

MA.2.GR.1.2

Overarching Standard: MA.2.GR.1 *Identify and analyze two-dimensional figures and identify lines of symmetry.*

Benchmark of Focus

MA.2.GR.1.2: Categorize two-dimensional figures based on the number and length of sides, number of vertices, whether they are closed or not and whether the edges are curved or straight.

Benchmark Clarifications

Clarification 1: Instruction focuses on using formal and informal language to describe defining attributes when categorizing.

Related Benchmark/Horizontal Alignment

- MA.2.M.1.1
- MA.2.DP.1.1

Vertical Alignment

Previous Benchmarks

MA.1.GR.1.1

Next Benchmarks

MA.3.GR.1.2

Terms from the K-12 Glossary

- Hexagon
- Rectangle
- Octagon
- Pentagon
- Triangle
- Square
- Polygon

Purpose and Instructional Strategies

The purpose of this benchmark is for students to work specifically with two-dimensional figures to categorize them based on their attributes.

- Instruction includes a variety of examples and non-examples which lack defining attributes.
- Instruction includes the understanding that some figures may share the attributes of another figure, possibly creating subcategories. For example, squares form a subcategory of rectangles.
- Instruction is not limited to polygons.

Common Misconceptions or Errors

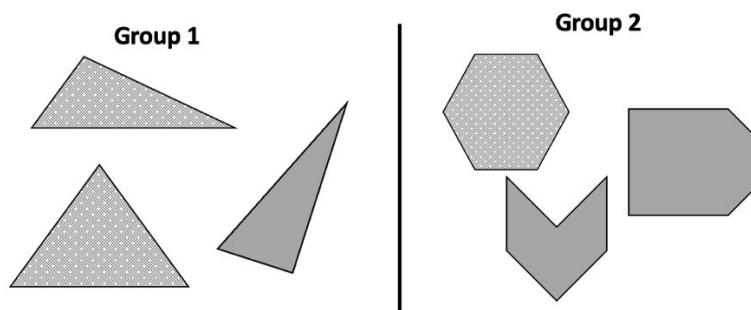
- Students may not realize figures can be categorized in more than way.
 - Students may have difficulty categorizing figures that are considered irregular.
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Strategies to Support Tiered Instruction

- Teacher provides a set of plane shapes (i.e., cut from tagboard in multiple sizes and colors) and ask the student to sort them any way they can.
 - For example, teacher asks, "How did you decide to sort them?" Students sort them again but this time in a different way. Teacher asks, "How did you decide to sort them this time?"
- Teacher provides a set of plane figures (i.e., circles, squares, rectangles, hexagons, trapezoids and triangles) cut out of tag board, construction paper or card stock and asks students to sort by size, shape or color.
- Teacher provides a set of plane shapes, including irregular polygons and asks students to sort them any way they can, including that they must use all the figures provided.
 - For example, teacher asks, "How did you decide to sort them that way?" or "How did you know which shape belongs in this group?"
- Teacher provides a set of plane figures, including irregular polygons and asks students to sort by size, shape or color, adding that they must include all the figures.
- For example, teacher asks, "How did you know that ___ figure belongs in this group?"

Questions to ask students:

- **What is the name of the shape (point to shape on paper or that student is currently working with)? How do you know? Are there any other names for that shape?**
 - Sample answer that indicates understanding: *The shape is a quadrilateral, because it has 4 sides and 4 vertices. It is also a rectangle, because it has 4 square angles, and the opposite sides are the same length.*
- **How are a square and rectangle related?**
 - Sample answer that indicates understanding: *They are both quadrilaterals because they both have 4 sides and 4 vertices. A square is also a rectangle. A square has 4 sides that are the same length and 4 right angles. A rectangle has 4 sides and 4 angles, but the sides are not all the same length.*
- **How are the following shapes categorized/grouped? Describe the defining attributes of each group.**



- Sample answer that indicates understanding: *All the shapes in group 1 have 3 sides and 3 vertices. Even though the lengths of the sides are different, they are all triangles. All the shapes in group 2 have 6 sides and 6 vertices. All the shapes in group 2 are hexagons.*

Instructional Tasks

Instructional Task 1

Provide students with isometric dot paper. Read aloud and describe a two-dimensional figure by naming the attributes.

- Part A: Draw the figures described. Once the figures are drawn, cut and place their figures under the appropriate provided categories in the table below. Some figures may fit in multiple categories, so encourage students to choose different categories to place their figures in, have students
- Part B: Discuss why you chose the different categories. Help students understand that some figures may not fit into any categories during this task (e.g., figures with curved sides).

Polygon	Shape with at least four sides	Triangle	Hexagon

Instructional Items

Instructional Item 1

Tina builds the following shapes and categorizes them both as hexagons. Is she correct? Explain why or why not.



Additional Resources:

[CPALMS Resources](#)

Resources/Tasks to Support Your Child at Home:

Look for real-world examples of flat shapes such as rugs, mirrors, road signs, mirrors, tiles, etc. Take turns describing the shapes. For each, describe the number of sides, vertices, and lengths of sides. Identify shapes that could be grouped together and ask why.

Play "What Shape Am I?" – think of a shape and describe its defining attributes. Have your child build/draw and guess the shape you have in mind. Example, *"I'm thinking of a closed shape with 4 straight sides. All sides are the same length. The shape also has 4 vertices. What shape am I?"* Correct answers: *quadrilateral, rectangle, square*