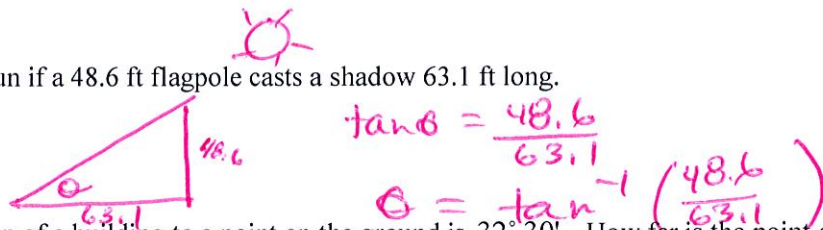


5.5 Word Problem Worksheet

Draw the right triangle and solve the problem.

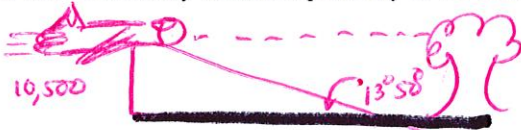
1. A 13.5 meter ladder is leaning against a wall. Find the distance the ladder goes up the wall if it makes an angle of $43^\circ 50'$ with the ground.
2. A guy wire that is 77.4 meters long is attached to the top of an antenna mast that is 71.3 meters high. Find the angle that the wire makes with the ground.
3. Find the length of a guy wire that makes an angle of $45^\circ 30'$ with the ground if the wire is attached to the top of the tower 63 meters high.
4. Suppose the angle of elevation of the sun is 23.4° . Find the length of the shadow cast by Cindy, who is 5.75 feet tall.
5. The shadow of a tower is 40.6 meters long when the angle of elevation of the sun is 34.6° . Find the height of the tower.

6. Find the angle of elevation of the sun if a 48.6 ft flagpole casts a shadow 63.1 ft long.

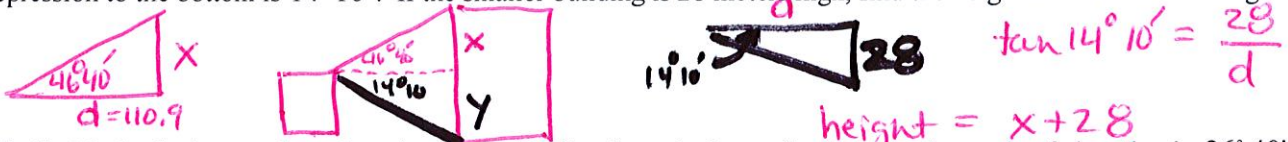


7. The angle of depression from the top of a building to a point on the ground is $32^\circ 30'$. How far is the point on the ground from the top of the building if the building is 252 meters high?

8. An airplane is flying 10,500 feet above the level ground. The angle of depression from the plane to the base of a tree is $13^\circ 50'$. How far horizontally must the plane fly to be directly over the tree?



9. The angle of elevation from the top of a small building to the top of a nearby taller building is $46^\circ 40'$, while the angle of depression to the bottom is $14^\circ 10'$. If the smaller building is 28 meters high, find the height of the taller building.



10. Shelly McCarthy knows that when she stands 123 feet from the base of a flagpole, the angle of elevation is $26^\circ 40'$. If her eyes are 5.3 feet above ground, find the height of the flagpole.



Key

5.5 Practice Worksheet

Solve each triangle described, given the triangle below. Round angle measures to the nearest degree and side measures to the nearest tenth.

1. $A = 39^\circ 12', b = 2.1$

$A = 39^\circ 12' \quad B = 50^\circ 48' \quad C = 90^\circ$
 $a = 1.7 \quad b = 2.1 \quad c = 2.7$

2. $B = 49^\circ, a = 9$

$A = 41^\circ \quad B = 49^\circ \quad C = 90^\circ$
 $a = 9 \quad b = 10.4 \quad c = 13.7$

3. $B = 64^\circ, b = 19.2$

$A = 26^\circ \quad B = 64^\circ \quad C = 90^\circ$
 $a = 9.4 \quad b = 19.2 \quad c = 21.4$

4. $B = 56^\circ 48', c = 63.1$

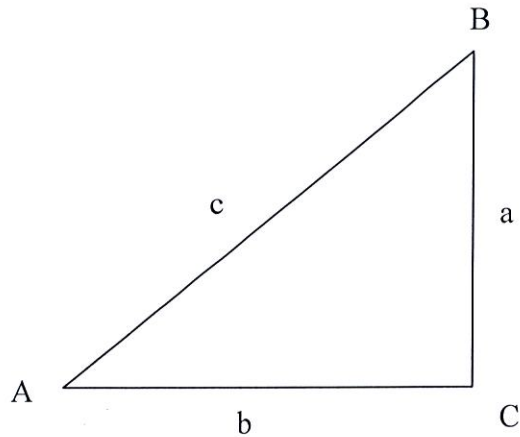
$A = 33^\circ 12' \quad B = 56^\circ 48' \quad C = 90^\circ$
 $a = 34.6 \quad b = 52.8 \quad c = 63.1$

5. $a = 0.4, c = 0.5$

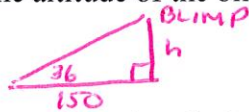
$A = 53^\circ \quad B = 37^\circ \quad C = 90^\circ$
 $a = .4 \quad b = .3 \quad c = .5$

6. $A = 26^\circ 20' 15'', c = 21.3$

$A = 26^\circ 20' 15'' \quad B = 63^\circ 39' 45'' \quad C = 90^\circ$
 $a = 7.8 \quad b = 19.1 \quad c = 21.3$

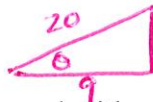


8. A blimp is hovering over a landing pad 150 m from where you are standing. The blimp's angle of elevation with the ground is 36° . What is the altitude of the blimp?



$\tan 36 = \frac{h}{150}$
 $h \approx 109 \text{ m}$

9. A 20-foot ladder leans against a wall so that the base of the ladder is 9 feet from the base of the building. What angle (nearest minute) does the ladder make with the ground?



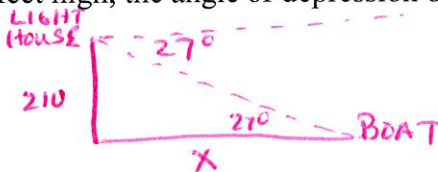
$\cos \theta = \frac{9}{20}$
 $\theta = 63^\circ 15'$

10. A 55-meter vertical tower is braced with a cable secured at the top of the tower and tied 32 meters from the base. What angle does the cable form with the ground (nearest degree)?



$\tan \theta = \frac{55}{32}$
 $\theta = 60^\circ$

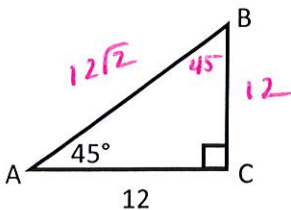
11. From the top of a lighthouse 210 feet high, the angle of depression of a boat is 27° . Find the distance from the boat to the foot of the lighthouse.



$\tan 27 = \frac{210}{x}$
 $x = 412.1 \text{ ft.}$

Solve each right triangle.

11.



12.

