MA.3.GR.1.2

Overarching Standard: MA.3.GR.1 *Describe and identify relationships between lines and classify quadrilaterals.*

Benchmark of Focus
MA.3.GR.1.2: Identify and draw quadrilaterals based on their defining attributes. Quadrilaterals include parallelograms, rhombi, rectangles, squares and trapezoids.

Benchmark Clarifications
Clarification 1: Instruction includes a variety of quadrilaterals and a variety of non-examples that lack one or more defining attributes when identifying quadrilaterals.
Clarification 2: Quadrilaterals will be filled, outlined or both when identifying.
Clarification 3: Drawing representations must be reasonably accurate.

Related Benchmark/Horizontal Alignment
- MA.3.M.1.1
- MA.3.M.1.2

Vertical Alignment

Previous Benchmarks	Next Benchmarks
MA.2.G.1.1	MA.4.G.1.1

Terms from the K-12 Glossary
- Line
- Parallelogram
- Rectangle
- Square

Purpose and Instructional Strategies
The purpose of this benchmark is to provide opportunities for students to apply their formalized definitions of geometric attributes when identifying and drawing quadrilaterals (MTR.5.1). With the support of vocabulary developed about geometric attributes in benchmark MA.3.GR.1.1, the goal of this benchmark is for students to identify and draw quadrilaterals based on them. In Grade 2, students started to explore and draw quadrilaterals in less formal ways.
- This benchmark gives students opportunities to build vocabulary around examples of quadrilaterals (e.g., parallelograms, rhombi, rectangles, squares, and trapezoids) based on the attributes that define them. Understanding

quadrilaterals will help them make comparisons to non-quadrilaterals (MTR.4.1).
- In Grade 4, students will classify types of angles and identify them in two-dimensional figures. In Grade 5, prior learning about quadrilaterals and triangles is synthesized for students to classify these figures based on their attributes.
- Instruction should include highlighting measurement as an attribute to help categorize quadrilaterals.

Common Misconceptions or Errors
- Students can confuse some pairs of intersecting lines as perpendicular. Encourage students to justify their thinking whenever they reason about geometric concepts. For example, students can use the corners of a standard sheet of paper as a comparison to determine whether a pair of intersecting lines is perpendicular.
- Some students may assume all quadrilaterals must have attributes of squares, rhombi, rectangles, squares, and trapezoids. During instruction, it is important for students to determine that a figure lacking further defining attributes (such as a kite) can still be a quadrilateral.

Strategies to Support Tiered Instruction
- Instruction includes real-world examples of points, lines, line segments, rays, intersecting lines, perpendicular lines, and parallel lines. The teacher provides images of real-world examples that include geometric figures. Students identify the geometric figure in the example.
  - For example, the teacher provides an image of railroad tracks to represent parallel lines, a speed sign to represent perpendicular lines, a balance beam to represent a line segment, and other common images.
- Instruction includes real-world examples of points, lines, line segments, rays, intersecting lines, perpendicular lines, and parallel lines. The teacher points out items in the classroom that are examples of the geometric terms listed above and has students identify which term it is an example of.
  - For example, if the teacher points out a poster with the number one or the letter l on it, students will say it represents a line segment. If the teacher points out the window, students will say the top and bottom of the window shows parallel lines, while the corners of the window show perpendicular lines.

- o For example, students to find their own examples within in the classroom and explain which geometric term they notice in the figure.

- Teacher provides students with key vocabulary from the glossary to identify right angles to help them identify perpendicular sides in shapes. The teacher also provides a tool such as a square tile or the corner of a standard sheet of paper to help students find right angles. Students then matches quadrilaterals that contain this attribute.
    - o For example, the teacher provides a vocabulary card or vocabulary information from the glossary for a right angle, similar to the example shown below. Students then uses the tool provided to locate right angles and identifies which quadrilaterals contain that attribute when provided images of parallelograms, rhombi, rectangles, squares, and trapezoids.

Right Angle	An angle measuring exactly 90°. An angle that forms a square corner.	90⁰

- Teacher provides a graphic organizer to help students identify given attributes in figures. Students place the figures under the correct columns and identify quadrilaterals that do not contain any of the attributes stated.
    - o For example, the teacher provides sample figures and students draw them in or place the shape cards in the correct columns of the graphic organizer (some figures will fit in more than one column).

4 equal sides	perpendicular sides/right angles	parallel sides	quadrilaterals that do not contain any of the given attributes

- Teacher provides figures that can be classified as quadrilaterals and those that are not (shapes may include: triangles, squares, pentagons, hexagons, square, rectangles, parallelograms, trapezoids, and other quadrilaterals such as a kite). Students sort the figures into two groups, quadrilaterals and non-quadrilaterals and justify their reasoning by explaining how they used the number of sides each figure has to determine their placement.
  - For example, students will add figures to the chart shown below and explain why the figure belongs in that category.

Quadrilaterals	Non-quadrilaterals

Questions to ask students:
- **What are the attributes of a square?**
- Students should be able to identify the attributes of a square: a square is a quadrilateral with four congruent sides, right angles, and vertices. It has two pairs of parallel lines and 4 pairs of perpendicular lines.

- **What is the name of that 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 a rectangle related?**
- Sample answer that indicates understanding: *A square is always a rectangle. A square has 4 congruent sides and 4 right angles. A rectangle has 4 sides and 4 angles, but the sides do not have to be congruent. A rectangle can sometimes be a square, it has 4 right angles but it may not have 4 congruent sides.*
- Sample answer that indicates an incomplete understanding or a misconception: *They are the same because they both have 4 sides and 4 angles.*

Instructional Tasks

Instructional Task 1

Draw an example of a quadrilateral that does not have any defining attributes of a square (expect that it has 4 straight sides and 4 vertices). Then explain how you know.

Instructional Items

Instructional Item 1

Which of the following quadrilaterals always have 2 sets of parallel sides? Select all that apply.

    a. Square
    b. Rectangle
    c. Rhombus
    d. Parallelogram
    e. Trapezoid

Instructional Item 2

Which of the following quadrilaterals always have perpendicular sides? Select all that apply.

    a. Square
    b. Rectangle
    c. Rhombus
    d. Parallelogram
    e. Trapezoid

Achievement Level Descriptors

Benchmark	Context	Assessment Limits
MA.3.GR.1.2 Identify and draw quadrilaterals based on their defining attributes. Quadrilaterals include parallelograms, rhombi, rectangles, squares, and trapezoids. Clarification 1: Instruction includes a variety of quadrilaterals and a variety of non-examples that lack one or more defining attributes when identifying quadrilaterals. Clarification 2: Quadrilaterals will be filled, outlined or both when identifying. Clarification 3: Drawing representations must be reasonably accurate.	Mathematical	Items with two-dimensional figures will not include hatch marks representing sides of equal lengths, arcs representing angles of equal measure, or arrows indicating parallel lines/sides. Item will not use the word "congruent."

ALD 2	ALD 3	ALD 4	ALD 5
identifies parallelograms, rhombi, rectangles, squares, and trapezoids as examples of quadrilaterals.	identifies and draws parallelograms, rhombi, rectangles, squares, and trapezoids as examples of quadrilaterals.	identifies and draws quadrilaterals based on their defining attributes. (Quadrilaterals include parallelograms, rhombi, rectangles, squares, and trapezoids.)	N/A

Additional Resources:
CPALMS Resource
Naming and Describing Quadrilaterals
Sort Quadrilaterals by Their Attributes

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 square corners. Identify shapes that could be grouped together and why.

Ask your child to find examples of specific quadrilaterals in the real-world (squares, rectangles, rhombuses and quadrilaterals that are not any of these), then have them use precise geometry vocabulary to explain how they know they are correct.
Identifying Quadrilaterals
Recognize Shape Attributes