

§4.8: Right Triangle Trig Applications

“I WILL...

...solve right triangles using trigonometry.”

I. Steps in Application Problems

- A. Draw a picture
- B. Label the sides of the triangle and the missing side as x
- C. Determine which of the 3 basic trig functions to use
- D. Write the equation in calculator-ready form

Ex 1: Solve for all unknown sides and angles where $\angle A = 34.2^\circ$, $b = 19.4$, and $\angle C = 90^\circ$.

Ex 2: Solve for all unknown sides and angles where $B \approx 65^\circ 12'$, $a = 14.2$, and $\angle C = 90^\circ$.

Your Turn: Solve for all unknown sides and angles where $A = 40^\circ$, $b = 27$, and $\angle C = 90^\circ$.

II. Angle of Elevation & Angle of Depression

- A. Angle of Elevation is a measurement _____ the horizontal line
- B. Angle of Depression is a measurement _____ the horizontal line

Ex 3: A flagpole casts a 60-foot shadow when the angle of elevation of the sun is 35° . Find the height of the flagpole.

Ex 4: A wire needs to reach from the top of a building to the point on the ground. The building is 10 meters tall and the angle of depression from the top of the building to the point on the ground is 22° . How long should the wire be?

Ex 5: A person on the edge of a canal observes a lamp post on the other side with an angle of elevation of 12° to the top of the lamp post and an angle of depression of 7° to the bottom of the lamp post from eye level. The person's eye level is 152 cm. Find the height of the lamp post.

Your Turn: A boat is observed from the top of a 30-foot tower. The angle of depression from the tower to the boat is 15° . How far is the boat from the tower?