

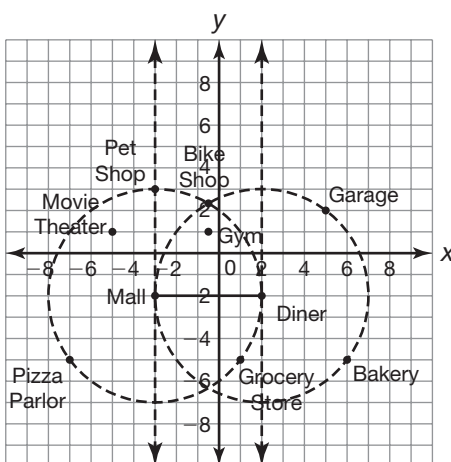
LESSON 5.1 Assignment

Name _____ Date _____

Name That Triangle!

Classifying Triangles on the Coordinate Plane

- The grid shown is a map of Stoneville and the locations of several businesses in the town. A line segment has been drawn between the locations of the mall and the diner. Using this line segment as one side of a triangle, determine the business (or businesses) whose location, when connected with the line segment, would result in each of the following types of triangles.

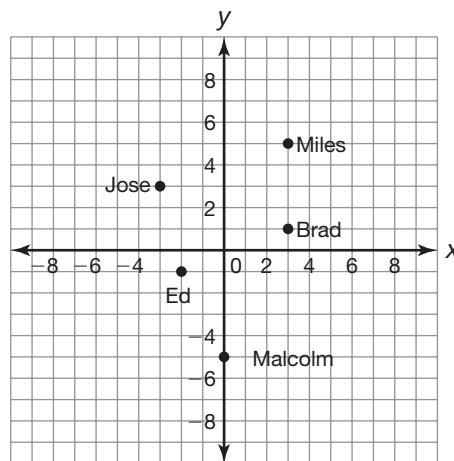


- an isosceles triangle
- an acute triangle
- a scalene triangle
- a right triangle

e. an equilateral triangle

f. a obtuse triangle

2. The grid shown represents a map of Jose's neighborhood. It shows the locations of his house as well as the houses of four friends.



- a. Draw a triangle between the houses of Jose, Ed, and Brad. Determine if this triangle is a scalene, an isosceles, or an equilateral triangle. Explain your reasoning.

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- b. Determine if the triangle is a right triangle. Explain your reasoning. If it is not a right triangle, use a protractor to determine what type of triangle it is.

- c. Jose, Miles, and Brad are meeting for band rehearsal. Miles claims that the distance from Jose's house to his house is the same as the distance from Jose's house to Brad's house. Is his claim correct? Explain your answer. What kind of triangle is formed if you connect all their houses in the shape of a triangle?

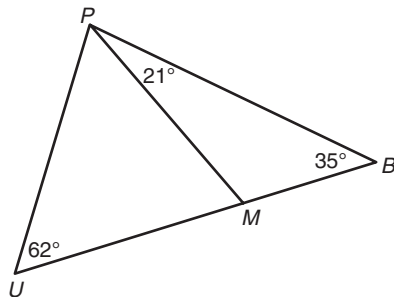
- d. A new boy, James, moved into the neighborhood at the location $(-3, -5)$. Plot and label James's house on the grid. Then, determine if the triangle formed by connecting his house, Jose's house, and Malcolm's house is a right triangle.

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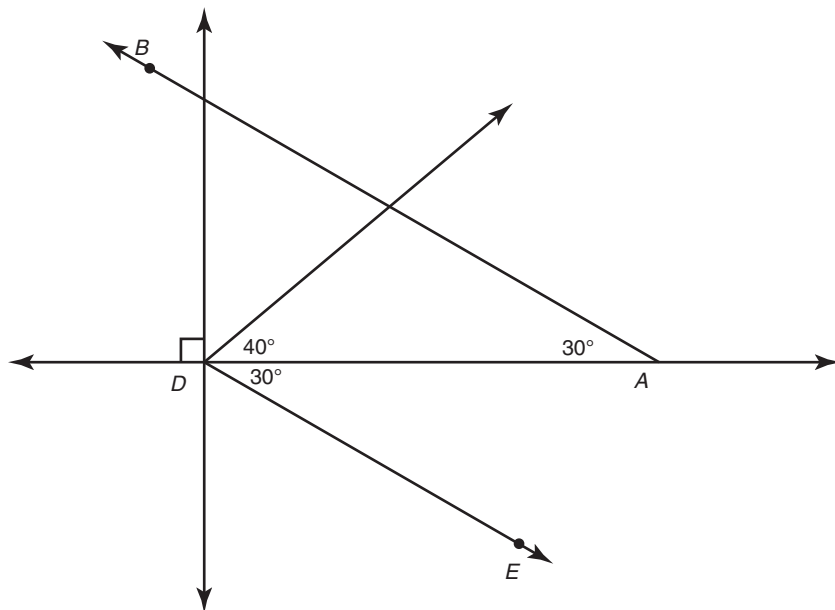
Inside Out

Triangle Sum, Exterior Angle, and Exterior Angle Inequality Theorems

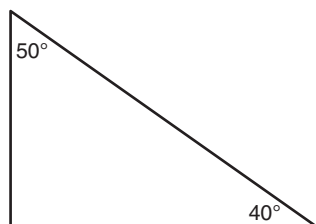
- Determine the measure of angle UPM in the figure shown. Explain your reasoning and show all your work.



2. In the figure shown, \overleftrightarrow{AB} is parallel to \overleftrightarrow{DE} . Determine the measure of each missing angle in the figure.



3. You are building a triangular play area for your new puppy. You decide that the play area will have angle measures of 50° and 40° as shown.



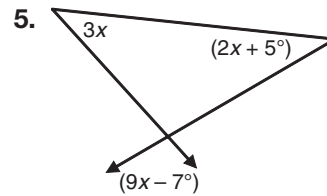
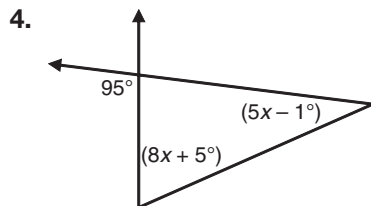
- a. Which side of the play area is the longest?

- b. Which side of the play area is the shortest?

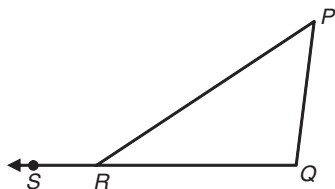
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- c. Explain how you determined your answers in parts (a) and (b).

Solve for x .



6. Use the figure shown to write a paragraph proof of the Exterior Angle Inequality Theorem.



Given: Triangle PQR with exterior angle PRS

Prove: $m\angle PRS > m\angle P$ and $m\angle PRS > m\angle Q$

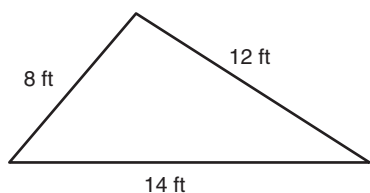
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Trade Routes and Pasta, Anyone?

The Triangle Inequality Theorem

1. You are building a triangular pen for baby ducks. The sides of the pen will be made from lumber you have left from other projects. You have two 12-foot boards, one 14-foot board, one 8-foot board, one 4-foot board, one 3-foot board, and one 2-foot board. Use this information to answer parts (a) through (f).
 - a. Suppose you choose the 14-foot board and the 4-foot board. Of the boards you have left over, what is the longest board that can be used for the third side of the pen? Explain.
 - b. Suppose you choose a 12-foot board and the 8-foot board. Of the boards you have left over, what is the shortest board that can be used for the third side of the pen? Explain.
 - c. Suppose you choose a 12-foot board and the 4-foot board. Of the boards you have left over, which board(s) can be used for the third side of the pen? Explain.

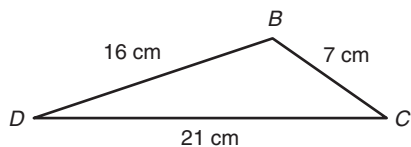
- d. How many different triangular pens can be formed using the 4-foot board?
List the side lengths of each possible triangular pen.
- e. If you only have three boards and their lengths are 5 feet, 8 feet, and 4 feet, can you form a triangular pen? Explain.
- f. Suppose you decide to build a pen with side lengths of 14 feet, 12 feet, and 8 feet as shown. Which angle has the greatest measure? Which angle has the least measure? Explain.



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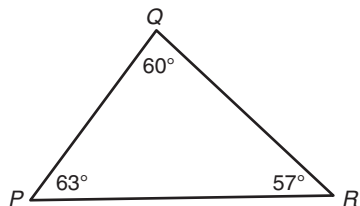
List the angles and sides of each triangle in order from least to greatest.
Do not measure the angles or sides.

2.



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3.



4. Triangle ABC with the following: $m\angle A = 27^\circ$, $m\angle B = 119^\circ$, and $m\angle C = 34^\circ$
5. Triangle RST with the following: $RS = 8$ centimeters, $ST = 20$ centimeters, and $RT = 14$ centimeters

Determine whether it is possible to form a triangle using segments with the following measurements. Explain.

6. 14 inches, 21 inches, 7 inches

7. 26 feet, 10 feet, 18 feet

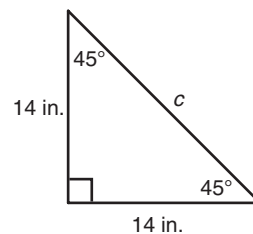
8. 2.2 millimeters, 7.2 millimeters, 5.1 millimeters

LESSON 5.4 Assignment

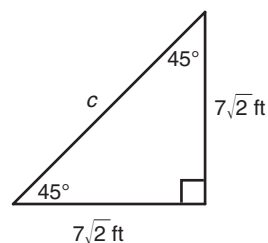
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Stamps Around the World
Properties of a 45° – 45° – 90° Triangle

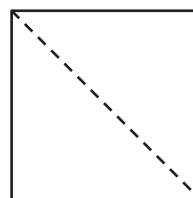
1. The legs of the isosceles triangle each measure 14 inches.
Calculate the length of the hypotenuse.



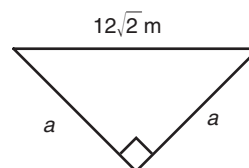
2. Calculate the value of c .



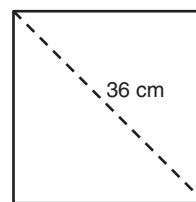
3. The perimeter of the square is 32 centimeters.
Calculate the length of its diagonal.



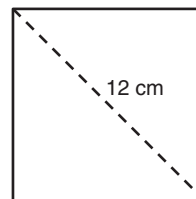
4. Calculate the value of a .

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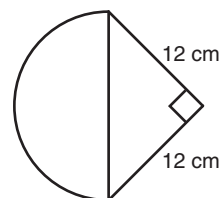
5. The length of a diagonal of the square is 36 centimeters. Calculate the length of each side.



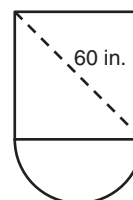
6. The length of a diagonal of the square is 12 centimeters. Calculate the area.



7. Calculate the area of the figure shown using the information given. The figure is composed of a triangle and a semicircle. Use 3.14 for π .



8. The length of a diagonal of the square in the figure shown is 60 inches. Calculate the perimeter of the figure. The figure is composed of a square and a semicircle.

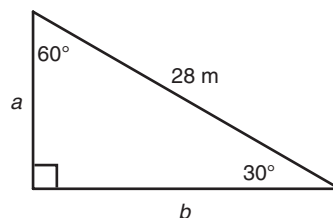


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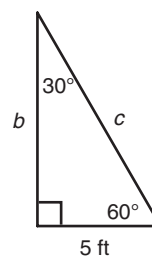
More Stamps, Really?

Properties of a 30° – 60° – 90° Triangle

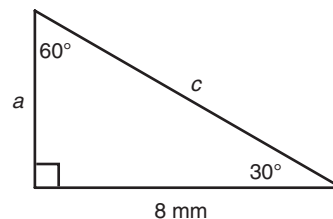
1. The length of the hypotenuse in the 30° – 60° – 90° triangle shown is 28 meters. Calculate the lengths of sides a and b .



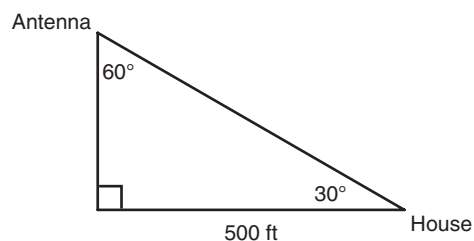
2. The length of the side opposite the 30° -degree angle is 5 feet. Calculate the lengths of sides b and c .



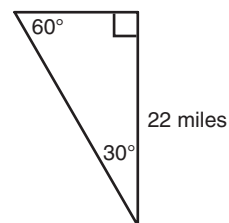
3. The length of the side opposite the 60° -degree angle is 8 millimeters. Calculate the lengths of sides a and c .



4. A broadcast antenna is situated on top of a tower. The signal travels from the antenna to your house so you can watch TV. The angle of elevation from your house to the tower measures 30 degrees, and the distance from your house to the tower is 500 feet. Calculate the height of the tower and the distance the signal travels.

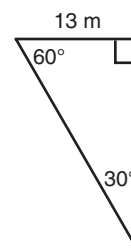


5. The length of the longer leg in the $30^\circ-60^\circ-90^\circ$ triangle shown is 22 miles. Calculate the length of the hypotenuse.



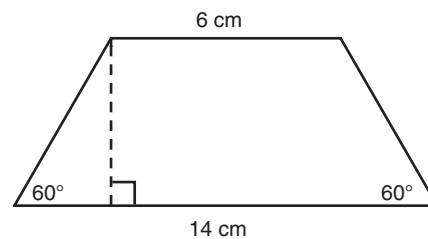
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6. The length of the shorter leg in the $30^\circ-60^\circ-90^\circ$ triangle shown is 13 meters. Calculate the length of the hypotenuse.

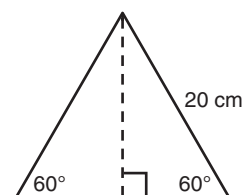


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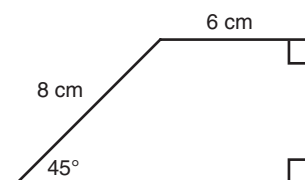
7. Calculate the perimeter of the trapezoid.



8. Calculate the area of the triangle.



9. Calculate the area of the trapezoid.



10. A broadcast antenna is situated on top of a tower, and the signal travels from the antenna to your house so that you can watch TV. The angle of elevation from your house to the tower measures 30 degrees, and the distance from your house to the tower is 775 feet. Calculate the height of the tower and the distance the signal travels.

