

State the number of possible triangles that can be formed using the given measurements.

19) $m\angle C = 63^\circ, b = 9, c = 12$

One triangle

20) $m\angle B = 33^\circ, a = 27, b = 22$

Two triangles

21) $m\angle B = 29^\circ, a = 14, b = 19$

One triangle

22) $m\angle B = 95^\circ, b = 24, a = 5$

One triangle

23) $m\angle A = 29^\circ, c = 18, a = 17$

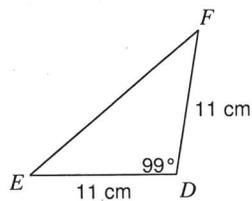
Two triangles

24) $m\angle B = 35^\circ, a = 24, b = 6$

None

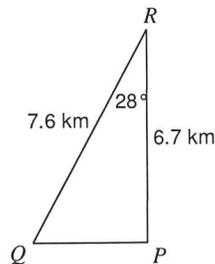
Find the area of each triangle to the nearest tenth.

25)



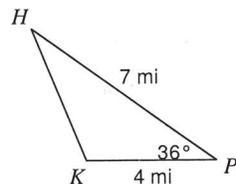
59.8 cm^2

26)



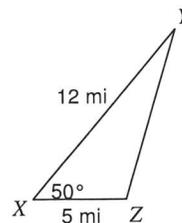
12 km^2

27)



8.2 mi^2

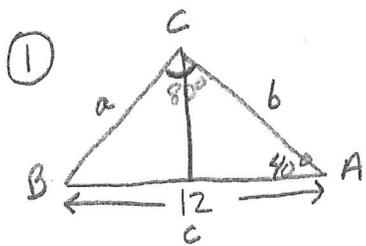
28)



23 mi^2

Law of Sines

Word Problems

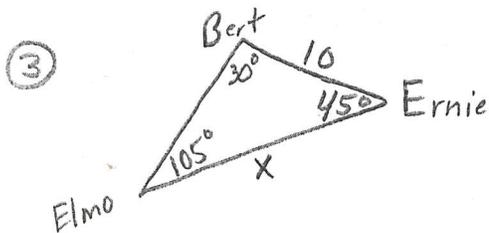


$$B = 180^\circ - 80^\circ - 40^\circ = 60^\circ$$

$$\frac{\sin 40^\circ}{a} = \frac{\sin 80^\circ}{12}$$

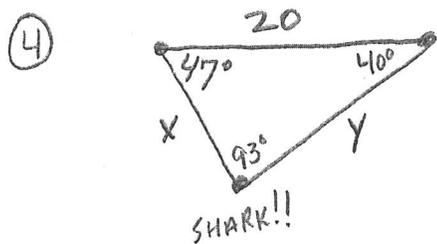
$$\frac{\sin 60^\circ}{b} = \frac{\sin 80^\circ}{12}$$

$$a = \frac{12 \sin 40^\circ}{\sin 80^\circ} \approx \boxed{7.83} \text{ m} \quad b = \frac{12 \sin 60^\circ}{\sin 80^\circ} \approx \boxed{10.55} \text{ m}$$



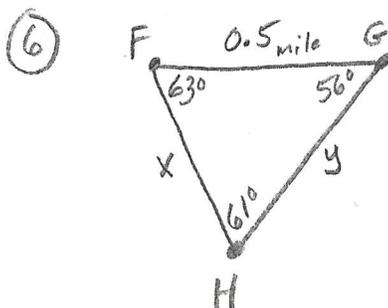
$$\frac{\sin 30^\circ}{x} = \frac{\sin 105^\circ}{10}$$

$$x = \frac{10 \sin 30^\circ}{\sin 105^\circ} \approx \boxed{5.18} \text{ m}$$



$$\frac{\sin 93^\circ}{20} = \frac{\sin 40^\circ}{x} \Rightarrow x = \frac{20 \sin 40^\circ}{\sin 93^\circ} = \boxed{12.87} \text{ m}$$

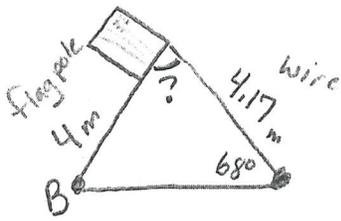
$$\frac{\sin 93^\circ}{20} = \frac{\sin 47^\circ}{y} \Rightarrow y = \frac{20 \sin 47^\circ}{\sin 93^\circ} = \boxed{14.65} \text{ m}$$



$$\frac{\sin 61^\circ}{0.5} = \frac{\sin 56^\circ}{x} \Rightarrow x = \frac{0.5 \sin 56^\circ}{\sin 61^\circ} \approx \boxed{0.47} \text{ mile}$$

$$\frac{\sin 61^\circ}{0.5} = \frac{\sin 63^\circ}{y} \Rightarrow y = \frac{0.5 \sin 63^\circ}{\sin 61^\circ} \approx \boxed{0.51} \text{ mile}$$

9



$$\frac{\sin B}{4.17} = \frac{\sin 68^\circ}{4}$$

$$\sin B = \frac{4.17 \sin 68^\circ}{4}$$

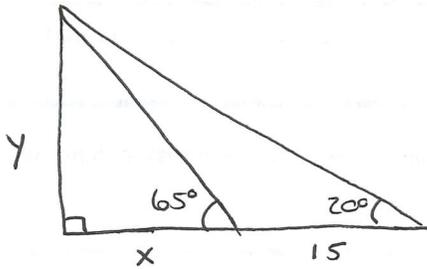
$$B = \sin^{-1}\left(\frac{4.17 \sin 68^\circ}{4}\right)$$

$$B \approx 75.15^\circ$$

the angle the flag pole makes with the wire

$$180^\circ - 68^\circ - 75.15^\circ = \boxed{36.85^\circ}$$

19



$$\tan 65^\circ = \frac{y}{x}$$

$$\tan 20^\circ = \frac{y}{x+15}$$

$$y = x \cdot \tan 65^\circ = (x+15) \cdot \tan 20^\circ$$

$$x \cdot \tan 65^\circ - x \cdot \tan 20^\circ = 15 \cdot \tan 20^\circ$$

$$x = \frac{15 \cdot \tan 20^\circ}{\tan 65^\circ - \tan 20^\circ} \approx \boxed{3.07}$$