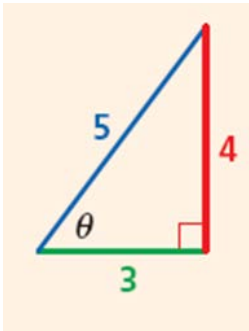
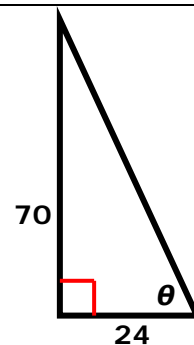


A **trigonometric function** is a function whose rule is given by a trigonometric ratio. A **trigonometric ratio** compares the lengths of two sides of a **right triangle**. The value of a trigonometric ratio depends upon the measure of an acute angle in a right triangle.

Trigonometric Functions and Reciprocal Trigonometric Functions		
Words	Numbers	Symbols
Sine		
Cosine		
Tangent		

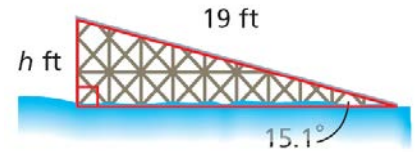
(1) Find the values of the six trigonometric functions for θ .



Trigonometric Ratios of Special Right Triangles			
Diagram	Sine	Cosine	Tangent

Applications

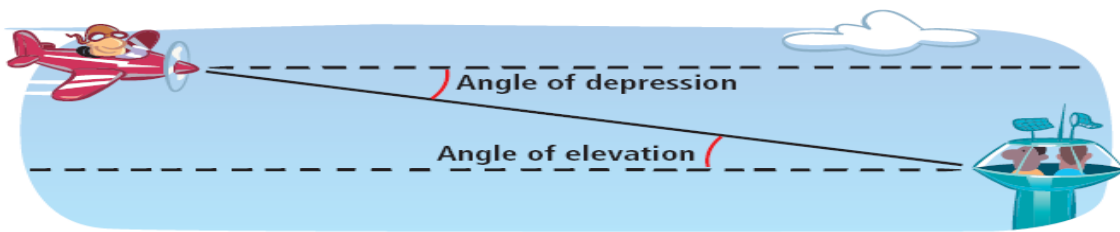
- (2) In a waterskiing competition, a jump ramp has the measurements shown. To the nearest foot, what is the height h above water that a skier leaves the ramp?



- (3) A skateboard ramp will have a height of 12 inches, and the angle between the ramp and the ground will be 17° . To the nearest inch, what will be the length l of the ramp?

Angles of Elevation and Depression

When an object is above or below another object, you can find distances indirectly using the **angle of elevation** or the **angle of depression** between the objects.



- (4) A biologist whose eye level is 6 ft above the ground measures the angle of elevation to the top of a tree to be 38.7° . If the biologist is standing 180 ft from the tree's base, what is the height of the tree to the nearest foot?

- (5) Mr. Domino is standing on a 40-foot ocean bluff near his home. He can see his two dogs on the beach below. If his line of sight is 6 feet above the ground and the angles of depression to his dogs are 34° and 48° , how far apart are the dogs?