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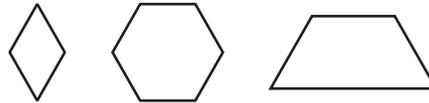
DATE _____

Geometry and Arrays

In Unit 8 children explore 2-dimensional shapes, including triangles, quadrilaterals, pentagons, and hexagons. They describe and sort the shapes according to their attributes, such as number of sides, length of sides, number of angles, and whether they have right angles or parallel sides.



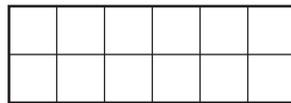
These shapes each have at least one right angle.



These shapes have no right angles.

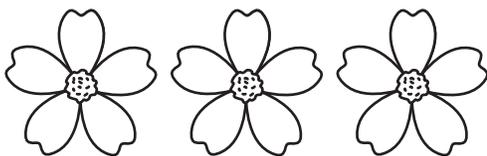
Children also look for 2-dimensional shapes in 3-dimensional objects. For example, they look at a cube and notice that each face, or side, of the cube is a square.

After these shape activities, children also explore techniques for partitioning rectangles into rows and columns of same-size squares. These activities lay the foundation for area measurement in Grade 3.



This rectangle is partitioned into 2 rows and 6 columns of squares.

In the last part of the unit, children solve number stories involving equal groups of objects. In some cases equal groups are small clusters of objects, such as petals on flowers. In other cases the equal groups are the rows or columns of rectangular arrays.



Equal groups of petals: 3 flowers with 5 petals on each flower is 15 petals in all.



An array of chairs: 3 rows with 5 chairs in each row is 15 chairs in all.

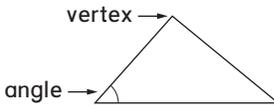
Children build equal groups and arrays with counters and explore strategies for finding how many counters there are in all. These activities lay the foundation for work with multiplication in Grade 3.

Please keep this Family Letter for reference as your child works through Unit 8.

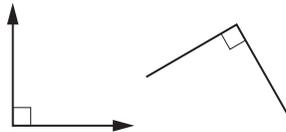
Vocabulary Important terms in Unit 8:

attribute (of a shape) A feature of a shape or a common feature of a set of shapes. Examples of shape attributes include the number of sides and the number of right angles.

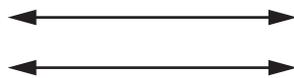
angle Two rays or two line segments with a common endpoint. The rays or segments are called the *sides* of the angle. The sides of a polygon form angles at each corner, or vertex, of the polygon.



right angle A 90-degree angle. Also known as a square corner.

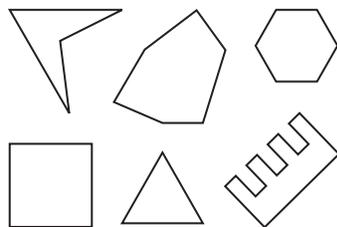


parallel lines Two lines in a plane are parallel if they never intersect or cross. Two parallel lines are always the same distance apart. Two line segments in a plane are parallel if they can be extended to form parallel lines. If two sides of a polygon are parallel line segments, that polygon has a pair of parallel sides.

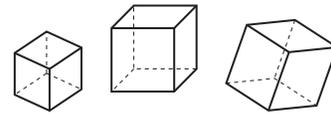


Parallel lines

polygon A 2-dimensional figure formed by three or more line segments (sides) that meet only at their endpoints to make a closed path. The sides may not cross one another.



cube A 3-dimensional shape with exactly 6 square faces.



face In *Everyday Mathematics*, a flat surface on a 3-dimensional shape.

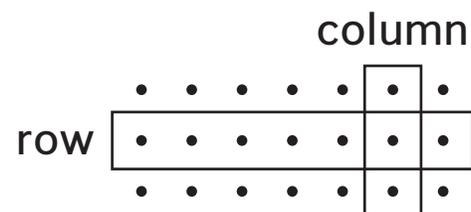
row A horizontal arrangement of objects or numbers in an array or a table.

column A vertical arrangement of objects or numbers in an array or a table.

partition To divide a shape into smaller shapes. In *Second Grade Everyday Mathematics*, children partition rectangles into rows and columns of same-size squares. See the example on the first page of this letter.

equal groups Sets with the same number of elements, such as cars with 5 passengers each or boxes containing 100 paper clips each.

array An arrangement of objects in a regular pattern. In *Second Grade Everyday Mathematics*, children work with rectangular arrays, which are arrangements of objects in rows and columns that form rectangles. All rows have the same number of objects, and all columns have the same number of objects. The rows and columns in a rectangular array are one way of representing equal groups.



Do-Anytime Activities

To work with your child on the concepts taught in this unit and previous units, try these interesting and rewarding activities:

1. Point to everyday objects and ask your child to identify the shapes he or she sees and describe their attributes. For example, your child might see rectangles on the sides of a shoe box and point out the parallel sides and right angles, or he or she might see hexagons on a soccer ball and note that they each have 6 equal-length sides.
2. Name a shape (such as a rectangle) or an attribute (such as a right angle) and ask your child to find an object with that shape or attribute. For example, if asked to find a shape with 4 right angles, your child might identify a book cover or a doorway.
3. Look for real-life examples of equal groups or arrays and ask your child to figure out how many objects there are in each one. For example, most telephone keypads have 4 rows of 3 keys each. That's $3 + 3 + 3 + 3 = 12$ (or $4 + 4 + 4 = 12$) keys in all. Other examples of real-life equal groups or arrays might include floor or ceiling tiles, window panes, or packages of pencils or markers.

Building Skills through Games

In Unit 8 your child will practice mathematical skills by playing a variety of games, including the following new games.

Shape Capture

Players have a set of Shape Cards spread out in front of them. One at a time, players draw an Attribute Card and “capture” all the shapes that have that attribute. The player who captures the most shapes wins.

The Number-Grid Difference Game

Each player draws two number cards and uses them to form a 2-digit number. Players mark the numbers on a number grid, and one player finds the difference between the two numbers. The difference is that player’s score for the round.

Array Concentration

Players arrange a set of *Array Concentration* Number Cards and Array Cards facedown in front of them. A player flips over one of each type of card. If the cards “match”—that is, if the number on the number card equals the total number of dots in the array—the player takes the cards and takes another turn.



These cards match because there are 6 dots in the array.

Array Bingo

Players arrange a set of array cards to form a bingo card. Children take turns drawing number cards and calling out the number. If players have an array on their bingo card that has that number of dots, they turn over the array card. The first player to turn over three arrays in a row (vertically, horizontally, or diagonally) wins.

As You Help Your Child with Homework

As your child brings home assignments, you may go over the instructions together, clarifying them as needed. The answers below will guide you through the Unit 8 Home Links.

Home Link 8-1

- 1.–4. Answers vary.
5. 36 6. 52 7. 83

Home Link 8-2

1.  2.   
3.    
4.   

Home Link 8-3

- 1.–3. Sample drawings are given.
1. ; Hexagon 2. ; Pentagon
3. ; Sample answer: Quadrilateral
4. Yes. Sample answer: They are all closed shapes with straight sides that don't cross.

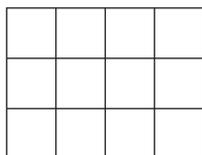
Home Link 8-4

1. Answers vary. 2. Answers vary.
3. Sample answer: A triangle has 3 sides, and a quadrilateral has 4 sides.
4. Answers vary.
- 5a. 61 5b. 73 5c. 94 5d. 72

Home Link 8-5

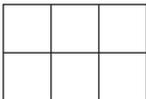
- 1.–3. Answers vary. 4. 45 5. 50 6. 94

Home Link 8-6



1. 12 2. 12

Home Link 8-7

1. 
6 squares
2. 39 3. 80 4. 96

Home Link 8-8

1. 10 fingers; Sample answers: $5 + 5 = 10$;
 $2 \times 5 = 10$
2. 12 muffin cups; Sample answers:
 $4 + 4 + 4 = 12$; $3 \times 4 = 12$
3. 8 shoes; Sample answers: $2 + 2 + 2 + 2 = 8$;
 $2 \times 4 = 8$

Home Link 8-9

1. 
12; Sample answers: $3 + 3 + 3 + 3 = 12$;
 $4 \times 3 = 12$
2.  15; Sample answers:
 $5 + 5 + 5 = 15$; $3 \times 5 = 15$
3.  8; Sample answers:
 $2 + 2 + 2 + 2 = 8$; $4 \times 2 = 8$
4. 55 5. 91 6. 94

Home Link 8-10

1. 20; Sample answers: $4 + 4 + 4 + 4 + 4 = 20$;
 $5 + 5 + 5 + 5 = 20$; $4 \times 5 = 20$; $5 \times 4 = 20$
2. 2; Sample answers: $1 + 1 = 2$; $1 \times 2 = 2$;
 $2 \times 1 = 2$
3. 8; Sample answers: $4 + 4 = 8$;
 $2 + 2 + 2 + 2 = 8$; $2 \times 4 = 8$; $4 \times 2 = 8$

Home Link 8-11

1. Answers vary.