

Assignment

Write

Define each term in your own words.

1. Law of Sines
2. Law of Cosines

Remember

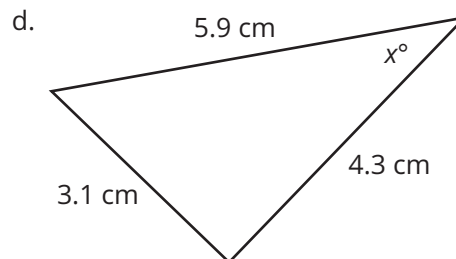
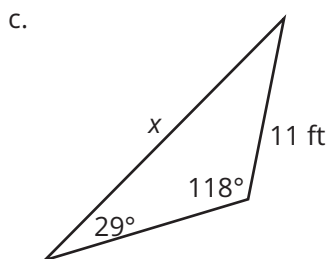
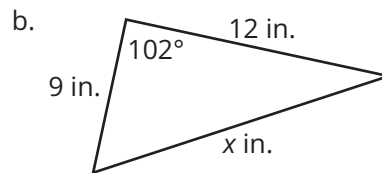
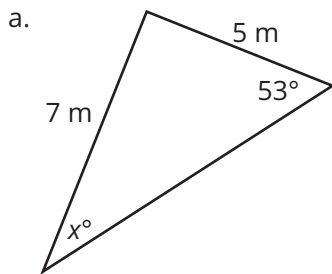
The area formula $A = \frac{1}{2}ab \cdot \sin C$ can be used to determine the area of any triangle if you know the lengths of two sides and the measure of the included angle.

The Law of Sines, or $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$, can be used to determine the unknown side lengths or unknown angle measures in any triangle.

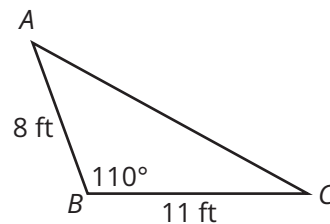
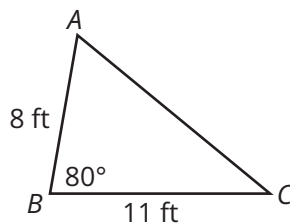
The Law of Cosines, $a^2 = b^2 + c^2 - 2bc \cdot \cos A$, $b^2 = a^2 + c^2 - 2ac \cdot \cos B$, and $c^2 = a^2 + b^2 - 2ab \cdot \cos C$, can be used to determine the unknown lengths of sides or the unknown measures of angles in any triangle.

Practice

1. Solve for x in each triangle. Round each answer to the nearest tenth.



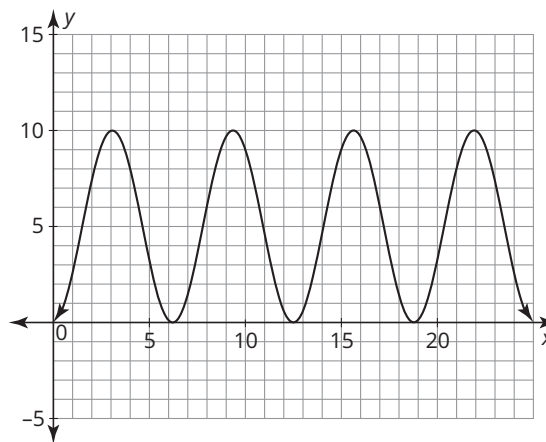
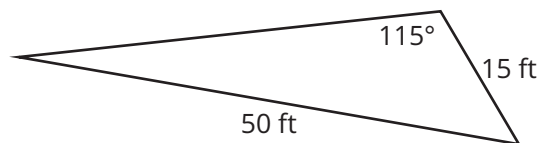
2. Emily and Joe are designing a fenced backyard play space for their children Max and Caroline. They start out by considering two designs for a triangular play space. They have made measurements in their yard and determined that either design would fit into the space that is available.



- Explain how Emily and Joe can use trigonometry to calculate the area and perimeter of the possible play spaces.
- Calculate the area of the play space for each design.
- Calculate the perimeter of the play space for each design.
- Which design do you think Emily and Joe should choose? Explain your reasoning.

Stretch

- Consider the triangle shown.
 - Determine the area of the triangle. Round your answer to the nearest tenth.
 - Determine the perimeter of the triangle. Round your answer to the nearest tenth.
- Consider the graph shown.
 - Is the graph continuous or discrete?
 - Does the graph contain a maximum? If so, what is the maximum?
 - Does the graph contain a minimum? If so, what is the minimum?
 - Approximately where are the x -intercepts?
 - Where is the y -intercept?
 - Do you notice a pattern in the graph? Explain your reasoning.



Review

- Determine the cosine of each angle measure's complement.
 - 30°
 - 45°
- Identify the theorem that proves $\triangle ABC$ and $\triangle XYZ$ are similar. Explain your reasoning.

