



Name: _____

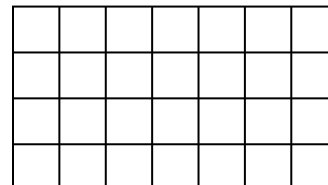
Date: _____

Student Exploration: Perimeter and Area of Rectangles

Vocabulary: area, perimeter, rectangle, square

Prior Knowledge Questions (Do these BEFORE using the Gizmo.)

1. Pam is tiling her kitchen floor. A diagram of the completed floor is shown to the right. How many tiles did she use? _____

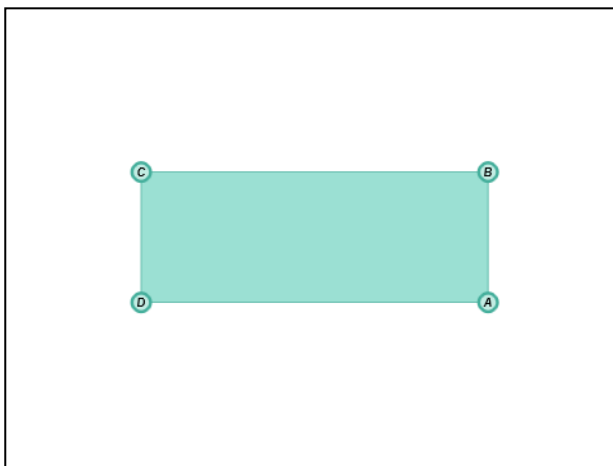


2. She is also putting some trim around the outside of the floor. If each tile is 1 foot by 1 foot, how many feet of trim will she need? _____

Gizmo Warm-up

In the *Perimeter and Area of Rectangles* Gizmo, you can use dynamic **rectangles** (quadrilaterals with four right angles) and **squares** (rectangles with four congruent sides) to explore perimeter and area.

There are three different ways to change the lengths of the sides: drag the vertices, drag the sliders, or click on the number in the text field next to a slider, type a new value, and hit **Enter**.



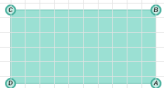
1. Be sure the **RECTANGLE** tab is selected in the Gizmo. Set **Base (*b*)** to 10.0 (10 units) and **Height (*h*)** to 4.0 (4 units).

A. Name the sides of the rectangle that are 10 units long. _____

B. Name the sides that are 4 units long. _____

2. Select the **SQUARE** tab. Drag the vertices to create a variety of squares. Why is there only one side length given for each square? _____



Activity A: Perimeter and area of rectangles	<u>Get the Gizmo ready:</u> <ul style="list-style-type: none"> Be sure the RECTANGLE tab is selected. 	
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1. In the Gizmo, set **Base (*b*)** to 7.0 (7 units) and **Height (*h*)** to 2.0 (2 units).

A. Sketch the rectangle you created in the space to the right. Label each side with its measure.

B. If you could “walk” along the sides of this rectangle, how many units would you walk?

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}} \text{ units}$$

C. The distance you found is the **perimeter**. Turn on **Show perimeter info** to check your answer. Look at the number of times you added the base (*b*) and the height (*h*). Then fill in the blanks to write a formula for the perimeter of a rectangle.

$$P = \underline{\hspace{1cm}}b + \underline{\hspace{1cm}}h$$

This can also be written using *l* (for “length”) and *w* (for “width”), instead of *b* and *h*.

2. Turn off **Show perimeter info**. Set **Base (*b*)** to 4.0 (4 units) and **Height (*h*)** to 6.0 (6 units). Select **Show grid**.

A. How many grid squares are inside the rectangle? _____ This is the **area** of the rectangle, in square units. Click on **Show area info** to check your answer.

B. How can you find the area without counting squares? _____

C. Use *b* and *h* to write a formula for the area of a rectangle. $A = \underline{\hspace{2cm}}$

This can also be written using *l* (for “length”) and *w* (for “width”), instead of *b* and *h*.

3. Turn off **Show area info** and **Show grid**. Create two rectangles in the Gizmo, and record their base and height below. Use your formulas to find the perimeter (in units) and area (in square units) of each. Then, select **Show perimeter info** and **Show area info** to check.

Base (<i>b</i>)	Height (<i>h</i>)	Perimeter (<i>P</i>)	Area (<i>A</i>)

(Activity A continued on next page)



Activity A (continued from previous page)

4. Turn off **Show area info**. Set **Base (b)** to 5.6 units and **Height (h)** to 11.6 units.

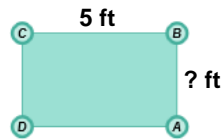
A. Use your formula to find the area of the rectangle. _____ square units

B. Turn on **Show grid**. Is it easier to use the formula or the grid to find the area of this rectangle? _____ Explain. _____

5. Find the missing measurement(s) for each rectangle. Show all of your work. Check your answers in the Gizmo.

A. base = 4.5 cm
height = 6.0 cm
perimeter = ?
area = ?

B. area = 15 ft²



C. base = ?
height = 7.6 m
perimeter = 38 m

6. Laura is painting two walls in her bedroom, and the ceiling. Both walls are 8 feet tall.

A. One of the walls is 12 feet wide. What is the area of this wall? _____

B. The other wall is 10 feet wide. What is the area of this wall? _____

C. What must the area of the ceiling be? _____ Explain. _____



Activity B (continued from previous page)

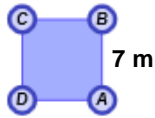
3. Turn off **Show area info**. Set **Side length (s)** to 7.4 units.

A. Use your formula to find the area of the square. _____ square units

B. Turn on **Show grid**. Is it easier to use the formula or the grid to find the area of this square? _____ Explain. _____

4. Find the missing measurement(s) for each square. Show all of your work. Check your answers in the Gizmo.

A. perimeter = ?
area = ?



B. side length = 3.8 cm
perimeter = ?
area = ?

C. side length = ?
perimeter = 27.2 ft
area = ?

5. Warren is planting grass seed in two sections of his backyard.

A. One section is a 9-foot square. What is the area of this section? _____

B. Warren wants to put a fence around the square section. How many feet of fencing will he need? _____

C. The other section is a 9-foot by 6.5-foot rectangle. What is the area of this section?

D. Each bag of grass seed that Warren wants to buy will cover 50 square feet. How many bags should he buy? _____ Explain. _____

