Name _____ Date _____

Skills Maintenance

Substitution

Activity 1

Solve the equations by using substitution.

1. Solve $y = 3x + 2$ if $x = 8$. _____
2. Solve $y = -x - 3$ if $x = 6$. _____
3. Solve $y = 2x - 4$ if $x = 5$. _____
4. Solve $y = -4x + -12$ if $x = 7$. _____

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Apply Skills

The Pythagorean theorem

Activity 1

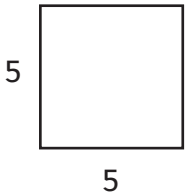
Find the areas of the shapes by substituting the dimensions into the area formulas.

1. Area of a Rectangle = base • height

What is the area of the rectangle?

_____ square units

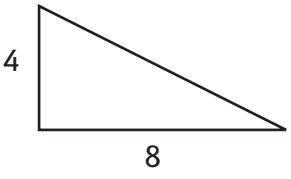
2. Area of a Square = base • height



What is the area of the square?

_____ square units

3. Area of a Triangle = $\frac{1}{2}$ (base • height)



What is the area of the triangle?

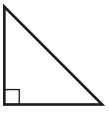
_____ square units

Activity 2

Match the type of triangle with its picture.

1.  _____ **(a)** Scalene

2.  _____ **(b)** Right

3.  _____ **(c)** Isosceles

4.  _____ **(d)** Equilateral

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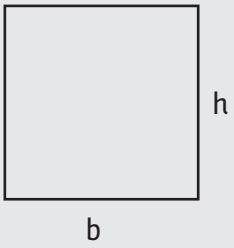
Activity 3

Prove that the Pythagorean theorem works using the area of squares. We will change the area formula for squares slightly. You can see that both formulas give you the same area. Look at the model then at the triangle and squares. Then answer the questions about the sides of the triangle.

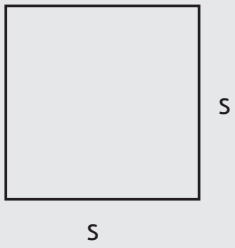
Model

Two Ways to Think About the Area of Squares

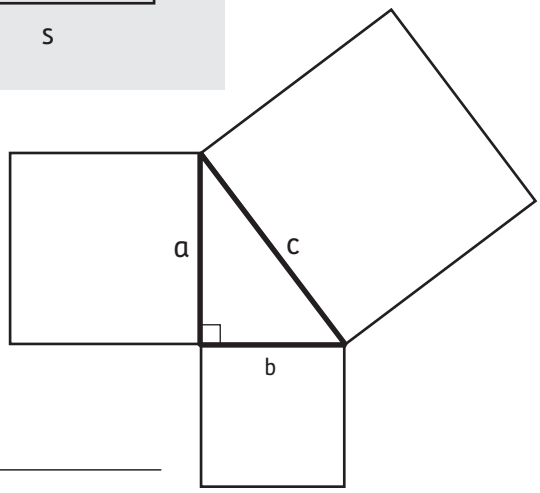
Traditional formula
$A = b \cdot h$



New formula
$A = s^2$



We can show that the Pythagorean theorem works by drawing squares onto each side of a right triangle as shown. Think about how the area of those squares helps prove the Pythagorean theorem.



1. What do we know about each of the sides of the right triangle based on the three squares?

   _____

2. What do squared units have to do with the Pythagorean theorem?

   _____

   _____

3. If the measurements of the sides of a right triangle are as follows: a = 3, b = 4, and c = 5, does this demonstrate that the Pythagorean theorem works?

   _____

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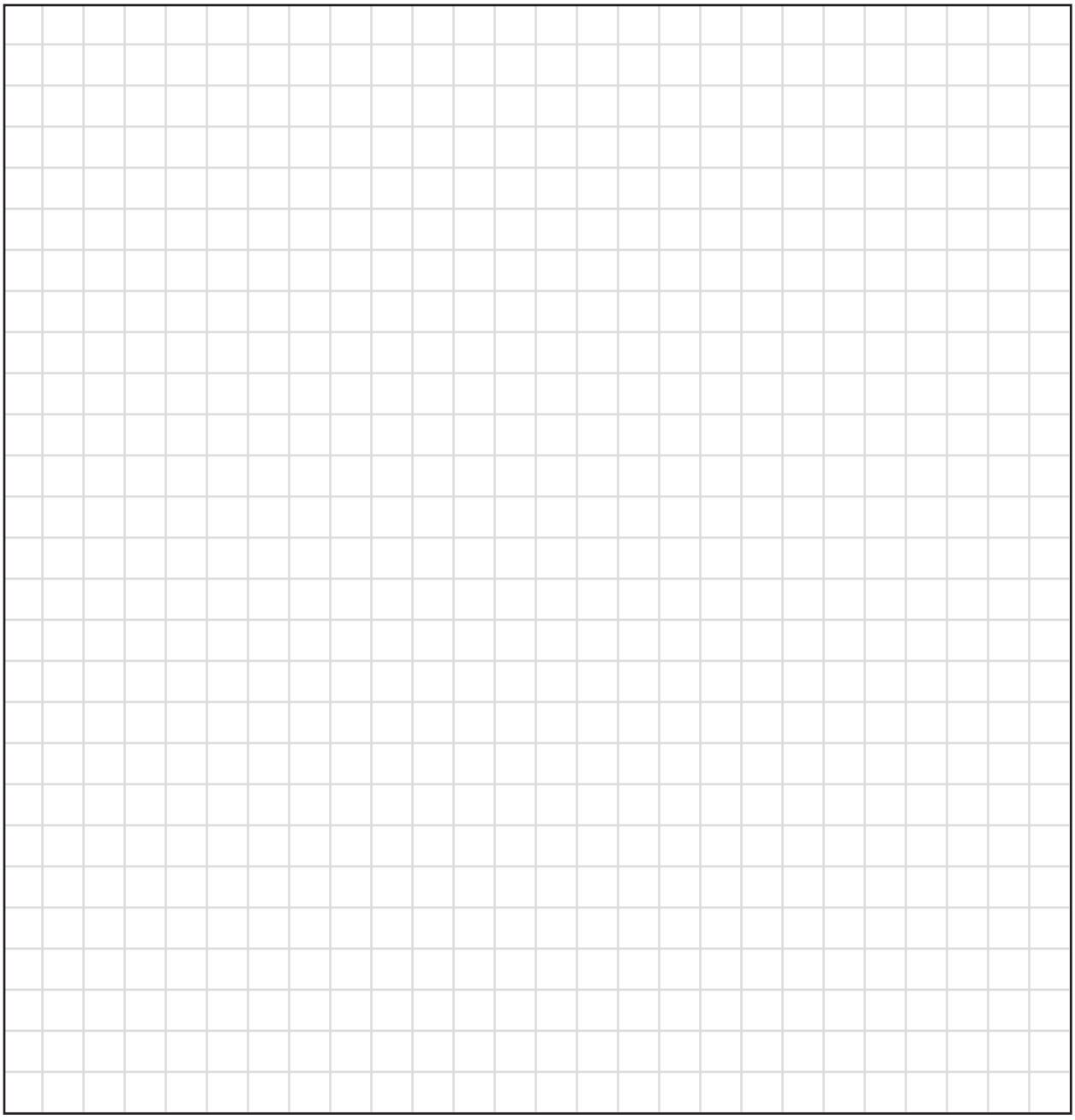
4. Draw three squares forming a right triangle in the middle of the graph. Use the dimensions of the squares you drew as your lengths a, b, and c. Test the Pythagorean theorem using this data.



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Use the **mBook *Study Guide*** to review lesson concepts.