Projecting and Scaling

Lesson 1

CCSS Standards: Building on	• 6.NS.A • 7.G.A.1
CCSS Standards: Addressing	• 8.G.A
CCSS Standards: Building towards	• 8.G.A

Let’s explore scaling!

Number Talk: **Remembering Fraction Division**

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Warm Up 1.1

- Compare and Connect
- Collect and Display

Find each quotient. Write your answer as a fraction or a mixed number.

$$6\frac{1}{4} \div 2$$

$$10\frac{1}{7} \div 5$$

$$8\frac{1}{2} \div 11$$

Sorting Rectangles

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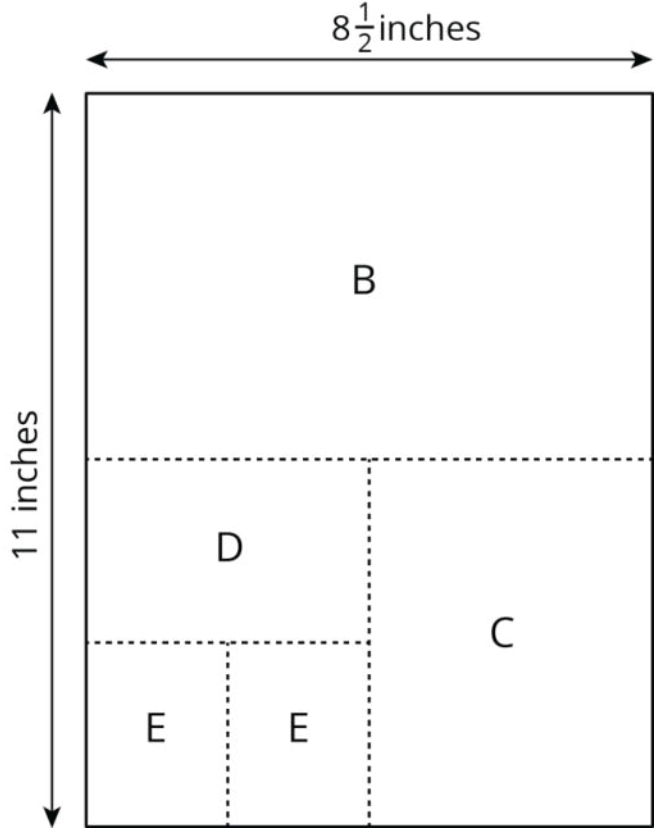
Activity 1.2

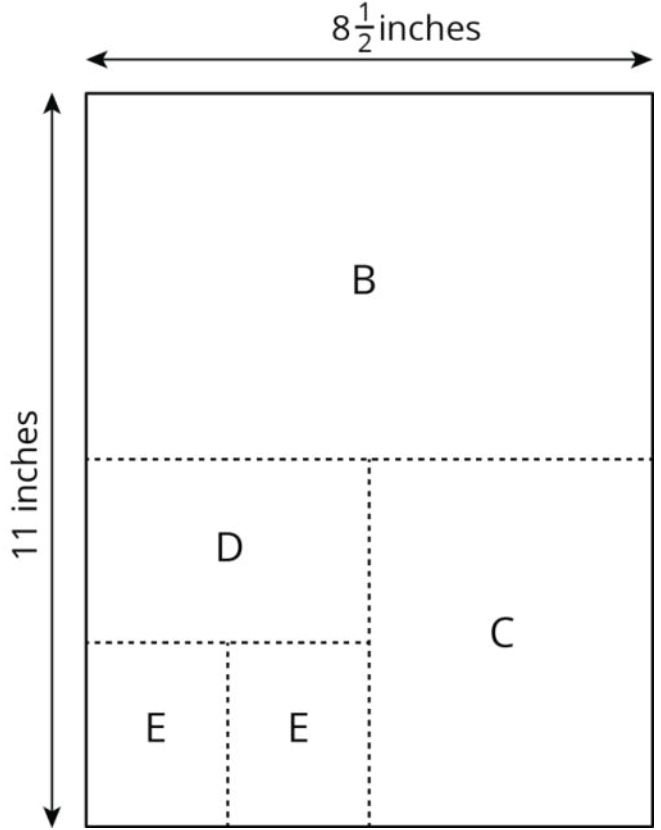
- Collect and Display

Begin working with your group, completing Questions 1–5.



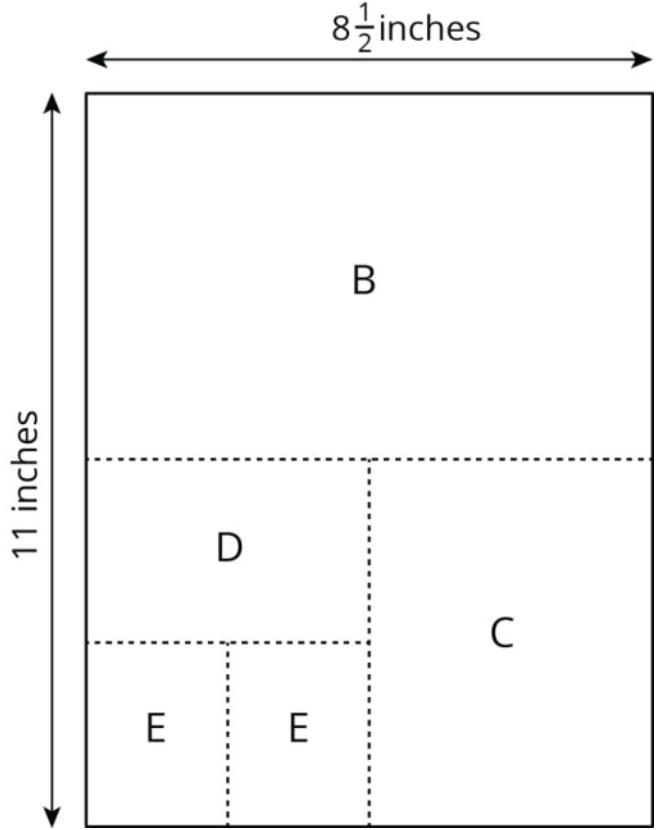
Is the 5½ by 8½ rectangle a scaled copy of the 8½ by 11 rectangle?

How did you decide?



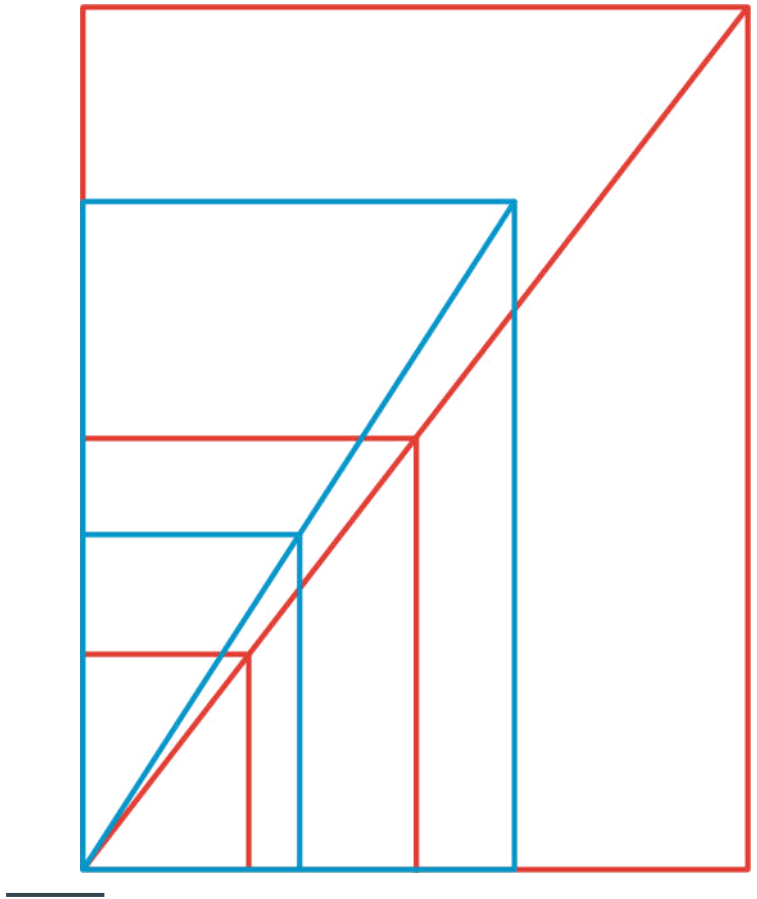
Is the 5½ by 4¼ rectangle a scaled copy of the 11 by 8½ rectangle?

How did you decide?



When all of the rectangles are aligned with the lower-left right angle matching, by increasing size:

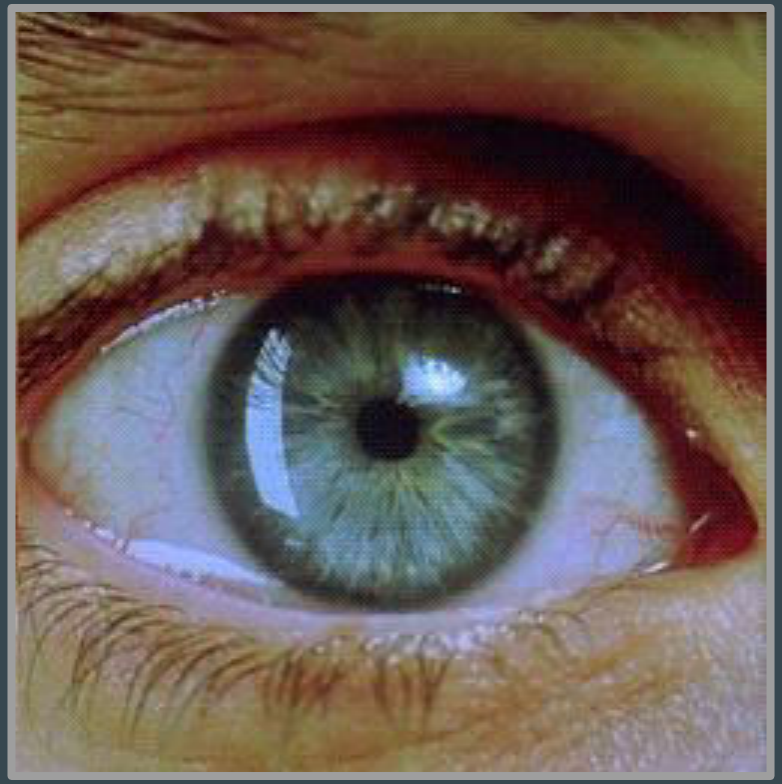
- the diagonals of the rectangles fall into two sets: those that are scaled copies of the full sheet of paper and those that are scaled copies of the half sheet of paper.
- the diagonals of the rectangles that are scaled copies of one another match up.



Let's study a new kind of transformation!

A dilation is a transformation that makes scaled copies.

It has a center of dilation and a scale factor!



“Are you ready for more?”

In many countries, the standard paper size is not 8.5 inches by 11 inches (called “letter” size), but instead 210 millimeters by 297 millimeters (called “A4” size).

Are these two rectangle sizes scaled copies of one another?

Scaled Rectangles

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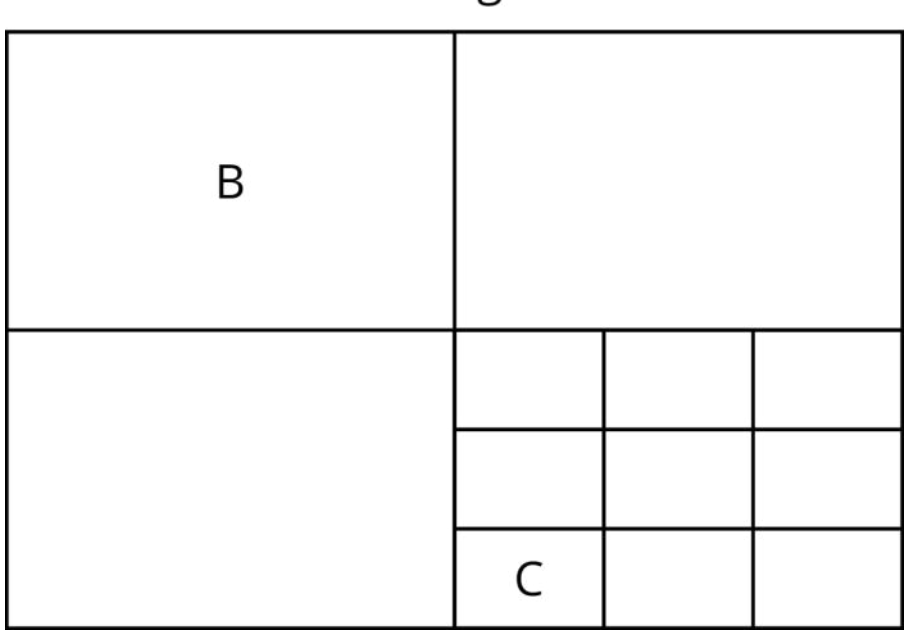
Activity 1.3 (optional)

- Co-Craft Questions and Problems
- Discussion Supports

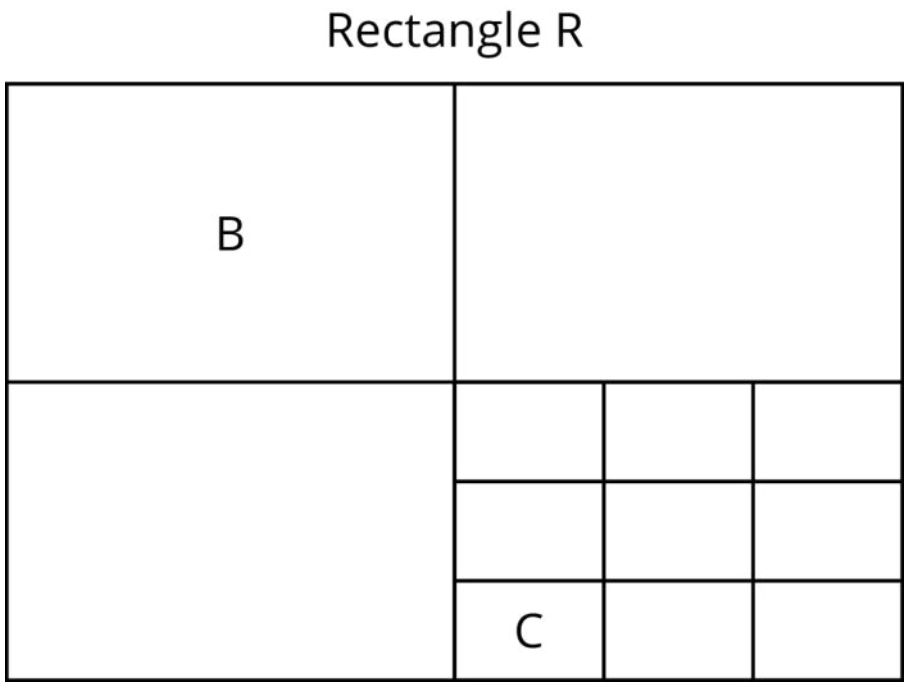
Let’s examine a different set of rectangles and determine scale factors for pairs which are scaled copies of one another!

What is meant by the phrase "evenly divided?"

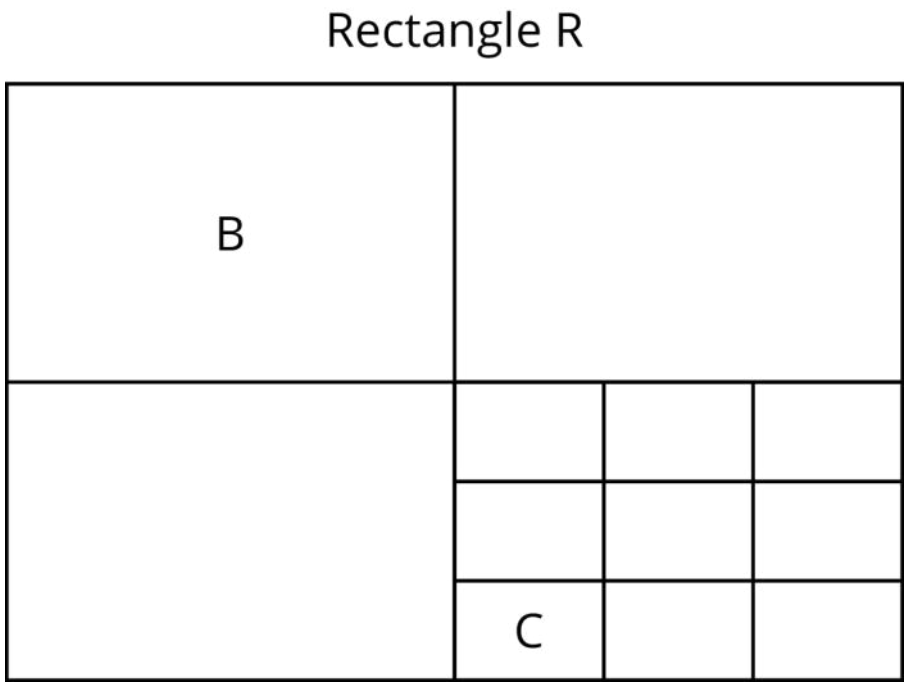
Begin with Quiet Work Time.
(5 min)



- Why is rectangle B a scaled copy of rectangle R?
- How are the scale factors from R to B to C related to the scale factor from R to C?



- Does the diagonal from top left to lower right of rectangle R go through opposite vertices of one rectangle of each size?



When we apply a sequence of rigid transformations to a figure, we change the figure's location and orientation, but not its size.

In this lesson, we began to study a new move, which makes scaled copies of figures *and* can change their size! This new move is called a **dilation**.

Today's Goals

- ❑ I can decide if one rectangle is a **dilation** of another rectangle.
- ❑ I know how to use a center and a scale factor to describe a dilation.

What is a Dilation?

Cool Down 1.4