# MA.2.FR.1.2

**Overarching Standard:** ***MA.2.FR.1*** *Develop an understanding of fraction by partitioning shapes into halves and fourths.*

**Benchmark of Focus**

MA.2.FR.1.2: Partition rectangles into two, three or four equal-sized parts in two different ways showing that equal-sized parts of the same whole may have different shapes.

*Examples: A square cake can be cut into four equal-sized rectangular pieces or into four equal- sized triangular pieces.*

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**Related Benchmark/Horizontal Alignment**

- MA.2.M.2.1

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**Vertical Alignment**

| Previous Benchmarks | Next Benchmarks |
|---|---|
| MA.1.FR.1.1 | MA.3.FR.1.1 |

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**Terms from the K-12 Glossary**

- Rectangle

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**Purpose and Instructional Strategies**

The purpose of this benchmark is to build understanding that figures can be partitioned in multiple ways, the parts can look different, but they still represent an equal amount of the whole.

- Instruction includes the use of manipulatives including geoboards, fraction circles, pattern blocks or color tiles.
- Instruction includes the idea of part-whole relationship if supported by a model.
- Students are not expected to use formal fraction notation until grade 3.

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**Common Misconceptions or Errors**

- Students may have difficulty partitioning into equal-sized parts.
- Students may not understand that the parts can be equal parts even if they do not look identical.

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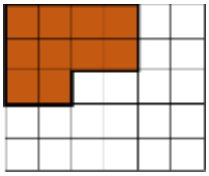
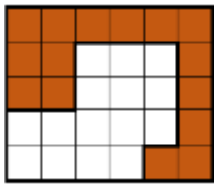
**Strategies to Support Tiered Instruction**

- Instruction includes geoboards to partition rectangles and circles into thirds.
- Instruction includes graph paper to divide shapes into equal parts when given part of a whole by counting the units inside the shape.
    - For example, the shape is a total of 30 units and one equal part is given. Students partition the shape into 3 equal parts using the knowledge that one part is equal to 10 units.



- Teacher provides opportunities to use fraction manipulatives to develop understanding of thirds in circles and rectangles.
    - For example, teacher provides pictures of circles and rectangles (of the same size as the manipulatives) on a sheet of paper. Students then use the "thirds" manipulatives to trace the thirds into the circles and rectangles, so they develop an understanding of how to partition these shapes into thirds.
- Teacher provides opportunities to use a pre-partitioned shape on graph paper to count units and determine if the different sized parts are equal.
    - For example, the shape is partitioned into two parts. Students may count to determine if they are equal parts.



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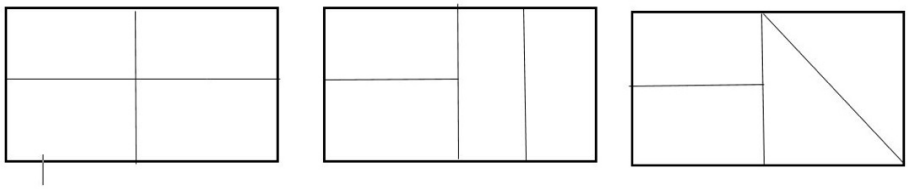
**Questions to ask students:**

- **Show the student the following picture. Ask: Which rectangles show fourths? How do you know?**



    - Sample answer that indicates understanding: *All of the rectangles show fourths. The first one has four equal sized pieces that look the same. The second one also has four equal pieces. They are just facing different directions. The third one also has four equal pieces. They are not the same shape, but they are all still equal pieces of the whole.*

- **Is it possible to have 4 equal sized pieces in a rectangle, but the fourths that have different shapes?**
    - Sample answer that indicates understanding: *Yes, if you partition a rectangle into halves, then you partition each half again into halves, you can do each side differently – the shapes could look different, but each piece will still be an equal piece of the whole.*

- **How can you use color tiles to help you decide if the size of the pieces in the shape below are equal? Is this shape partitioned into thirds? Why or why not?**

- Sample answer that indicates understanding: *I can put color tiles in each section and if each section fits the same number of color tiles then I know the size of each piece is equal. That means this shape is partitioned into thirds even though the shape of each piece is not the same.*

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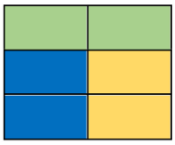
**Instructional Tasks**
*Instructional Task 1*

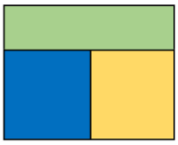
Provide students with multiple copies of a three-unit by four-unit array.

- Part A. Shade the array to show how it can be partitioned into two, three and four equal- sized pieces in as many ways as possible.
- Part B. Discuss with a partner or in a group why the parts look different but still represent the same equal-sized part of the whole.

*Instructional Task 2*

Given the images below, discuss why these are divided into three equal parts.





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**Instructional Items**
*Instructional Item 1*
Four friends will share a large rectangular pizza. Show several ways they can cut the pizza to show four equal-sized pieces.

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**Additional Resources:**

CPALMS Resources
NAGWA Video: Divide Shapes into Equal Parts (includes describing why equal parts can have different shapes)

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**Resources/Tasks to Support Your Child at Home**:

Geoboard square and rectangle – Ask your child to use the virtual rubber bands to partition the shapes into fourths. Ask if they can show another way to partition the shapes into fourths. Discuss if the pieces are the same shape or not and if that affects them being fourths.

Rip off a paper towel or use a napkin from the kitchen. Explore with your child how to fold the shape in various ways to show equal sized pieces with different shapes.

Class Playground Video: Equal Shares Different Shapes with a Geoboard