Chapter 3: Trigonometry

3.2 Solving Problems

A. Two-Step Triangles

Example 1: Solve the following triangle:

Example 2: Find the length of side AB
Assignment
Find the length of the side AB (to the nearest tenth):

1)

2)

3)
Two-Step Answer Key
1) 15.8 mm  2) 8.6 ft  3) 15.5 cm  4) 30.1 yds  5) 32 cm  6) 12.0 m
Word Problems

**Example 1:** A guy wire for a flag pole is 10 m long. The foot of the guy wire is 7 m to the foot of the flag pole. What is the angle of inclination of the guy wire?

**Example 2:** A 10-ft ladder leans against the side of a building with its base 4-ft from the wall. What angle, to the nearest degree, does the ladder make with the wall?
Example 3:  The angle of elevation of the sun is 68° when the tree casts a shadow 14.3 m long. How tall is the tree?

Example 4:  A surveyor, 31 m from a building, uses a transit to measure the angle of elevation to the top of the building to be 37°. The transit is set at a height of 1.5 m.

a) Calculate the distance from the transit to the top of the building.

b) Calculate the height of the building.
Assignment

1. From a distance of 80.0 m, the angle of elevation of the top of a flagpole is $18^0$. Determine the height of the flagpole, to the nearest tenth of a metre.

2. A radio tower is 350 m high. If the sun’s rays make an angle of $39^0$ with the ground, determine the length of the tower’s shadow.

3. Sharon is flying a kite on a string 130 m long. Determine the height of the kite if the string is an angle of $34^0$ to the ground. What assumptions are you making?
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4. The diagonal of a rectangle is 12 cm long and makes an angle of $32^0$ with the longer side. Find the length of the rectangle.

5. An airplane is flying at an altitude of 6000 m over the ocean directly towards an island. When the angle of depression of the coastline from the airplane is $14^0$, how much farther does the airplane have to fly before it crosses the coast?

6. Find the measure of the acute angle formed by the intersection of the diagonals of a rectangle which measures 8 cm by 6 cm.

Word Problems Answer Key
1) 26.0 m 2) 432 m 3) 73 m assuming the string is straight 4) 10 cm 5) 5 cm 5) 24065 m 6) 74$^0$ 7) 2.9 m, 7.7 m
Practice Quiz

1) Find the length of side AB to the nearest tenth

2) From a distance of 25.0 m, the angle of elevation of the top of a tree is $60^\circ$. Determine the height of the tree, to the nearest tenth of a metre.

Practice Quiz Answer Key
1) 98 cm  2) 43.3 m