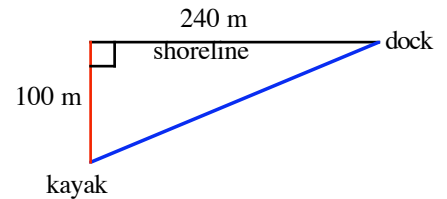


### Test 4 Pretest, Chapters 2 & 7

**Round each part (length or angle measure) in an answer to the nearest tenth, unless otherwise indicated.**

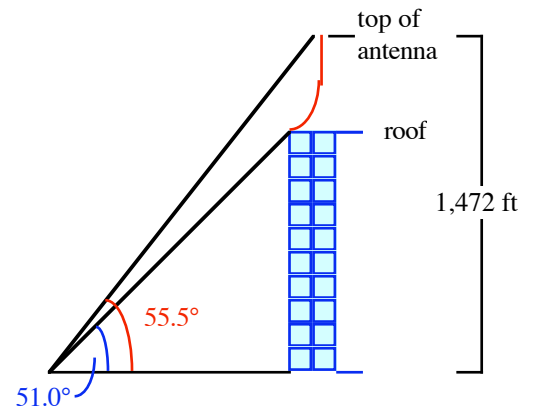
1. The following refer to triangle  $ABC$  with  $C = 90^\circ$ . In each case, find all of the missing parts.
  - a)  $a = 68$  and  $b = 104$ .
  - b)  $a = 24.3$  and  $c = 48.1$ .
  - c)  $b = 305$  and  $B = 24.9^\circ$ .
  - d)  $c = 8.1$  and  $A = 35.5^\circ$ .
2. The altitude of an isosceles triangle is 25 cm and each base angle measures  $17^\circ$ .
  - a) How long is each of the two congruent sides of the triangle?
  - b) How long is the base of the triangle?
3. If the angle of elevation of the sun is  $68^\circ$ , how tall is a fence post that casts a shadow that is 2.4 feet long?
4. If a 73-foot tall flagpole casts a 51-foot long shadow, what is the angle of elevation of the sun? (Round to the nearest degree.)

5. Jerrod is paddling a kayak on a lake. He pauses 100 meters from the nearest point on a shore and points the kayak toward a dock that is 240 meters down the straight shoreline.



- a) At this moment, how far is the kayak from the dock? (Round to the nearest meter.)
  - b) What angle with the shoreline is the kayak making as he paddles toward the dock? (Round to the nearest degree.)

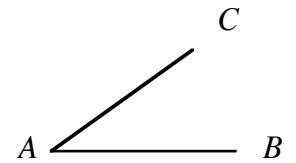
6. The height of the Empire State Building in New York City, from the ground to the top of its antenna, is 1,472 feet. From a point several blocks away, the angle of elevation to the top of the antenna is  $55.5^\circ$ . From the same point, the angle of elevation to the roof of the building is  $51.0^\circ$ . How high is the rooftop of the Empire State Building? (Round to the nearest foot.)



7. Each refers to triangle  $ABC$ , which is not necessarily a right triangle. For each, determine whether to use the Law of Sines or the Law of Cosines to answer the question. The ambiguous case is not included in this set of exercises.

- a) If  $A = 32^\circ$ ,  $B = 70^\circ$ , and  $a = 38$  centimeters, find the length of  $b$ .
- b) If  $A = 15^\circ$ ,  $b = 8$  inches, and  $c = 12$  inches, find the length of  $a$ .
- c) If  $a = 10$  meters,  $b = 7$  meters, and  $c = 9$  meters, find the measure of  $C$ .
- d) If  $A = 106^\circ$ ,  $C = 20^\circ$ , and  $a = 42$  inches, find the length of  $b$ .
- e) If  $C = 15^\circ$ ,  $b = 15$  feet, and  $a = 10$  inches, find the measure of  $B$ .

8. Each refers to triangle  $ABC$ , which is not necessarily a right triangle. Each of these is of the Angle-Side-Side variety so the ambiguous case applies. From the given information, find all possible triangles, if any exist.

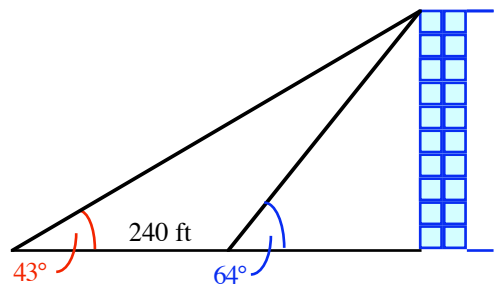


Use this incomplete triangle as the model for your work.

- a) If  $A = 52^\circ$ ,  $b = 8$  inches, and  $a = 5$  inches, find all possible measures of  $B$ .
- b) If  $A = 71^\circ$ ,  $b = 10$  feet, and  $a = 11$  feet, find all possible measures of  $B$ .
- c) If  $A = 102^\circ$ ,  $b = 4$  meters, and  $a = 8$  meters, find all possible measures of  $C$ .
- d) If  $A = 28^\circ$ ,  $b = 12$  centimeters, and  $a = 6$  centimeters, find all possible lengths of  $c$ .

9. The two congruent sides of an isosceles triangle are each 38 centimeters long. If the base is 48 centimeters long, what is the measure of each base angle?

10. A woman standing near a building measures the angle of elevation to the top of the building to be  $64^\circ$ . She then walks 240 feet farther away from the building and measures the angle of elevation to the top of the building to be  $43^\circ$ . How tall is the building? (Round to the nearest foot.)



11. The diagonals of a parallelogram measure 26 inches ( $AC$ ) and 39 inches ( $BD$ ). If they meet at an angle of  $112^\circ$ , what is the length of the shorter side of the parallelogram?

