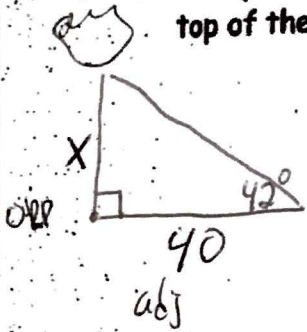


6. At a point on the ground 40 feet from the base of a tree, the angle of elevation of the top of the tree is 42 degrees. Find the height of the tree to the nearest tenth of a foot.

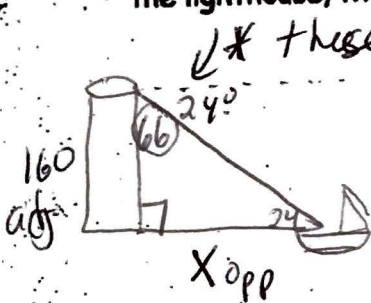


$$40 \cdot \tan 42 = \frac{X}{40} \cdot 40$$

$$X = 40 \cdot \tan(42)$$

$$X \approx 36 \text{ ft}$$

7. From the top of the lighthouse 160 feet high, the angle of depression of a boat out at sea is 24 degrees. Find, to the nearest foot, the distance from the boat to the foot of the lighthouse, the foot being at sea level.

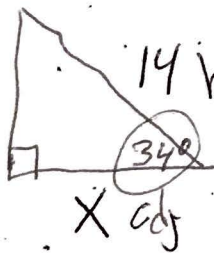


↓ * these add up to 90°

$$160 \cdot \tan 66 = \frac{X}{160} \cdot 160$$

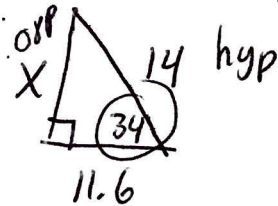
$$X \approx 359.4 \text{ ft}$$

8. The hypotenuse of a right triangle measures 14 cm. One of the two acute angle measures is 34 degrees. What is the perimeter of the triangle?



$$14 \cdot \cos 34 = \frac{X}{14} \cdot 14$$

$$X \approx 11.6$$

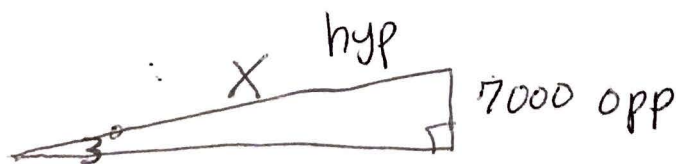


$$\sin 34 = \frac{X}{14}$$

$$X \approx 7.8$$

$$P = 14 + 11.6 + 7.8 = \boxed{33.4 \text{ cm}}$$

9. Trains have a very difficult time climbing steep inclines. If the maximum angle that a train can climb is 3 degrees, how many miles long must the tracks be to climb a 7000 ft high mountain pass? Round to the nearest mile?



$$X \cdot \sin 3 = \frac{7000}{X}$$

$$X \cdot \sin 3 = \frac{7000}{\sin 3}$$

$$X \approx \boxed{133751.3 \text{ ft}}$$