

## Trigonometry

### Solving Triangles: The Law of Sines and Cosines – Mixed Homework Problems

*In this assignment, you will use a combination of right triangle trig, the law of sines and the law of cosines to solve the triangles. All answers should be to the nearest tenth.*

- 1) Solve the triangle with  $A = 40^\circ$ ,  $B = 80^\circ$ ,  $a = 15$  cm.
- 2) To measure the height of a hill, a surveyor spots two points on the ground in line with the hill and marks them A and B. From the top of the hill she measures the angle of depression to point A as  $39.5^\circ$  and the angle of depression to point B as  $47^\circ$ . On the ground, the distance between points A and B is 36 meters. How tall is the hill?
- 3) Solve the triangle with  $B = 100^\circ$ ,  $b = 10$  m,  $c = 15$  m
- 5) Solve the triangle with  $A = 40^\circ$ ,  $a = 12$  cm,  $b = 15$  cm
- 6) A child finds three sticks, one is 10 in. long, one is 16 in. long and the third is 18 in. long. He lays them on the ground so that the ends meet to form a triangle. What are the angles formed by the three sides? If another child joins the first, picks up the sticks and also lays them on the ground so that the ends meet to form a triangle, is his triangle congruent to the first triangle?
- 7) To measure the width of a crater, Nick marks a spot on the ground outside the crater. He measures the distance from the point to the left side of the crater as 49 ft. The distance from the point to the right side of the crater is 55 ft. The angle between the line from the point to the left side and the line from the point to the right side is  $96^\circ$ . How wide is the crater from the left to the right?
- 8) The bearing from a dock to a boat 600 m from the dock is  $60^\circ$ . The bearing from the boat to a second boat is  $100^\circ$ . The bearing from the second boat back to the dock is  $255^\circ$ . How far apart are the boats? How far is the second boat from the dock?