

583 quantitatively (**MP.2**), justifying conclusions (**MP.3**), appropriate use of tools
584 (**MP.5**), attention to precision (**MP.6**), and evaluating the reasonableness of
585 results (**MP. 8**).

586

587

588

Domain: Geometry

589

590 Grade one students reasoned about attributes of geometric shapes. A critical
591 area of instruction in second grade is for students to describe and analyze
592 shapes by examining their sides and angles. This work will develop a foundation
593 for understanding area, volume, congruence, similarity, and symmetry in later
594 grades.

595

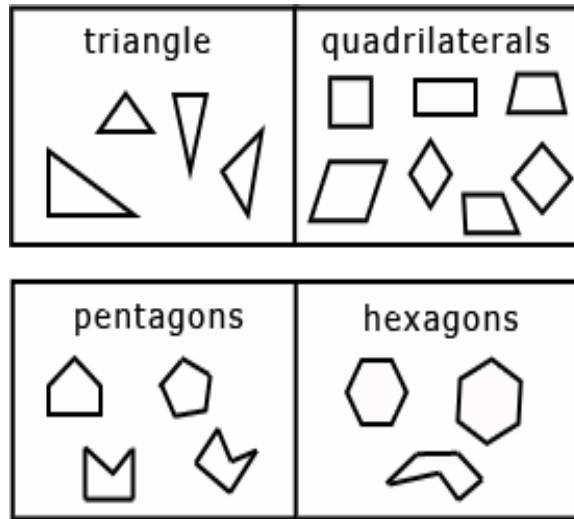
| Geometry | 2.G |
|---|-----|
| <p>Reason with shapes and their attributes.</p> <ol style="list-style-type: none">1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.⁵ Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words <i>halves</i>, <i>thirds</i>, <i>half of</i>, <i>a third of</i>, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. | |

596

597 Students identify, describe, and draw triangles, quadrilaterals (squares,
598 rectangles and parallelograms, and trapezoids), pentagons, hexagons, and
599 cubes (**2.G.1**). Pentagons, triangles, and hexagons should appear as both
600 regular (equal sides and equal angles) and irregular. Students recognize all four
601 sided shapes as quadrilaterals. Students use the vocabulary word “angle” in
602 place of “corner,” but they do not need to name angle types (e.g. right, acute,
603 obtuse). Shapes should be presented in a variety of orientations and
604 configurations.

⁵ Sizes are compared directly or visually, not compared by measuring.

605



606

607

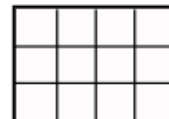
608 As students use attributes to identify and describe shapes they also develop
 609 mathematical practices such as analyzing givens and constraints (**MP.1**),
 610 justifying conclusions (**MP.3**), modeling with mathematics (**MP.4**) appropriate use
 611 of tools (**MP.5**), attention to precision (**MP.6**), and looking for a pattern or
 612 structure (**MP. 7**).

613

614 Students partition a rectangle into rows and columns of same-size squares and
 615 count to find the total number of squares. (**2.G.2**) As students partition rectangles
 616 into rows and columns they build a foundation for learning about the area of a
 617 rectangle and using arrays for multiplication.

618

| |
|--|
| <p>Example: Partition the rectangle into 3 equal rows and 4 equal columns. How can you partition into 3 equal rows? Then into 4 equal columns? Can you do it in the other order? How many small squares did you make?</p> |
| <p>Student: "I counted 12 squares in this rectangle. This is a lot like when we counted arrays by counting $4+4+4=12$."</p> |



619

620 An interactive whiteboard or manipulatives such as square tiles, cubes, or other
 621 square-shaped objects can be used to help students partition rectangles (**MP.5**).

622

623 In first grade students partitioned shapes into halves, fourth and quarters.

624 Second grade students partition circles and rectangles into 2, 3 or 4 equal shares

625 (regions). Students explore this concept with paper strips and pictorial

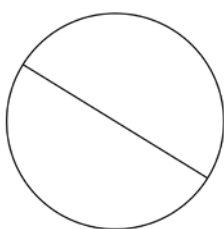
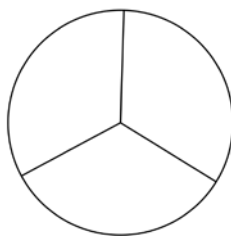
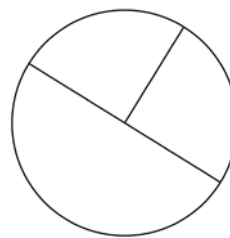
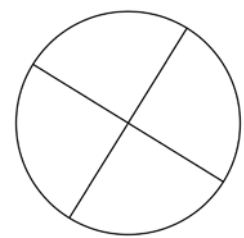
626 representations and work with the vocabulary terms halves, thirds, halves, and

627 fourths. **(2.G.3)** Students recognize that when they cut a circle into three equal

628 pieces, each piece will equal one third of its original whole and students describe

629 the whole as three thirds. If a circle is cut into four equal pieces, each piece will

630 equal one fourth of its original whole and the whole is described as four fourths.

Circle cut
into halvesCircle cut
into thirdsCircle **NOT** cut
into thirdsCircle cut
into fourths

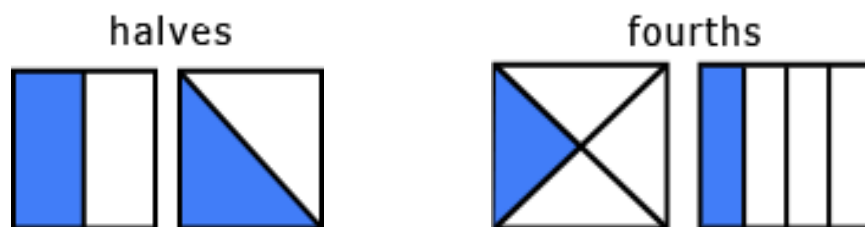
631

632

633 Students should see circles and rectangles partitioned in multiple ways so they

634 learn to recognize that equal shares can be different shapes within the same

635 whole.



636

637

638 As students partition circles and squares and explain their thinking they develop

639 mathematical practices such as making sense of quantities **(MP.2)**, justifying640 conclusions **(MP.3)**, attending to precision **(MP.6)**, and evaluating the641 reasonableness of their results **(MP. 7)**. They also develop understandings that

642 will support major work at grade three in the cluster “Develop understanding of
643 fractions as numbers”.

644 (Adapted from Arizona 2012 and N. Carolina 2013)

645

646

647 **Essential Learning for the Next Grade**

648 In kindergarten through grade five, the focus is on the addition, subtraction,
649 multiplication, and division of whole numbers, fractions, and decimals, with a
650 balance of concepts, skills and problem solving. Arithmetic is viewed as an
651 important set of skills and also as a thinking subject that, done thoughtfully,
652 prepares students for algebra. Measurement and geometry develop alongside
653 number and operations and are tied specifically to arithmetic along the way.

654

655 In kindergarten through grade two students focus on addition and subtraction and
656 measurement using whole numbers. To be prepared for grade three
657 mathematics, students should be able to demonstrate they have acquired certain
658 mathematical concepts and procedural skills by the end of grade two and have
659 met the fluency expectations for the grade. For second graders, the expected
660 fluencies are add and subtract within 20 using mental strategies and know from
661 memory all sums of two one-digit numbers (**2.OA.2▲**), and add and subtract
662 within 100 using various strategies (**2.NBT.5▲**). These fluencies and the
663 conceptual understandings that support them are foundational for work in later
664 grades.

665

666 Of particular importance at grade two are concepts, skills, and understandings of
667 addition and subtraction within 20 and representing and solving problems
668 involving addition and subtraction (**2.OA.1-2▲**); place value (**2.NBT1-4▲**) and
669 the use of place value understanding and properties of operations to add and
670 subtract (**2.NBT.5-9▲**); measuring and estimating lengths in standard units
671 (**2.MD.1-4▲**) and relating addition and subtract to length. (**2.MD.5-6▲**)

672