

**Notes: Trig Day 2
More SOHCAHTOA**

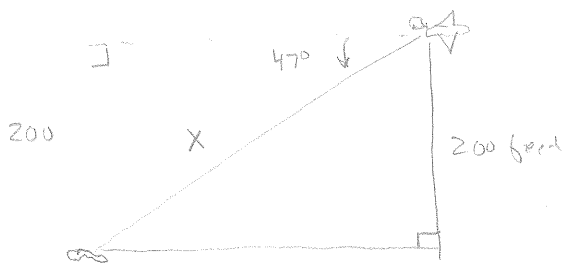
The **angle of elevation** is the angle formed by a horizontal ray and the ray looking up to a given object.

The **angle of depression** is the angle formed by a horizontal ray and the ray looking down to a given object.

Mark Text

1-4 Draw a picture, write a trig. equation, then solve. Round to thousandths.

1) A bird hovering at 200 ft. in the air, spots a worm on the ground. The angle of depression from the bird to the worm is 47° . a) What's the distance from the bird to the worm? b) If the bird travels at 12 ft/sec, then how long will it take for the bird to reach the worm?



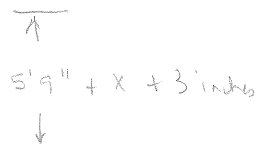
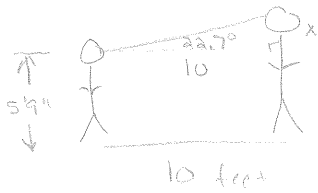
a) $\sin 47 = \frac{200}{X}$

$X = 273.465 \text{ feet}$

b) $273.465 \text{ feet} \div \frac{12 \text{ ft/sec}}{\text{sec}} =$

22.789 sec

2) Fiyin is standing 10 ft. from the man of her dreams. The angle of elevation from her eyes to his eyes is 22.7° . Fiyin's eyes are 5 ft. 9in. above the ground. How tall is the man of her dreams? (The distance between his eyes and the top of his head is 3(in.))



$$\tan 22.7^\circ = \frac{x}{10}$$

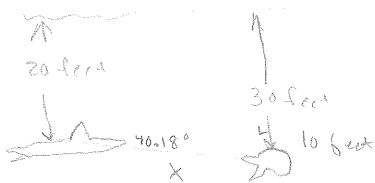
$$x = 4.183 \text{ feet}$$

$$5'9'' + 4.183 \text{ feet} + 3 \text{ inches}$$

$$5.75' + 4.183 \text{ feet} + .25 \text{ feet}$$

$$\boxed{10.183 \text{ feet}}$$

3) A shark is 20 ft. below sea level while some bait is 30 ft. below sea level. The angle of depression from the shark to the bait is 40.18° . The shark swims directly towards the bait and arrives at the bait in 3.1 sec. How fast did the shark travel in ft/sec?



$$\sin 40.18^\circ = \frac{10}{x}$$

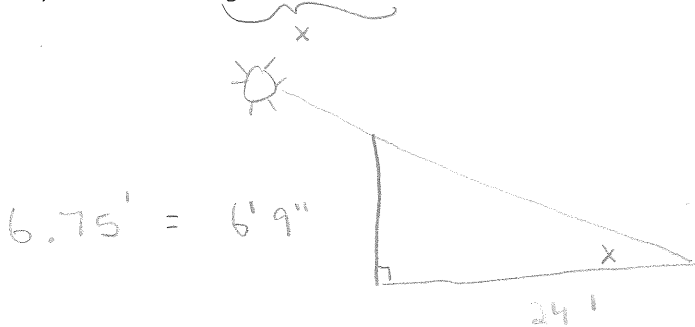
$$x = 15.499 \text{ feet}$$

$$\text{Speed} = \frac{15.499 \text{ feet}}{3.1 \text{ sec}}$$

$$\boxed{5.0 \text{ ft/sec}}$$

The \angle of **elevation of the sun** is the \angle formed by the shadow of an object, and the ray connecting the end of the shadow to the top of the object.

4) Find the angle of elevation of the sun when a 6 ft. 9in man casts a 24 ft. shadow.



$$\tan x = \frac{6.75}{24}$$

$$\boxed{x = 15.709^\circ}$$