

Learning Target 50 Homework

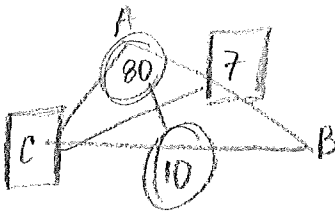
"I can use the Law of Sines."

1) In $\triangle PQR$, $PR = 4$, $QR = 1$, and $m\angle R = 105$. Thraxor used the Law of Sines to set up the proportion below to find $m\angle P$. Explain his error in one to two complete sentences.

$$\frac{P}{\sin 1} = \frac{105}{\sin 4}$$

m∠P is an angle measure while QR is a side length. Thraxor took the sine of the side instead of sine of the angle.

2) In $\triangle ABC$, $AB = 7$, $BC = 10$, and $m\angle A = 80$. What is $m\angle C$? Round to the nearest degree.



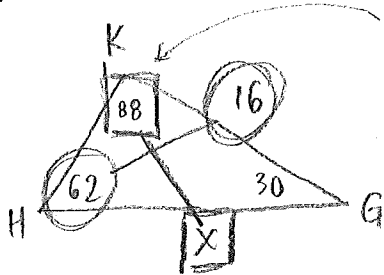
$$\frac{\sin C}{7} = \frac{\sin 80}{10} \cdot \frac{7}{1}$$

$$\sin^{-1}(\sin C) = \sin^{-1}\left(\frac{7 \sin 80}{10}\right)$$

$$C = \sin^{-1}\left(\frac{7 \sin 80}{10}\right) \approx \boxed{44^\circ}$$

For questions 3 and 4, use $\triangle GHK$ where $GK = 16$, $m\angle G = 30$, and $m\angle H = 62$.

3) What is GH ? Round to the nearest tenth.

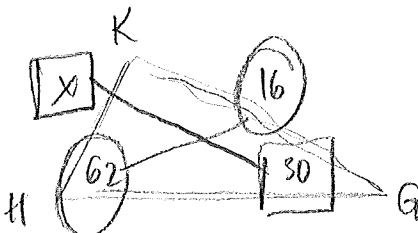


$$180 - 30 - 62 = 88$$

$$\frac{\sin 88}{\sin 62} \cdot \frac{GH}{16} = \frac{\sin 30}{1}$$

$$GH = \frac{16 \sin 88}{\sin 62} \approx \boxed{18.1}$$

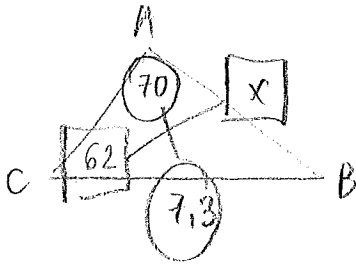
4) What is HK ? Round to the nearest tenth.



$$\frac{\sin 30}{\sin 30} \cdot \frac{HK}{16} = \frac{\sin 62}{1}$$

$$HK = \frac{16 \sin 30}{\sin 62} \approx \boxed{9.1}$$

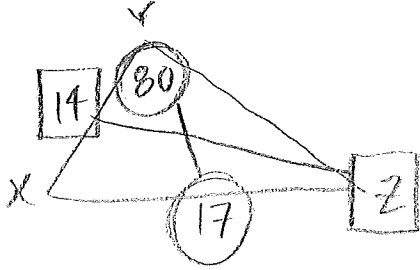
- 5) In $\triangle ABC$, $m\angle A = 70$, $m\angle C = 62$ and $BC = 7.3$. What is AB ? Round to the nearest tenth.



$$\cancel{\sin 62} \cdot \frac{AB}{\sin 62} = \frac{7.3}{\sin 70} \cdot \frac{\cancel{\sin 62}}{1}$$

$$AB = \frac{7.3 \sin 62}{\sin 70} \approx \boxed{6.9}$$

- 6) In $\triangle XYZ$, $XY = 14$, $XZ = 17$, and $m\angle Y = 80$. What is $m\angle Z$? Round to the nearest degree.



$$14 \cdot \frac{\sin z}{14} = \frac{\sin 80 \cdot 17}{17}$$

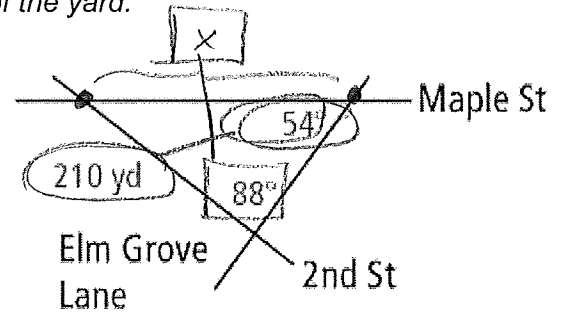
$$\sin^{-1}(\sin z) = \sin^{-1}\left(\frac{17 \sin 80}{17}\right)$$

$$z = \sin^{-1}\left(\frac{17 \sin 80}{17}\right) \approx \boxed{54}$$

- 7) A portion of a city map is shown in the diagram. If you walk along Maple Street between 2nd Street and Elm Grove Lane, how far do you walk? Round to the nearest tenth of the yard.

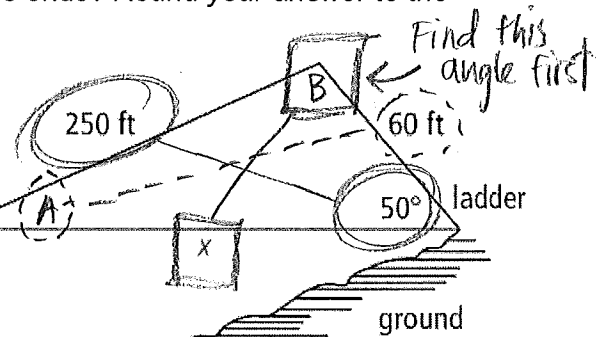
$$\cancel{\sin 88} \cdot \frac{x}{\sin 88} = \frac{210}{\sin 54} \cdot \frac{\cancel{\sin 88}}{1}$$

$$x = \frac{210 \sin 88}{\sin 54} \approx \boxed{259.4 \text{ yds}}$$



- 8) A zipline is a long cable or rope strung high over the ground. People wear harnesses hooked to the cable and slide down for fun. This zipline is constructed over a ravine as shown in the diagram. What is the horizontal distance from the bottom of the ladder to the platform where the zipline ends? Round your answer to the nearest tenth of a foot.

Based on the given info, the only other thing we can find is this \angle which we can use to find the \angle opposite x .



$$\frac{60}{60} \cdot \frac{\sin A}{\sin 50} = \frac{60}{250} \cdot \frac{\sin 50}{1}$$

$$m\angle B = 180 - 50 - 10.6 = 119.4$$

$$\cancel{\sin 119.4} \cdot \frac{x}{\sin 119.4} = \frac{250}{\sin 50} \cdot \cancel{\sin 119.4}$$

$$A = \sin^{-1}\left(\frac{60 \sin 50}{250}\right) \approx 10.6^\circ$$

$$x = \frac{250 \sin 119.4}{\sin 50} \approx \boxed{284.3}$$