EUREKA MATH®
TEKS EDITION

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

During the next few days, our math class will explore geometric shapes. We will learn the names and **attributes**, or characteristics, of the following **two-dimensional shapes**: **triangle**, **quadrilateral**, **pentagon**, **hexagon**, **heptagon**, **octagon**, **nonagon**, and **decagon**. We will learn to recognize, describe, and draw these shapes based on the number of sides, **angles**, and **vertices** they have. We will use this knowledge as we learn about **parallel** lines, **right angles** (square corners), **trapezoids**, **parallelograms**, **rectangles**, and **rhombuses**. We will describe **three-dimensional shapes** in terms of their attributes, as well, counting the number of **edges**, **faces**, and **vertices** to help us classify and sort them. Finally, we will build a **three-dimensional shape**, the **cube**, to explore the connection between it and its two-dimensional counterpart, the **square**.
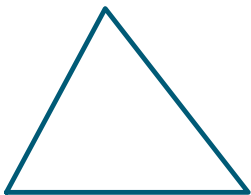
You can expect to see homework that asks your child to do the following:

- Identify the number of sides, angles, and vertices for a given shape.

- Count the number of sides, angles, and vertices to identify polygons.

- Use a straightedge or ruler to draw a polygon based on a given set of attributes.

- Classify and sort three-dimensional shapes by their number of faces, edges, and vertices.

SAMPLE PROBLEM *(From Lesson 3)*

Use a straightedge to draw the polygon with the given attributes.

Draw a polygon with 3 angles.

Number of sides: **3**   Number of angles: **3**   Number of vertices: **3**
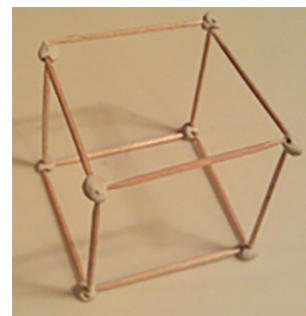
Name of polygon: ***triangle***

HOW YOU CAN HELP AT HOME

- Give your child a handful of toothpicks or straws and encourage her to create two-dimensional shapes (e.g., triangle, parallelogram, pentagon). As she creates each shape, ask her to identify it and describe its attributes. For example, she might make a triangle and say, "This is a triangle because it has 3 sides and 3 angles."

HOW YOU CAN HELP AT HOME *(continued)*

▪ Invite your child to teach you how to construct a cube by modeling the process for you. (See image at right.) You will need 24 toothpicks and 16 pieces of a sticky material such as mini marshmallows or gumdrops. Have fun! As he builds, ask your child questions about the attributes of a cube: "How many **faces** does a cube have? How many vertices? How many edges? What shape are the faces of a cube?"

▪ Go on a shape hunt around the home and around town. Challenge your child to spot as many two- and three-dimensional shapes as she can and to prove she is correct by naming the attributes that define the shape. For example, she might spot a street sign and say, "I see a rectangle! It has 4 sides and 4 right angles!"

TERMS

Angle: A figure formed when two straight sides share a common endpoint. (See Figure 1.)

Attributes: The characteristics of a shape, such as the number of sides, angles, or faces.

Figure 1

Cube: A three-dimensional shape with six square faces of equal size.

Decagon: A ten-sided polygon.

Edge: A line segment on a three-dimensional shape where two flat faces meet.

Faces: The two-dimensional surfaces of a three-dimensional solid. A face can be a circle, triangle, square, or other flat shape.

Heptagon: A seven-sided polygon.

Hexagon: A six-sided polygon.

Nonagon: A nine-sided polygon.

Octagon: An eight-sided polygon.

Parallel: Used to describe opposite sides of a parallelogram in Grade 2. For example, "These sides are parallel because if they kept on going, they'd never intersect!"

Parallelogram: A quadrilateral in which both pairs of opposite sides are parallel.

Pentagon: A five-sided polygon.

Polygon: A closed figure with three or more straight sides (e.g., triangle, quadrilateral, pentagon, hexagon).

Quadrilateral: A four-sided polygon.

Rectangle: A parallelogram with four right angles.

Rhombus: A parallelogram with four sides of equal length.

Right angle: A square corner (a 90 degree angle). (See Figure 2.)
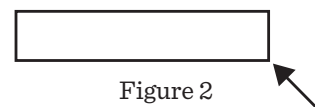
Figure 2

Square: A rectangle with four sides of equal length.

Three-dimensional shape: An object that has depth, height, and width such as a cube, rectangular prism, cylinder, sphere, or cone.

Trapezoid: A quadrilateral with exactly one pair of parallel sides.

Triangle: A three-sided polygon.

Two-dimensional shape: A flat shape with no depth such as a circle, triangle, rectangle, square, hexagon, or trapezoid.

Vertex (vertices): The point(s) on a two-dimensional shape where two sides meet or the "point" on a three-dimensional shape where three edges meet.

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KEY CONCEPT OVERVIEW

During the next few days, our math class will explore ways in which two-dimensional shapes can compose new shapes. For example, two triangles can form a square. We will study how smaller parts can create a larger whole. We will learn that larger shapes can be partitioned, or divided, into equal parts, or shares, and will focus on cases in which equal shares create **halves**, **thirds**, or **fourths**. We will use **pattern blocks** to build larger shapes out of smaller, equal parts. For example, a hexagon can be composed of two equal trapezoids; these two equal parts are called halves.

You can expect to see homework that asks your child to do the following:
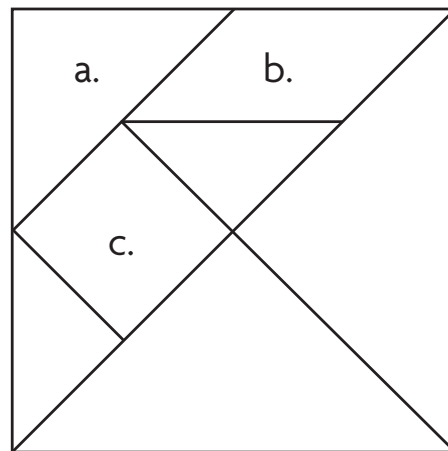
- Identify the polygons that compose a **tangram**.

- Use tangram pieces to make various polygons. For example, use the two smallest triangles to make one larger triangle.

- Tell how many equal shares are in a given shape and circle shapes divided into halves, thirds, and fourths.

- Name the pattern block used to cover one-half, one-third, or one-fourth of a given shape.

SAMPLE PROBLEM *(From Lesson 6)*

Identify each polygon labeled in the tangram as precisely as possible in the space below.

a. *triangle*

b. *parallelogram*

c. *square*

HOW YOU CAN HELP AT HOME

- Invite your child to share with you the tangram created in class during Lesson 6. Virtual tangrams may also be found through an internet search. Encourage her to show you different shapes she can form by combining smaller tangram pieces, and ask her to describe and name the shapes. For example, she might say, "I used the two small triangles and the square to make a parallelogram! It has four straight sides and four angles, and each of the pairs of opposite sides is parallel." Challenge your child to reassemble the tangram into the large square. Help her store the cutout tangram pieces in a small plastic bag or envelope.

- Consider going to the library or bookstore to get *Grandfather Tang's Story*, by Ann Tompert. Read the book with your child, and invite him to use his tangram pieces to make the shapes shown in the book.

- Help your child make real-world connections with the math by asking questions such as, "Can you think of any objects that are made up of lots of smaller shapes?" (e.g., tile floors, brick walls, the sections of an orange) "When would you want to have equal shares of something?" (e.g., sharing food, such as a pizza) "Where do you see examples of halves, thirds, or fourths?" (e.g., a blanket or towel folded in half, a measuring cup filled to the $\frac{1}{3}$ mark with water, a newspaper folded into quarters, one cube in a stick of four linking cubes).

TERMS

Fourths: Four equal shares, or parts, that make a whole (e.g., fourths of a square).

Halves: Two equal shares, or parts, that make a whole (e.g., halves of a rectangle).

Thirds: Three equal shares, or parts, that make a whole (e.g., thirds of a circle).

MODELS

Pattern Blocks: Blocks shaped as hexagons, squares, triangles, trapezoids, and wide and thin rhombuses.

Tangram: A geometric puzzle consisting of a square cut into seven pieces that can be arranged to make various other shapes. (See Sample Problem.)

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TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

During the next week, our math class will focus on partitioning, or dividing, circles and rectangles into equal fractional parts such as halves, fourths, and eighths. We will learn that a whole can be composed of two halves, four fourths, or eight eighths. We will look at pictures of partitioned shapes and discuss whether the partitioning represents equal shares. We will also partition and then shade a given fraction of a shape.

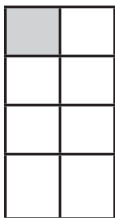You can expect to see homework that asks your child to do the following:

▪ Identify shapes that are split into two equal shares and shade one-half of each shape.

▪ Partition shapes by drawing lines to show halves, fourths, or eighths, and then shade various fractional parts. For example, partition circles to show fourths. Then shade one part of a circle to show one-fourth, two parts of a circle to show two-fourths, and so on.

▪ Name the fractional part that must be filled in to result in one shaded whole. For example, if a circle is one-eighth shaded, then seven more eighths must be filled in to completely shade one whole.

SAMPLE PROBLEM *(From Lesson 11)*

What fraction do you need to color so that 1 whole is shaded?

a.

7 eighths

b.

1 half

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HOW YOU CAN HELP AT HOME

- Encourage your child to skip-count by fives to prepare for telling time to the nearest five minutes. If your child shows mastery of skip-counting by fives, challenge him to skip-count by threes and fours in preparation for Grade 3. You might start the skip-counting and then encourage your child to join in.

- Practice basic addition and subtraction facts within 20 with your child to help her review and maintain fluency. This will help her solve two- and three-digit addition and subtraction problems using the vertical form.

- Help your child practice addition and subtraction by encouraging him to solve problems (e.g., $37 + 8$) using the make a ten addition strategy. Then ask him to explain the solution strategy. For example, he might say, "I know that 37 needs 3 to make 40, and I can break 8 into 3 and 5. My new, easier problem is $40 + 5$, which is 45." If your child shows mastery of the make a ten strategy, challenge him to use the make the next hundred strategy and explain why it works. For example, to solve $280 + 150$ he might say, "I know that 280 needs 20 to make 300, and I can break 150 into 20 and 130. My new, easier problem is $300 + 130$, which is 430."

![Eureka Math TEKS Edition logo]

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

During the next week, our math class will apply our understanding of fraction concepts to telling time on an **analog clock**. We will make paper clocks and then fold the clock face in half and then in quarters to mark the hour, half hour, and quarter hours. We will relate 30 minutes to a half hour and 15 minutes to a quarter hour, and we will practice telling time to the half hour and quarter hour. Then we will fill in the missing numbers on the clock face and use skip-counting to tell time to the nearest five minutes and to the nearest one minute. Finally, we will learn the meanings of *a.m.* and *p.m.* and solve word problems involving time intervals.
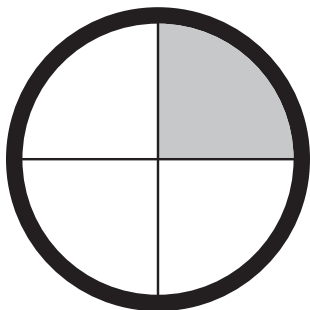
You can expect to see homework that asks your child to do the following:

- Tell what fraction of a clock is shaded by using the words *quarter*, *quarters*, *half*, or *halves*.
- Tell and write the time shown on a clock, and draw the hour and minute hands to show a given time.
- Decide whether an activity would happen in the a.m. or p.m.
- Tell how much time has passed, for example, from 2:00 p.m. to 8:00 p.m., and use the RDW process to solve word problems involving time intervals.
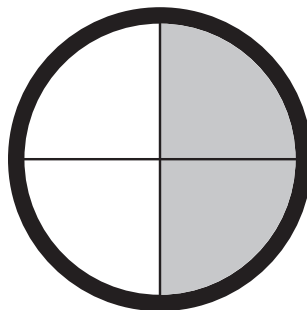- Relate time on a clock to a number line.

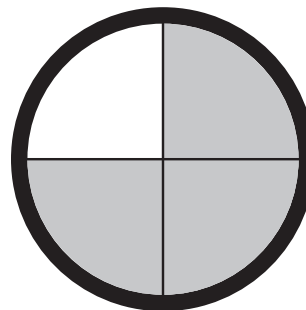## SAMPLE PROBLEM *(From Lesson 12)*

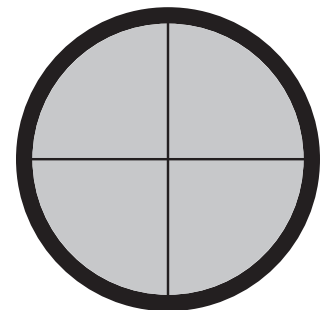Tell what fraction of each clock face below is shaded by using the words *quarter*, *quarters*, *half*, or *halves*.

1 quarter   **2 quarters or 1 half**   **3 quarters**   **4 quarters or 2 halves**

HOW YOU CAN HELP AT HOME

- Help your child make connections between fractions and telling time. You might ask questions such as, "Why is 15 minutes called a quarter hour?" "How do you know that 3:45 and a quarter to four represent the same time?" "Why is it called the half hour when the minute hand points to the 6?"

- Encourage your child to be on the lookout for clocks in stores, in restaurants, or around the home. Ask him to tell the time to the nearest one minute, to the nearest five minutes, to the quarter hour, or to the half hour.

- Encourage your child to relate various activities to a.m. and p.m. by asking questions such as, "When you sleep at night, are you sleeping during the a.m. or p.m.?" "What might you be doing at 2:00 p.m.?" "Would you eat breakfast in the a.m. or p.m.?"
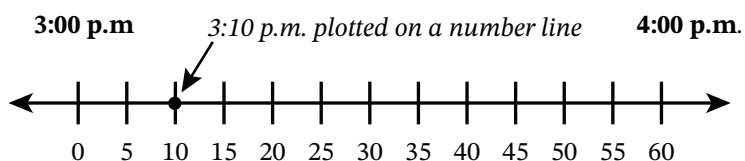
TERMS

Interval: The space between two tick marks on a number line.

Plot: To locate and label a point on the number line.

MODELS

Number Line: A line on which numbers are marked at equal intervals.

3:00 p.m   *3:10 p.m. plotted on a number line*   **4:00 p.m**.

0   5   10   15   20   25   30   35   40   45   50   55   60

Analog Clock: A clock or watch that displays time by the positions of the hour and minute hands.