

Law of Sines and Law of Cosines

Solve the following equations for x .

1. $\frac{\sin(68^\circ)}{x} = \frac{\sin(37^\circ)}{3}$

2. $\frac{\sin(24^\circ)}{8} = \frac{\sin(x)}{3.75}$

$x =$ _____

$x =$ _____

3. $23^2 = 37^2 + 18^2 - 2(37)(18)\cos(x)$

4. $x^2 = 10^2 + 8^2 - 2(10)(8)\cos(60^\circ)$

$x =$ _____

$x =$ _____

Find each measure using the given measures of $\triangle KLM$.

5. In $\triangle KLM$; $m = 10.5$, $k = 18.2$, and $m\angle K = 73^\circ$. Find $m\angle M$.

$m\angle M =$ _____

6. In $\triangle KLM$; $m\angle L = 88^\circ$, $m\angle K = 31^\circ$, and $m = 5.4$. Find l .

$l =$ _____

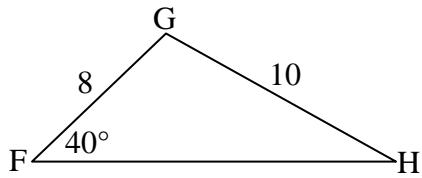
7. In $\triangle KLM$; $m = 11$, $l = 17$, and $m\angle K = 59^\circ$. Find k .

$k =$ _____

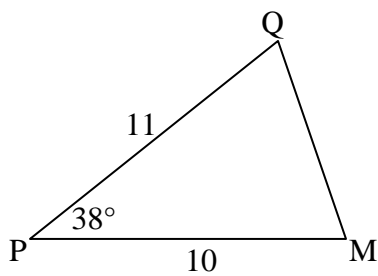
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Solve each triangle by finding all of the missing side lengths and angle measures..

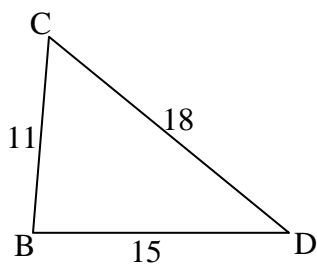
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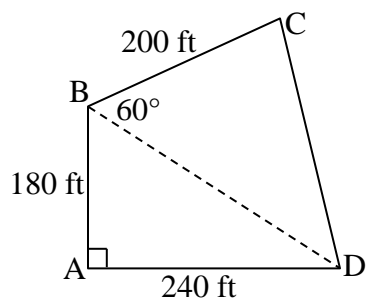
9.



10.



11. Ms. Jenkins is buying some property that is shaped like quadrilateral $ABCD$ below. Find the perimeter of the property.



Law of Sines and Law of Cosines

1. Juan and Romella are standing at the seashore 10 miles apart. The coastline is a straight line between them. Both can see the same ship in the water. The angle between the coastline and the line between the ship and Juan is 35 degrees. The angle between the coastline and the line between the ship and Romella is 45 degrees. How far is the ship from Juan?
2. Jack is on one side of a 200-foot-wide canyon and Jill is on the other. Jack and Jill can both see the trail guide at an angle of depression of 60 degrees. How far are they from the trail guide?
3. Tom, Dick, and Harry are camping in their tents. If the distance between Tom and Dick is 153 feet, the distance between Tom and Harry is 201 feet, and the distance between Dick and Harry is 175 feet, what is the angle between Dick, Harry, and Tom?
4. Three boats are at sea: Jenny one (J1), Jenny two (J2), and Jenny three (J3). The crew of J1 can see both J2 and J3. The angle between the line of sight to J2 and the line of sight to J3 is 45 degrees. If the distance between J1 and J2 is 2 miles and the distance between J1 and J3 is 4 miles, what is the distance between J2 and J3?

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5. Airplane A is flying directly toward the airport which is 20 miles away. The pilot notices airplane B 45 degrees to her right. Airplane B is also flying directly toward the airport. The pilot of airplane B calculates that airplane A is 50 degrees to his left. Based on that information, how far is airplane B from the airport?

6. A plane leaves JFK International Airport and travels due west at 570 mi/hr. Another plane leaves 20 minutes later and travels 22° west of north at the rate of 585 mi/h. To the nearest ten miles, how far apart are they 40 minutes after the second plane leaves.

7. Flights 104 and 217 are both approaching O'Hare International Airport from directions directly opposite one another and at an altitude of 2.5 miles. The pilot on flight 104 reports an angle of depression of $17^\circ 47'$ to the tower, and the pilot on flight 217 reports an angle of depression of $12^\circ 39'$ to the tower. Calculate the distance between the planes.