**Lesson 1.2 – Applications of Trigonometric Ratios**

* Learning Goal: Determine the unknown sides and angles of an acute right triangle

*Example 1*: You are tasked at measuring the height of a certain tall building. From 40 meters away you can measure the angle to the top of the building is 70 degrees. Find the height of the building.

**700**

**40 m**



An angle from horizontal looking *up* at an object is an *angle of elevation*

An angle from horizontal looking *down* at an object is an *angle of depression*

*Example 2:* An air traffic controller is in a control tower 92 m above the ground. He estimates his angle of elevation to a passing airplane to be 17º. The airplane is approximately 4800 m from the control tower.

1. Approximately how high is the airplane above the ground?
2. Determine the approximate angle of elevation from the bottom of the control tower to the airplane.



*Example 3:* A roadway rises 4 m for every 10 m along the road. What is the angle of elevation of the roadway?

*Example 4:* From the top of a 100 metre cliff, Roger looks at a boat in the lake below. The angle of depression from Roger to the boat is 30°. What is the distance of the boat from the bottom of the cliff?

*Example 5:*

