

9.1 Right Triangle Applications

OBJECTIVE 1: Solving Right Triangles

Right triangles abound in our everyday world, and so it is appropriate at this point to look at just a few situations where the right triangle definitions of trigonometric functions can simplify our lives. We start with a concept called “solving right triangles.” The goal of solving a right triangle is to determine the measure of all angles and the length of all sides, given certain information.

In order to solve a right triangle, we must be given at least two pieces of information. The only two pieces of information that will not help to solve a right triangle are the measures of two angles. In this case we can easily determine the measure of the third angle but it is impossible to determine the length of the three sides. This is because there are infinitely many similar right triangles with the same three angle measures.

OBJECTIVE 2 Applications Using Right Triangles

Applications involving right triangles often involve angles created by an observer looking up or looking down at an object. The angle between the horizontal and the line of sight of an object *above* the horizontal is called the **angle of elevation**. The angle between the horizontal and the line of sight of an object *below* the horizontal is called the **angle of depression**.

