ}$$

$$x = \frac{10}{\tan 39^\circ - \tan 11^\circ} \cdot \tan 11^\circ = 3.158581944$$

$$\approx 3.2$$

$$\text{Total height} = 3.2 + 10 = 13.2$$

17



$$\tan 30^\circ = \frac{x}{y} \rightarrow x = y \tan 30^\circ$$

$$\tan 50^\circ = \frac{x+5}{y} \rightarrow x+5 = y \tan 50^\circ$$

$$x = y \tan 50^\circ - 5$$

$$y \tan 30^\circ = y \tan 50^\circ - 5$$

$$5 = y \tan 50^\circ - y \tan 30^\circ$$

$$5 = y (\tan 50^\circ - \tan 30^\circ)$$

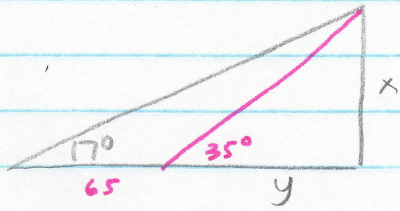
$$y = \frac{5}{\tan 50^\circ - \tan 30^\circ}$$

$$x = \frac{5}{\tan 50^\circ - \tan 30^\circ} \cdot \tan 30^\circ = 4.698463104$$

$$\approx 4.7$$

$$\text{Total height} = 5 + 6 + 4.7 = 15.7 \text{ ft}$$

18



$$\tan 17^\circ = \frac{x}{65+y} \rightarrow x = (65+y) \tan 17^\circ$$

$$\tan 35^\circ = \frac{x}{y} \rightarrow x = y \tan 35^\circ$$

$$y \tan 35^\circ = (65+y) \tan 17^\circ$$

$$y \tan 35^\circ = 65 \tan 17^\circ + y \tan 17^\circ$$

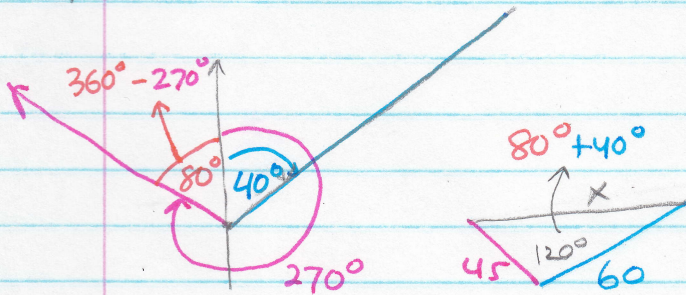
$$y \tan 35^\circ - y \tan 17^\circ = 65 \tan 17^\circ$$

$$y (\tan 35^\circ - \tan 17^\circ) = 65 \tan 17^\circ$$

$$y = \frac{65 \tan 17^\circ}{\tan 35^\circ - \tan 17^\circ}$$

$$x = \frac{65 \tan 17^\circ}{\tan 35^\circ - \tan 17^\circ} \cdot \tan 35^\circ = 35.3 \text{ ft}$$

19



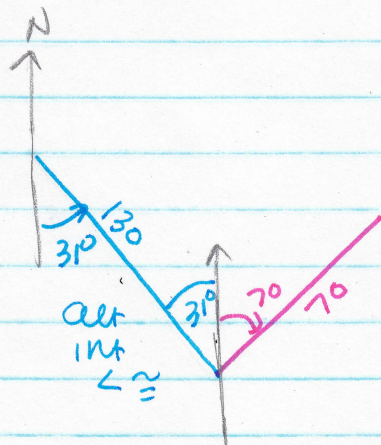
	R	T	D
A	20	3	60
B	15	3	45

$$x^2 = 45^2 + 60^2 - 2(45)(60) \cos 120^\circ$$

$$= 8325$$

$$x \approx 91.2 \text{ nautical miles}$$

20



$$\text{Area} = \frac{1}{2} (130)(70) \sin 38^\circ$$

$$2801.260 \text{ ft}^2$$

