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| Reason with shapes and their attributes (Standards 3.G.1–2). | |
| <p>Standard 3.G.1 Understand that shapes in different categories (<i>for example, rhombuses, rectangles, and others</i>) may share attributes (<i>for example, having four sides</i>), and that the shared attributes can define a larger category (<i>for example, quadrilaterals</i>). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.</p> | |
| <p>Concepts and Skills to Master</p> <ul style="list-style-type: none"> • Understand that squares, rectangles, rhombuses, parallelograms, and trapezoids are examples of quadrilaterals • Compare and contrast squares, rectangles, rhombuses, parallelograms, and trapezoids • Identify and draw quadrilaterals that cannot be classified as squares, rectangles, rhombuses, parallelograms, or trapezoids • Recognize and understand that the larger category of quadrilaterals includes other subcategories such as squares, rectangles, rhombuses, parallelograms, and trapezoids; Identify examples and non-examples of squares, rectangles, rhombuses, parallelograms, and trapezoids; Recognize that there are quadrilaterals that are not in any of the subcategories <p>Teacher Note: While students are expected to informally recognize attributes of quadrilaterals, including parallel lines and right angles, they are not expected to master these concepts until fourth grade. Developing a hierarchy of quadrilateral shapes is reserved for fifth grade (5.G.4). In third grade, students only make basic connections between the attributes of these shapes. Note that in the U.S., that the term “trapezoid” may have two different meanings. Research identifies these as inclusive and exclusive definitions. The inclusive definition states: A trapezoid is a quadrilateral with at least one pair of parallel sides. The exclusive definition states: A trapezoid is a quadrilateral with exactly one pair of parallel sides. Both definitions are accepted in the United States. Utah has adopted the inclusive definition. A trapezoid is a quadrilateral with at least one pair of parallel sides. The inclusive definition is the most accepted definition worldwide and is the definition used by the Utah State Board of Education for standard and assessment purposes.</p> | |
| Related Standards: Current Grade Level | Related Standards: Future Grade Levels |
| <p>3.G.2 Partition shapes into parts with equal areas</p> | <p>4.G.1 Draw points, lines, line segments, rays, angles (right, acute, and obtuse) and perpendicular and parallel lines. Identify these in two-dimensional figures</p> <p>4.G.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.</p> <p>4.G.1</p> <p>4.MD.5 Recognize angles as geometric figures</p> <p>5.G.3 Understand that attributes belonging to a category of two-dimensional figures all belong to all subcategories of that category</p> <p>5.G.4 Classify two-dimensional figures in a hierarchy based on properties</p> |
| <p>Critical Background Knowledge from Previous Grade Levels</p> <ul style="list-style-type: none"> • Recognize and draw shapes having specified attributes, such as a given number of sides or angles. Identify and describe quadrilaterals, squares, rectangles, and trapezoids (2.G.1) • Identify and distinguish between defining attributes versus non-defining attributes; build and draw shapes that possess defining attributes (1.G.1) • Students work with trapezoids, squares, and rectangles in first and second grade. The term <i>quadrilateral</i> is introduced in second grade • Students work with squares, circles, triangles, rectangles, and hexagons in Kindergarten | |

Academic Vocabulary

attribute, angle, closed figure, open figure, parallel ||, side, polygon, quadrilateral, rhombus, rectangle, square, parallelogram, trapezoid

right angle , corners

Shapes new to third grade: rhombus, parallelogram

Teacher Note: Rectilinear figures must have four right angles. Ensure that correct plural forms of vocabulary words are used. The plural form for rhombus may be rhombuses or rhombi (may be used interchangeably). The plural form for vertex is vertices.

Suggested Models

Suggested Strategies

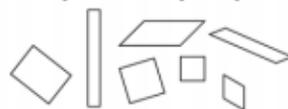
Quadrilaterals and some special kinds of quadrilaterals

Quadrilaterals: four-sided shapes.



Subcategory:

Parallelograms: four-sided shapes that have two pairs of parallel sides.



Subcategory:

Rectangles: four-sided shapes that have four right angles. They also have two pairs of parallel sides. We could call them "rectangular parallelograms."



Subcategory:

Squares: four-sided shapes that have four right angles and four sides of the same length. We could call them "rhombus rectangles."



P1

The representations above might be used by teachers in class. Note that the left-most four shapes in the first section at the top left have four sides but do not have properties that would place them in any of the other categories shown (parallelograms, rectangles, squares).

- Analyze collections of each shape (quadrilateral, trapezoid, parallelogram, rectangle, rhombus, and square) to determine the defining attributes; compare and contrast the attributes of several different shapes
- Create or represent many varied and unusual squares, rectangles, rhombuses, parallelograms, and trapezoids and explain them verbally or in written form; students also create or represent examples of quadrilaterals that do not belong in any of the subcategories
- Use graphic organizers to categorize sets of shapes
- Draw shapes as examples and non-examples in given categories and subcategories

Image Source: http://commoncoretools.me/wp-content/uploads/2014/12/ccss_progression_gk6_2014_12_27.pdf pp.13

Reason with shapes and their attributes (Standards 3.G.1–2).

Standard 3.G.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into four parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*

Concepts and Skills to Master

- Partition shapes into parts with equal areas ($\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8}$)
- Understand the denominator of the fraction as the fractional name determined by the number of pieces in the whole (for example, when a whole shape is partitioned into six equal parts, the fractional parts are sixths)
- Understand that the parts must have equal areas in order to use fractional notation to describe their size
- Understand that one of the equal parts is a unit fraction (when a shape is partitioned into 6 equal parts, one of the parts is $\frac{1}{6}$)

Teacher Note: Third grade is the first time students work with fractions as numbers, including fractional notation as well as representations beyond circles and rectangles. Equal shares, equal areas, and equal parts may be used interchangeably.

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| Related Standards: Current Grade Level | Related Standards: Future Grade Level |
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| <p>3.NF.1 Understand unit fractions</p> <p>3.NF.2 Understand a fraction as a number on the number line</p> <p>3.NF.3 Explain equivalence of fractions and compare fractions by reasoning about their size</p> <p>3.MD.6 Measure area by counting unit squares</p> | <p>4.NF.3 Understand fractions as sums of unit fractions</p> <p>4.NF.1, 4.NF.2, 4.NF.4, 5.NF.1, 5.NF.2, 5.NF.4, 5.NF.6, 5.NF.7 Use area models to represent operations with fractions</p> <p>4.G.3 Recognize and draw a line of symmetry</p> |
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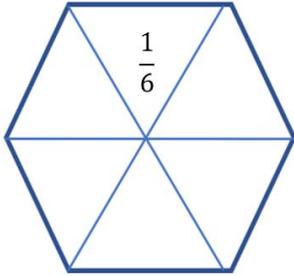
Critical Background Knowledge from Previous Grade Levels

- Partition rectangles into rows and columns and count to find the total (2.G.2)
- Partition circles and rectangles into two, three, and four equal shares; describe the shares as halves, thirds, fourths, and quarters. Recognize that equal shares of identical wholes need not have the same shape (2.G.3, 1.G.3)
- Notice smaller shapes within a larger existing shape (1.G.2)

Academic Vocabulary

partition, fraction, unit fraction, whole, area, equal area, numerator, denominator, $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8}$

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| Suggested Models | Suggested Strategies |
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|  | <ul style="list-style-type: none"> • Practice paper folding and identify each equal part with the fractional notation • Partition regions into equal shares using a context and name the shares using fractional notation (cookies, pies, pizza, brownies, crackers, grass area, etc.) • Sort shapes that are partitioned into equal shares and shares that are not equal • Partition shapes using manipulatives such as geoboards, pattern blocks, and paper rectangles and circles, food, etc. |
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