

**FIFTH GRADE ADVANCED MATHEMATICS**

**UNIT 5**

Dear Parents,

We want to make sure you understand the mathematics your child will be learning this year. Below you will find the standards we will be learning in Unit Five. Each standard is in bold print and underlined and below it is an explanation with student examples. Your child is not learning math the way we did when we were in school, so hopefully this will assist you when you help your child at home. Please let your teacher know if you have any questions.

**MGSE5.G.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles**

This standard calls for students to reason about the attributes (properties) of shapes. Students should have experiences discussing the property of shapes and reasoning.

Example:

Examine whether all quadrilaterals have right angles. Give examples and non-examples. Examples of questions that might be posed to students:

- If the opposite sides on a figure are parallel and congruent, then the figure is a rectangle. True or false?
- A parallelogram has 4 sides with both sets of opposite sides parallel. What types of quadrilaterals are parallelograms?
- Regular polygons have all their sides and angles congruent. Name or draw some regular polygons.
- All rectangles have 4 right angles. Squares have 4 right angles so they are also rectangles. True or False?
- A trapezoid has 2 sides parallel so it must be a parallelogram. True or False?

**MGSE5.G.4 Classify two-dimensional figures in a hierarchy based on properties.**

This standard builds on what was done in 4<sup>th</sup> grade. Figures from previous grades: polygon, rhombus/rhombi, rectangle, square, triangle, quadrilateral, pentagon, hexagon, cube, trapezoid, half/quarter circle, circle

Example:

Create a hierarchy diagram using the following terms.

polygons – a closed plane figure formed from line segments that meet only at their endpoints

quadrilaterals - a four-sided polygon

rectangles - a quadrilateral with two pairs of congruent parallel sides and four right angles

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rhombi – a parallelogram with all four sides equal in length.

square – a parallelogram with four congruent sides and four right angles.

quadrilateral – a four-sided polygon.

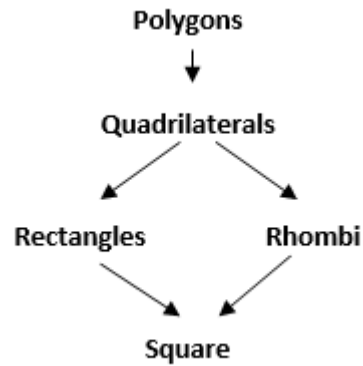
parallelogram – a quadrilateral with two pairs of parallel and congruent sides.

rectangle – a quadrilateral with two pairs of congruent, parallel sides and four right angles

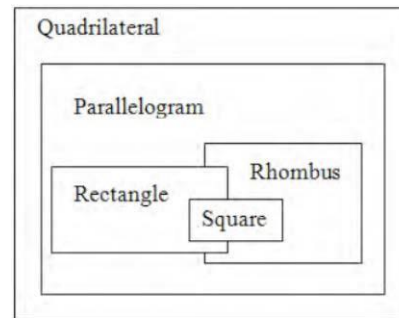
rhombus – a parallelogram with all four sides equal in length

square – a parallelogram with four congruent sides and four right angles.

**Possible student solution:**



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Student should be able to reason about the attributes of shapes by examining questions like the following.

- What are ways to classify triangles?
- Why can't trapezoids and kites be classified as parallelograms?
- Which quadrilaterals have opposite angles congruent and why is this true of certain quadrilaterals? How many lines of symmetry does a regular polygon have?

**Common Misconceptions**

Students think that when describing geometric shapes and placing them in subcategories, the last category is the only classification that can be used.