

Checkpoint 7D/7E

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Find the measure of theta. Round to the nearest tenth.

$\cos \theta = \frac{6}{11}$
 $\cos^{-1}(\cos \theta) = \cos^{-1}\left(\frac{6}{11}\right)$
 $\theta \approx 56.9^\circ$

$\sin \theta = \frac{3}{5}$
 $\sin^{-1}(\sin \theta) = \sin^{-1}\left(\frac{3}{5}\right)$
 $\theta \approx 36.9^\circ$

Find the measures of the unknown angles. Round answers to the nearest tenth.

$\tan A = \frac{7.5}{8}$
 $\tan^{-1}(\tan A) = \tan^{-1}\left(\frac{7.5}{8}\right)$
 $A \approx 43.15$
 $A \approx 43.2^\circ$
 $B = 46.8^\circ$

$A = 180 - 90 - 51$
 $A = 39^\circ$

Find the measure of x. Round to the nearest tenth.

$16 \cdot \sin(62^\circ) = \frac{x}{16}$
 $16 \cdot \sin(62^\circ) = x$
 $x \approx 14.1$

$x \cdot \tan(49.4^\circ) = \frac{6}{x}$
 $\frac{x \cdot \tan(49.4^\circ)}{\tan(49.4^\circ)} = \frac{6}{\tan(49.4^\circ)}$
 $x \approx 5.1$

Solve each triangle. Round answers to the nearest tenth.

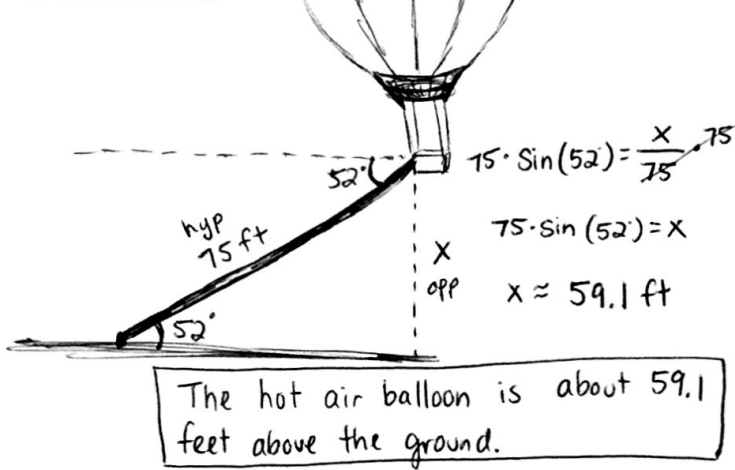
$(5)^2 + b^2 = (14)^2$
 $25 + b^2 = 196$
 $-25 \quad -25$
 $\sqrt{b^2} = \sqrt{171}$
 $b \approx 13.1$

$\sin \theta = \frac{5}{14}$
 $\sin^{-1}(\sin \theta) = \sin^{-1}\left(\frac{5}{14}\right)$

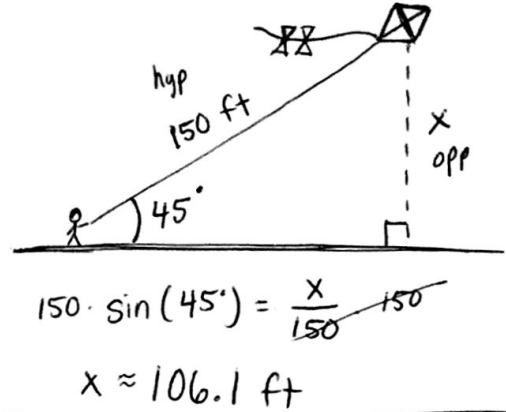
$\theta = 20.9^\circ$
 $A \approx 20.9^\circ$
 $B \approx 69.1^\circ$

$22.9 \cdot \tan(25^\circ) = \frac{a}{22.9}$
 $a \approx 10.7$
 $a^2 + b^2 = c^2$
 $(10.7)^2 + (22.9)^2 = c^2$
 $\sqrt{638.439} = \sqrt{c^2}$
 $c \approx 25.3$
 $B = 65^\circ$

- 9) A hot air balloon is tethered to the ground by a 75-foot cable. As the balloon is inflated, it begins to rise and drift away due to the wind. When the cable is pulled tight, the angle of depression from the balloon to the ground is 52° . How high above the ground is the balloon at this moment?

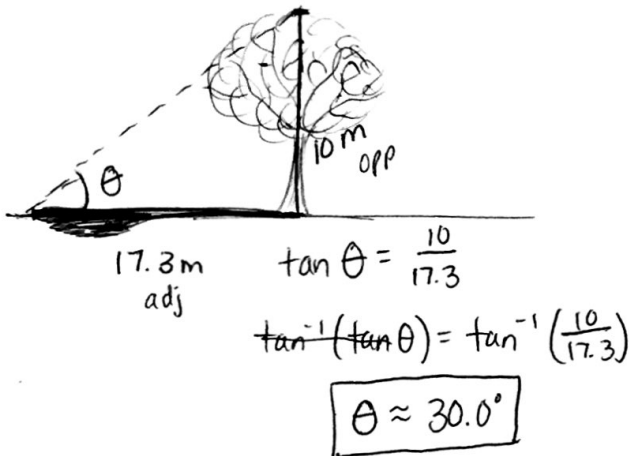


- 10) A kite with a string 150 ft long makes an angle of 45° with the ground. Assuming the string is straight, how high is the kite?

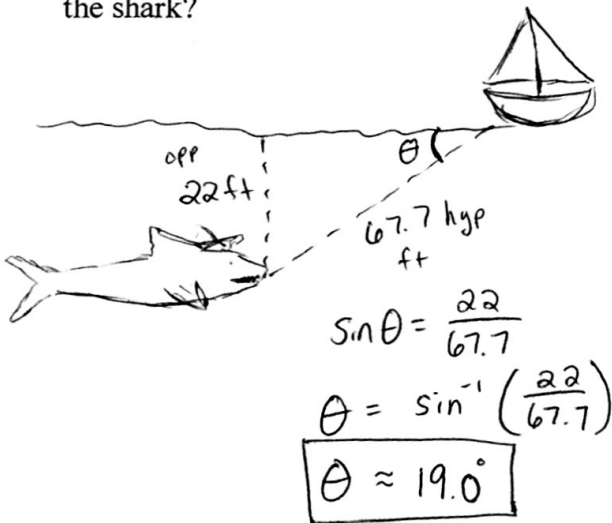


The kite is about 106.1 feet off the ground.

- 11) A tree 10 meters high casts a 17.3 meter shadow. What is the angle of elevation of the sun?



- 13) A great white shark swims 22 feet below sea level. If the shark is 67.7 feet from the sailboat, what is the angle of depression of the boat to the shark?



- 12) A plane is flying at an altitude of 12,000 miles. From the pilot, the angle of depression to the airport tower is 32° . How far is the tower from a point directly beneath the plane?

