

Name

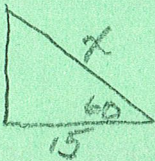
Key

HW#

HW: Word Problems Using Right Triangle Trig

Draw pictures! Make all answers accurate to the nearest tenth.

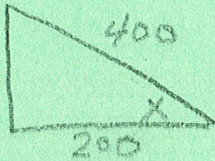
1. A damsel is in distress and is being held captive in a tower. Her knight in shining armor is on the ground below with a ladder. When the knight stands 15 feet from the base of the tower and looks up at his precious damsel, the angle of elevation to her window is 60 degrees. How long does the ladder have to be?



$$\cos 60 = \frac{15}{x}$$

$$x = 30$$

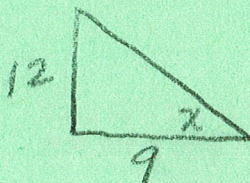
2. You are 200 yards from a river. Rather than walking directly to the river, you walk 400 yards along a straight path to the river's edge. Find the acute angle between path and the river's edge.



$$\cos x = \frac{200}{400}$$

$$x = 60$$

3. A 12 meter flagpole casts a 9 meter shadow. Find the angle of elevation of the sun.



$$\tan x = \frac{12}{9}$$

$$x = 53.1$$

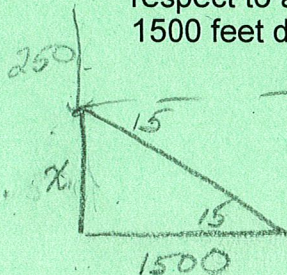
4. Suppose you're flying a kite, and it gets caught at the top of the tree. You've let out all 100 feet of string for the kite, and the angle that the string makes with the ground is 75 degrees. Instead of worrying about how to get your kite back, you wonder.

"How tall is that tree?"

$$\sin 75 = \frac{x}{100}$$

$$x = 96.6$$

5. A submersible traveling at a depth of 250 feet dives at an angle of 15° with respect to a line parallel to the water's surface. It travels a horizontal distance of 1500 feet during the dive. What is the depth of the submersible after the dive?

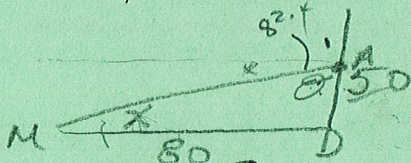


$$\tan 15 = \frac{x}{1500}$$

$$x = 401.9$$

651.9 ft

6. Suppose that Mike and Dave are making measurements for the road-paving crew. They need to know how much the land slopes downward along a particular stretch of road. Dave walks 80 feet from Mike and holds up a long pole, perpendicular to the ground, that has markings every inch along it. Mike looks at the pole through a sighting instrument. Looking straight across, parallel to the horizon, Mike sights a point on the pole 50 inches above the ground- call it point A. Then Mike looks through the instrument at the bottom of the pole, creating an angle of depression. Which is the angle of depression ~~or slope~~ of the road, to where Mike is standing?



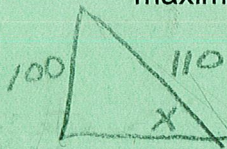
$$\tan X = \frac{50}{80}$$

$$X = 2.98$$

82.4

~~2.98~~

7. A fire department's longest ladder is 110 feet long, and the safety regulation states that they can use it for rescues up to 100 feet off the ground. What is the maximum safe angle of elevation for the rescue ladder?

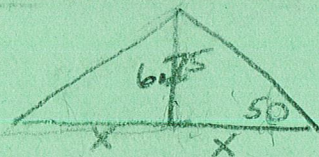


$$\sin X = \frac{100}{110}$$

$$X = 65.38$$

65.4 ft

8. Brothers Bob and Tom Katz buy a tent that has a center pole 6.25 feet high. If the sides of the tent are supposed to make a 50° angle with the ground, how wide is the tent?



$$\tan 50 = \frac{6.25}{X}$$

$$X = 5.2444$$

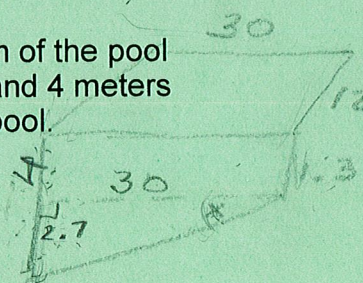
10.5 ft

9. A swimming pool is 30 meters long and 12 meters wide. The bottom of the pool is slanted so that the water depth is 1.3 meters at the shallow end and 4 meters at the deep end. Find the angle of depression of the bottom of the pool.

$$\cos X = \frac{2.7}{30}$$

$$X = 84.8$$

and 5°



10. In rhombus ABCD, diagonals AC and BD meet at point E. If the measure of angle DAB is 46° , find the length of EB. AB = 10 cm

$$\sin 23 = \frac{X}{10}$$

$$X = 3.9$$

