

Just in Time Quick Check

Standard of Learning 4.MG.5

Strand: Measurement and Geometry

Standard of Learning 4.MG.5

The student will classify and describe quadrilaterals (parallelograms, rectangles, squares, rhombi, and/or trapezoids) using specific properties and attributes.

Students will demonstrate the following Knowledge and Skills:

- a) Develop definitions for parallelograms, rectangles, squares, rhombi, and trapezoids through the exploration of properties and attributes.
- b) Identify and describe points, line segments, angles, and vertices in quadrilaterals.
- c) Identify and describe parallel, intersecting, perpendicular, and congruent sides in quadrilaterals.
- d) Compare, contrast, and classify quadrilaterals (parallelograms, rectangles, squares, rhombi, and/or trapezoids) based on the following properties and attributes:
 - a) parallel sides;
 - b) perpendicular sides;
 - c) congruence of sides; and
 - d) number of right angles.
- e) Denote properties of quadrilaterals and identify parallel sides, congruent sides, and right angles by using geometric markings.
- f) Use symbolic notation to name line segments and angles in quadrilaterals.

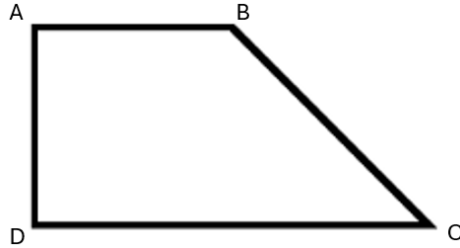
Just in Time Quick Check

Just in Time Quick Check Teacher Notes

Supporting and Prerequisite SOL: 4.MG.4, 4.MG.6, 3.MG.4

Just in Time Quick Check 4.MG.5

1. Use the figure ABCD to answer the questions below.

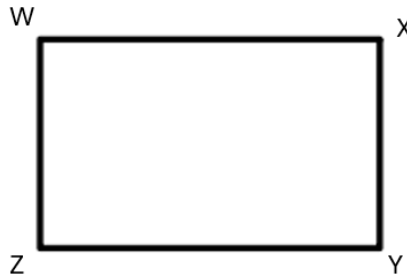


- a) Identify two line segments in figure ABCD.

- b) Identify two angles in figure ABCD.

- c) Identify two vertices in figure ABCD.

2. Figure WXYZ is a rectangle. Use figure WXYZ to answer the questions below.

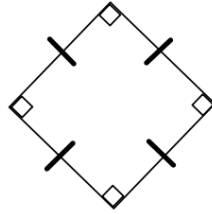


- a) Identify a pair of parallel sides in figure WXYZ.

- b) Identify a pair of perpendicular sides in figure WXYZ.

- c) Identify congruent sides in figure WXYZ.

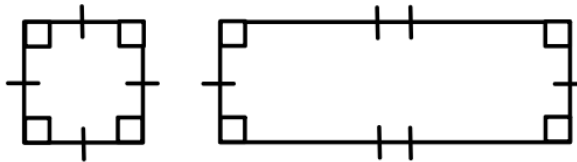
3. A polygon has the characteristics shown in the figure below.



a) What is the best classification of this figure?

b) Name two other classifications that could be used to describe this figure.

4. Look at the figures below.



a) Explain how they are similar to each other.

b) Explain how they are different from each other.

5. A quadrilateral has these characteristics.

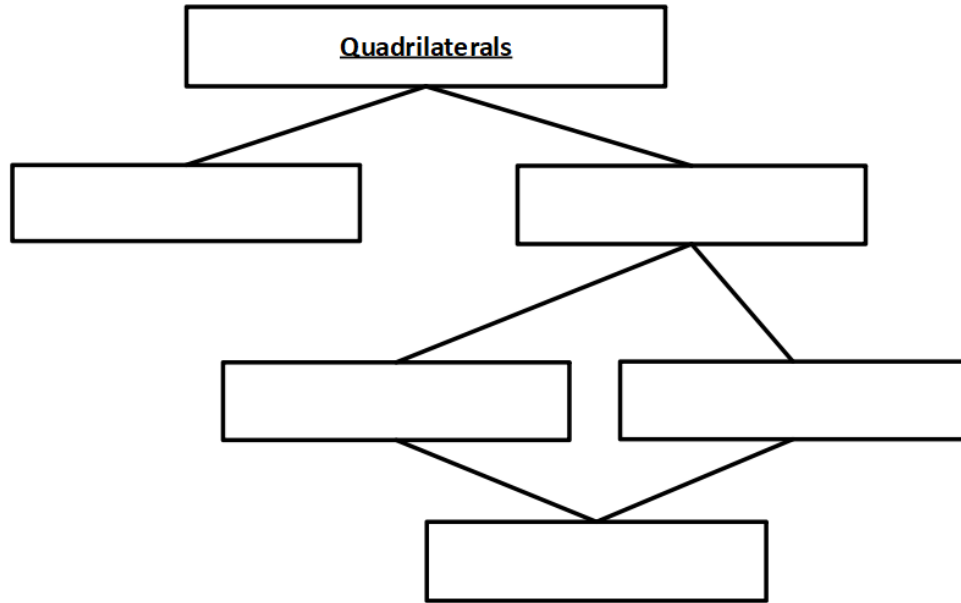
- Exactly one pair of opposite sides is parallel
- Exactly two right angles
- Exactly two sides are congruent

This figure can best be described as a _____.

Justify your reasoning using pictures, symbols, and words.

6. Use the word bank below to fill in each blank in the diagram below.

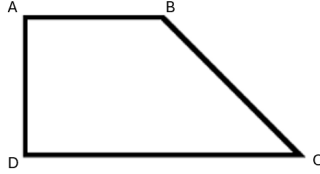
Parallelogram	Rhombus	Trapezoid	Rectangle	Square
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4.MG.5 Just in Time Quick Check Teacher Notes

Common Errors/Misconceptions and their Possible Indications

1. Use the figure ABCD to answer the questions below.



- a) Identify two line segments in figure ABCD.

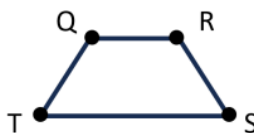
Students may have difficulty identifying two line segments in the figure. Students may be used to seeing line segments with points at both ends and they may not understand that each side of the polygon is a line segment. It may be helpful for students to draw a point at the location of each vertex, allowing them to better visualize each line segment. Students may also be unsure of how to use symbolic notation to represent the line segments in the polygon (e.g., \overline{AB} , \overline{BC}). Teachers should model correct use of symbolic notation during instruction and should encourage students to use accurate symbolic notation when writing about geometric figures.

- b) Identify two angles in figure ABCD.

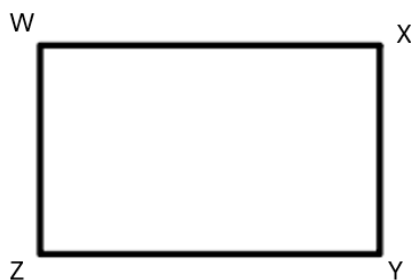
Students may have difficulty identifying two angles in figure ABCD. They may recognize angles A and D as right angles, but they may be confused because they believe that A and D represent vertices. It may be helpful to facilitate a discussion about how, in the figure, A can represent point A (a vertex) or angle A (which could also be named angle DAB or angle BAD). Students may also have difficulty recognizing the obtuse angle B (or angle ABC) as an angle in the polygon or acute angle C (or angle BCD) as an angle in the polygon. It may be helpful for students to trace the two line segments that make up each angle and practice naming each angle in two ways.

- c) Identify two vertices in figure ABCD.

Students may have difficulty identifying two vertices in figure ABCD. They may be looking for emphasized points to indicate vertices (see the image below) and may say that figure ABCD does not have any vertices. It may be helpful for students to see polygons and figures in multiple representations (i.e., some where the vertices are emphasized, as below, and others where the vertices are not emphasized, as in figure ABCD). Additionally, some students may not recognize A, B, C, and D as vertices because they believe A, B, C, and D represent angles. It may be helpful to facilitate a discussion about how, in the figure, A can represent point A (a vertex) or angle A (which could also be named angle DAB or angle BAD).



2. Figure WXYZ is a rectangle. Use figure WXYZ to answer the questions below.



- a) Identify a pair of parallel sides in figure WXYZ.

A common error students may make is to incorrectly identify a pair of perpendicular sides rather than a pair of parallel sides. This may indicate that students need additional support with geometry vocabulary. The use of anchor charts or vocabulary cards may be helpful. Additionally, some students may be able to identify a pair of parallel sides but may be unsure how to write this in a mathematical statement using symbolic notation (e.g., $\overline{WX} \parallel \overline{ZY}$). It may be helpful to model how to write mathematical statements with parallel and perpendicular lines. It may also be beneficial to help students see the connection that the sides of the rectangle are line segments and thus, they are represented symbolically as such.

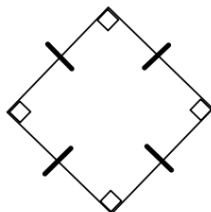
- b) Identify a pair of perpendicular sides in figure WXYZ.

A common error students may make is to incorrectly identify a pair of parallel sides rather than a pair of perpendicular sides. This may indicate that students need additional support with geometry vocabulary. The use of anchor charts or vocabulary cards may be helpful. Additionally, some students may be able to identify a pair of perpendicular sides but may be unsure how to write this in a mathematical statement using symbolic notation (e.g., $\overline{WX} \perp \overline{XY}$). It may be helpful to model how to write mathematical statements with parallel and perpendicular lines. It may also be beneficial to help students see the connection that the sides of the rectangle are line segments and thus, they are represented symbolically as such.

- c) Identify two congruent sides in figure WXYZ.

Students may have difficulty identifying two congruent sides. Students may not understand what it means for two sides to be congruent, and they may choose two sides of different lengths. It may be helpful for students to have opportunities to explore various quadrilaterals, so they are able to make generalizations about congruent sides. For example, students will be able to see that all rectangles have two pairs of congruent sides; all squares have four congruent sides; all rhombi have four congruent sides, etc.

3. A polygon has the characteristics shown in the figure below.



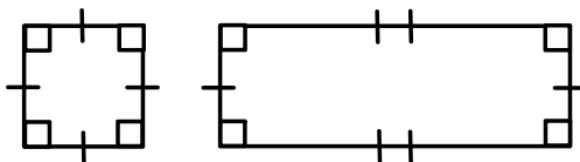
a) What is the best classification of this figure?

Students may have difficulty identifying the best classification for this figure because of its orientation. This may indicate that a student's understanding of the shape might be referred to as a diamond and that students have only had exposure to polygons with horizontal and vertical sides. Teachers may wish to have students sort quadrilaterals by their properties when quadrilaterals are displayed in different orientations.

b) Name two other classifications that could be used to describe this figure.

Students may also have difficulty naming this figure within a hierarchy and may not realize that a square can also be classified as a parallelogram, a rectangle, and a rhombus. Teachers may wish to provide quadrilateral sorts that allow students to explore the relationship between squares and other quadrilaterals (i.e. parallelogram, rectangle, and rhombus).

4. Look at the figures below.



a) Explain how they are similar to each other.

b) Explain how they are different from each other.

Some students may be limited in their explanation of the similarities and/or differences between the two figures. This will be evident if students state that each figure has four right angles but fail to mention that opposite sides are congruent and both figures can be classified as quadrilaterals and rectangles. Teachers may wish to review properties that define these figures and have students organize shapes in Venn diagrams to explore their similarities and differences.

5. A quadrilateral has these characteristics.

- Exactly one pair of opposite sides is parallel
- Exactly two right angles
- Exactly two sides are congruent

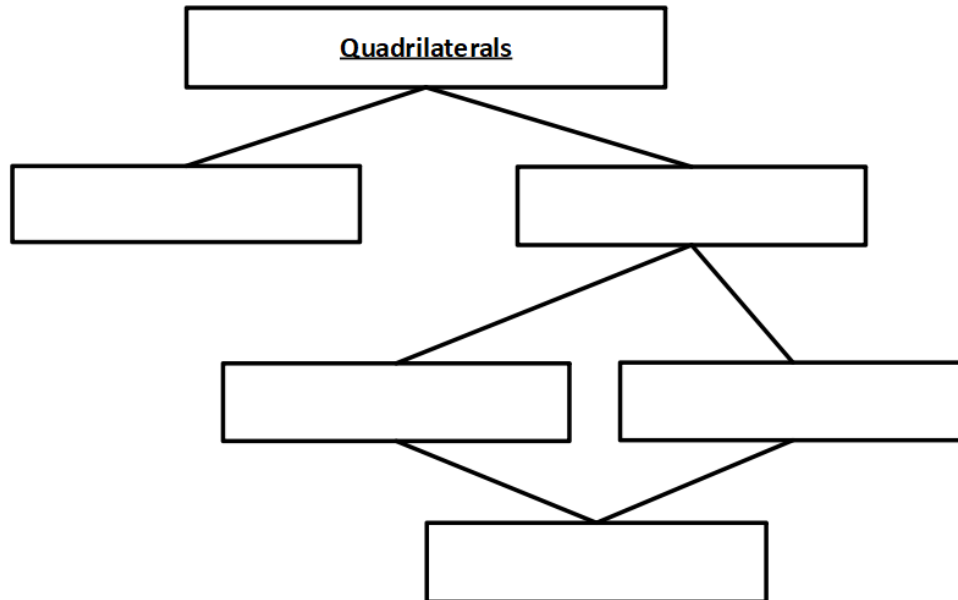
This figure can best be described as a _____.

Justify your reasoning using pictures, symbols, and words.

Some students may have difficulty identifying a figure based on characteristics only using verbal descriptions. This may indicate that a student lacks experience classifying a quadrilateral without an image. Teachers may wish to provide visual representations as in questions 1 – 4 before using written or verbal descriptions without pictorial representations. When using descriptions without pictorial representations, it may be helpful to have students visualize, draw, and name the figures.

6. Use the word bank below to fill in each blank in the diagram below.

Parallelogram	Rhombus	Trapezoid	Rectangle	Square
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Some students may have difficulty classifying quadrilaterals. This may indicate that students lack exposure and experience with identifying the properties of quadrilaterals. Teachers may wish to have students organize pictorial representations of quadrilaterals and terms by their properties in a hierarchical organizer.