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ISBN 978-0-8454-7908-7

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LESSON 32 Partitioning Shapes CC.1.2.G.3

1 Introduction

You can **partition** shapes. To partition means you divide shapes into equal shares, or parts. Each share is the same size. When put together, the equal parts of a shape make the entire **whole**. Some equal parts have special names.

<p>Half 2 equal parts = 1 whole 2 halves make a whole.</p>	
<p>Third 3 equal parts = 1 whole 3 thirds make a whole.</p>	
<p>Fourth 4 equal parts = 1 whole 4 fourths make a whole.</p>	

You can remember the word **partition** by thinking that the word **part** is a part of the whole word: **partition**.

Sometimes equal shares of the same wholes have different shapes. These rectangles both show 4 equal shares. Each rectangle is divided into 4 equal parts. Each equal share is one-fourth of the whole rectangle.

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Think About It

When have you had to make equal shares of something? How did you make each part equal?

2 Focused Instruction

Partition a rectangle into equal parts. Equal parts are the same size.

► Mrs. Turner is decorating a bulletin board. She wants to partition it into thirds. How can she divide it?

How many equal parts will there be? 3

Draw lines to partition the first rectangle into this number of equal parts.

Draw lines to partition the second rectangle into this number of equal parts in a different way.

How many equal parts did you make in each rectangle? 3

Do the equal parts in the first rectangle look the same as the equal parts in the second rectangle? no

Think about what **thirds** means.

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Objective

To partition shapes into halves, thirds, and fourths

1 Introduction

Tell students that they can partition figures into equal parts. The equal parts have special names, depending on how many parts they make. Discuss the examples of halves, thirds, and fourths. Then look at the two ways to make fourths in a rectangle. Tell students that there is often more than one way to partition shapes.

Think About It

Students should recognize times that they may need to partition things, such as when they split a candy bar with their brother or sister.

Common Core Learning Standard

2.G.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Vocabulary

partition: to divide a plane figure into smaller pieces

whole: entire shape

2 Focused Instruction

First, students will partition a rectangle into thirds in two different ways. Students should recognize that they can often partition shapes in more than one way. They must also recognize that *thirds* means they are partitioning the rectangle into three equal pieces.


Next, students will identify parts of a circle as halves or fourths. Students should recognize that a whole is two halves or four fourths and that the pieces must be the same size.

Conclude the Focused Instruction section by having students answer two questions about partitioning shapes.

2 Focused Instruction Lesson 32

Shapes can be partitioned into different numbers of equal parts. Use special words to name different numbers of equal parts.

► How can the circle be partitioned into equal parts in different ways?



Draw a line to divide the circle on the left into 2 equal parts.
Each part of the circle is called a half.
The whole circle is made up of 2 halves.

Draw lines to divide the circle on the right into 4 equal parts.
Each part of the circle is called a fourth.
The whole circle is made up of 4 fourths.

Are halves equal parts? yes
Are fourths equal parts? yes
Do the halves and the fourths of the circle have the same shape? no

Use what you know about partitioning shapes to answer these questions.

- How many equal parts does a circle divided into thirds have?
3
- How many halves are in a whole? 2

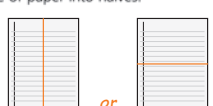
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3 Guided Practice


Students should complete the Guided Practice section on their own. Offer assistance as needed, pointing out the reminder and hint boxes along the right side of the page.

3 Guided Practice Lesson 32

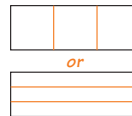
Solve the following problems.

- Gisa wants to cut this piece of paper into halves.
 

Part A How many equal parts will Gisa have after she cuts the paper?
Answer 2 equal parts

Part B Draw a line on the piece of paper to partition it into halves.
- Fia divided this rectangle into 3 parts as shown.
 

Part A Did Fia correctly show thirds in this rectangle? Explain your answer.
The parts are not the same size. She needs to show three equal parts to show thirds.

Part B Divide Fia's rectangle into thirds.


There are two ways to partition the paper correctly.
Does this rectangle show 3 equal parts?

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Connections to Standards for Mathematical Practice



- Reason abstractly and quantitatively.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.



4 Independent Practice Lesson 32

Solve the following problems.



1 Which figures show thirds? Circle the **two** correct answers. **DOK 2**
2.G.3



A  D 

B  **E** 

C  F 

2 Which rectangle is not divided into thirds? **DOK 2**
2.G.3

A  B 

C  D 

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4 Independent Practice Answer Rationales

1 A shape is divided into thirds when it is shown to have three equal parts. Choice B is correct because the circle shows three equal parts, or thirds. Choice E is also correct because the square is partitioned into thirds. Choices A and D are incorrect because the shapes are divided into four equal parts, or fourths. Choices C and F are incorrect because the three parts are not equal.

2 A shape is divided into thirds when it is shown to have three equal parts. Choice B is correct because the three parts are not equal sizes. In choices A, C, and D, the rectangles are correctly partitioned into thirds because the three parts in each rectangle are equal to each other.





4 Independent Practice Lesson 32

3 Atil divided this circle as shown here. **DOK 1**
2.G.3



What part did he divide it into?
Answer halves

4 Write the word from the box that matches each circle. **DOK 2**
2.G.3

A 	<u>thirds</u>	halves thirds fourths whole
B 	<u>whole</u>	
C 	<u>halves</u>	
D 	<u>fourths</u>	

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3 The circle is divided into two equal parts. Two equal parts are halves of a figure, so Atil divided the circle in half, or into halves.


4 Count the parts that each circle is split into, and find the correct name for the number of parts. Circle A is partitioned into three equal parts, or thirds. Circle B is not split into any parts, so it shows a whole. Circle C is partitioned into two equal parts, or halves. Circle D is partitioned into four equal parts, or fourths.

5 PARTS A AND B In order to divide each rectangle into fourths, the rectangle needs to be split into four equal parts. There are several ways to divide the rectangles into fourths, including making three equally-spaced horizontal lines, three equally-spaced vertical lines, or using a vertical line and a horizontal line to create two rows of two equal shapes. Four fourths make up the entire rectangle.

4 Independent Practice
Lesson 32

5 These rectangles are the same size.

Drawings may vary.



DOK 2

2.G.3

Part A Divide both rectangles into fourths. Show two different ways to partition the rectangles.

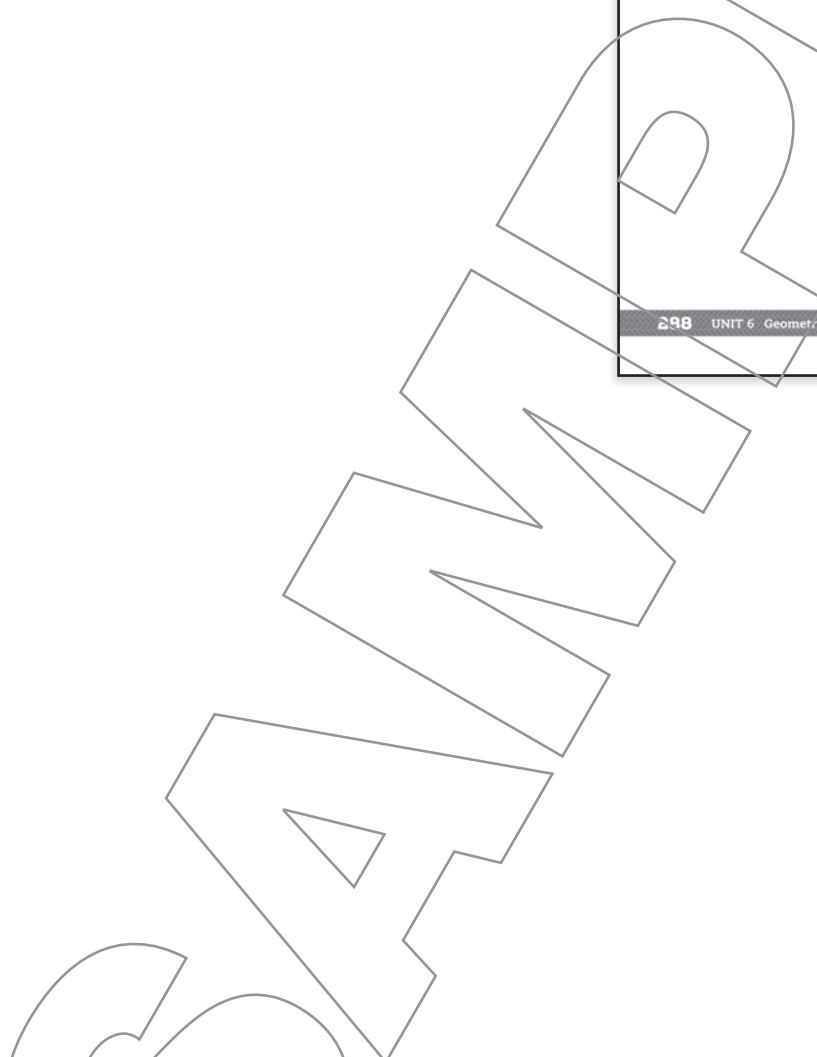
Part B How many fourths make up a whole rectangle? Explain how you know.

Four fourths make up a whole because each piece is equal.

Each piece is 1 out of 4 parts. So 4 out of 4 parts is a whole.

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Extension Activity

Give each student three rectangular pieces of paper. Have them divide one into halves, one into thirds, and one into fourths. Direct them to label the one part of each rectangle with the appropriate word.