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GRADE K • MODULE 2

Two-Dimensional and Three-Dimensional Shapes

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Grade K • Module 2
Two-Dimensional and Three-Dimensional Shapes

OVERVIEW

Students began the year observing their world. What is exactly the same? What is the same but...? They matched and sorted according to criteria sequenced from simple to complex. Their perceptions evolved into observations about numbers to 10. “4 is missing 1 to make 5.” “4 plus 1 more is 5.” “There is the same number of dogs and flowers, 6!”

Now, students will seek out flat and solid shapes in their world (K.G.1). Empowered by this lens, they begin to make connections between the wheel of a bicycle, the moon, and the top of an ice cream cone. Just as the number 4 allowed them to quantify 4 mountains and 4 mice as equal numbers, learning their flats and solids allows them to see the relationship of the simple to the complex, a mountain’s top to a plastic triangle and cone sitting on their desk.

To open Topic A, students find and name shapes in their environment using informal language, describing flat shapes without naming them (K.G.4). In Lesson 2, they classify the shapes, juxtaposing them with various examples and non-examples. This process further refines their ability to talk about the shapes, for example, as closed or having straight sides. The naming of the flat shape as a triangle or hexagon is part of that process, not the focus of it (K.G.2, K.G.1).

The same process is then repeated with rectangles in Lesson 3 and hexagons and circles in Lesson 4. In Lesson 5, they manipulate all the flat shapes using position words as the teacher gives directives such as, “Move the closed shape with three straight sides behind the shape with six straight sides.” These positioning words are subsequently woven into the instructional program, at times in math fluency activities, but also throughout the entire school day.

The lessons of Topic B reiterate those of Topic A but with solid shapes. In addition, students recognize the presence of the flats within the solids. The module closes in Topic C with discrimination between flats and solids and a culminating task wherein students create displays of a given flat shape with counter-examples and show related solid shapes (K.G.3).

The fluency components in the lessons of Module 1 included activities wherein students used a variety of triangles and rectangles to practice their decompositions of 3 and 4. Flats and solids will continue to be included in fluency activities all through the year so that students have repeated experiences with shapes, their attributes, and their names. Daily number fluency practice in this new module is critical. There are two main goals of consistent fluency practice: (1) to solidify the numbers of Module 1 and (2) to anticipate the numbers of Modules 3, 4, and 5. Therefore, students continue to work extensively with numbers to 10 and fluency with addition and subtraction to 5.

The kindergarten year closes with another geometry unit. By that time much more familiar with flats and solids, the students will be composing new flat shapes (“Can you make a rectangle from these two
triangles?”) and building solid shapes from components (“Let’s use these straws to be the edges and these balls of clay to be the corners of a cube!”). This module will allow them to bring together all that they have learned throughout the year as they manipulate shapes and their components (K.G.4 and K.G.5).

**Focus Grade Level Standards**

**Classify objects and count the number of objects in each category.**

- **K.MD.3** Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.)

**Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).**

- **K.G.1** Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above, below, beside, in front of, behind,* and *next to.*
- **K.G.2** Correctly name shapes regardless of their orientations or overall size.
- **K.G.3** Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).
Analyze, compare, create, and compose shapes.¹

**K.G.4** Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length).

**Foundational Standards**

**Identify and describe shapes (squares, circles, triangles, rectangles).**

**PK.G.1** Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as top, bottom, up, down, in front of, behind, over, under, and next to.

**PK.G.2** Correctly name shapes regardless of size.

**Analyze, compare, and sort objects.**

**PK.G.3** Analyze, compare, and sort two- and three-dimensional shapes and objects, in different sizes, using informal language to describe their similarities, differences, and other attributes (e.g., color, size, and shape).

**PK.G.4** Create and build shapes from components (e.g., sticks and clay balls).

**Focus Standards for Mathematical Practice**

**MP.1** Make sense of problems and persevere in solving them. Distinguish shapes from among variants, palpable distractors, and difficult distractors.² See examples to the right.

**MP.3** Construct viable arguments and critique the reasoning of others. Students are increasingly able to use shape attributes to defend identification of a plane or solid shape.

**MP.6** Attend to precision. Students use position words to clearly indicate the location of shapes. Also, when kindergarten students are analyzing and defining attributes such as “3 straight sides” they are attending to precision.

**MP.7** Look for and make use of structure. Students use examples, non-examples, and shared attributes of geometric figures in order to develop a richer “concept

¹ The balance of this cluster is addressed in Module 6.
² This excellent image plus further clarification is found in the Geometry Progressions document, p. 6.
image” (Geometry Progression, p. 6) of each geometric shape. This concept image allows for more acute discernment of the shape within the environment.

### Overview of Module Topics and Lesson Objectives

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Lesson 1: Find and describe flat triangles, squares, rectangles, hexagons, and circles using informal language without naming.  
Lesson 2: Explain decisions about classifications of triangles into categories using variants and non-examples. Identify shapes as triangles.  
Lesson 3: Explain decisions about classifications of rectangles into categories using variants and non-examples. Identify shapes as rectangles.  
Lesson 4: Explain decisions about classifications of hexagons and circles and identify them by name. Make observations using variants and non-examples.  
Lesson 5: Describe and communicate positions of all flat shapes using the words **above, below, beside, in front of, next to, and behind**. | 5 |
| K.G.1, K.G.2, K.G.4, K.MD.3 | **B Three-Dimensional Solid Shapes**  
Lesson 6: Find and describe solid shapes using informal language without naming.  
Lesson 7: Explain decisions about classification of solid shapes into categories. Name the solid shapes.  
Lesson 8: Describe and communicate positions of all solid shapes using the words **above, below, beside, in front of, next to, and behind**. | 3 |
| K.MD.3, K.G.3, K.G.4, K.G.1, K.G.2 | **C Two-Dimensional and Three-Dimensional Shapes**  
Lesson 9: Identify and sort shapes as two-dimensional or three-dimensional and recognize two-dimensional and three-dimensional shapes in different orientations and sizes.  
Lesson 10: Culminating task—collaborative groups create displays of different flat shapes with examples, non-examples, and a corresponding solid shape. | 2 |
|  | **End-of-Module Assessment: Topics A–C (Interview style assessment: 2 days)** | 2 |
|  | **Total Number of Instructional Days** | **12** |
**Terminology**

**New or Recently Introduced Terms**

- Above, below, beside, in front of, next to, behind (position words)
- Circle
- Cube (three-dimensional shape)
- Cylinder (three-dimensional shape)
- Face (flat side of a solid)
- Flat (two-dimensional shape)
- Hexagon (flat figure enclosed by six straight sides)
- Rectangle (flat figure enclosed by four straight sides)
- Solid (three-dimensional shape)
- Cone (three-dimensional shape)
- Sphere (three-dimensional shape)
- Square (flat figure enclosed by four straight, equal sides)
- Triangle (flat figure enclosed by three straight sides)

**Familiar Terms and Symbols**

- Match (group items that are the same or that have the same given attribute)
- Sort

**Suggested Tools and Representations**

- Three-dimensional shapes: cone, sphere, cylinder, and cube
- Two-dimensional shapes: circle, hexagon, rectangle, square, and triangle

**Scaffolds**

The scaffolds integrated into A Story of Units give alternatives for how students access information as well as express and demonstrate their learning. Strategically placed margin notes are provided within each lesson elaborating on the use of specific scaffolds at applicable times. They address many needs presented by English language learners, students with disabilities, students performing above grade level, and students performing below grade level. Many of the suggestions are applicable to more than one population. The charts included in Module 1 provide a general overview of the lesson-aligned scaffolds, organized by Universal Design for Learning (UDL) principles. To read more about the approach to differentiated instruction in A Story of Units, please refer to “How to Implement A Story of Units.”

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3 These are terms and symbols students have seen previously.

4 Students with disabilities may require Braille, large print, audio, or special digital files. Please visit the website, www.p12.nysed.gov/specialed/aim, for specific information on how to obtain student materials that satisfy the National Instructional Materials Accessibility Standard (NIMAS) format.
## Assessment Summary

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Topic A

Two-Dimensional Flat Shapes

**K.G.1, K.G.2, K.G.4, K.MD.3**

**Focus Standard:**

K.G.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

K.G.2 Correctly name shapes regardless of their orientations or overall size.

K.G.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

**Instructional Days:** 5

**Coherence**
- Links from: GPK–M2
- Links to: G1–M5

Students began the year developing number concepts by observing their world. Now, students begin to develop spatial reasoning and geometric concepts by experiencing flat and solid shapes in their world. This module examines how shapes and objects are similar to or different from one another with respect to orientation and relative positions to objects.

In Lesson 1, students use the informal language of their everyday world to name and describe flat shapes without yet using mathematical concepts and the vocabulary of geometry. They are not yet able to consistently distinguish between examples and non-examples of different groups of shapes such as triangles, circles, squares, rectangles, or hexagons. At this stage, a figure is a square because it looks like a book; another figure is a circle because it is round like the wheel of a car. Students make these observations without explicitly thinking about the attributes or properties of squares or circles.

In Lesson 2, students build on their experiential learning by the mathematical concept and vocabulary of geometry, allowing them to enhance their experiences of shapes. They begin to classify three-sided shapes by identifying them as examples of a triangle. Using various examples and non-examples of triangles, they sort and classify different shapes as examples of a triangle or not a triangle. Having learned to identify shapes as triangles, they explain their decisions about classifying shapes as triangles and other shapes as not triangles by focusing on common attributes or properties of the shapes they have identified as triangles.

Lessons 3 and 4 continue the work of Lesson 2 in the same vein by identifying shapes as rectangles, hexagons, and circles. In Lesson 5, students communicate about the relative position of shapes by using terms such as above, below, next to, beside, in front of, and behind.
## A Teaching Sequence Towards Mastery of Two-Dimensional Flat Shapes

**Objective 1:** Find and describe flat triangles, squares, rectangles, hexagons, and circles using informal language without naming.  
(Lesson 1)

**Objective 2:** Explain decisions about classifications of triangles into categories using variants and non-examples. Identify shapes as triangles.  
(Lesson 2)

**Objective 3:** Explain decisions about classifications of rectangles into categories using variants and non-examples. Identify shapes as rectangles.  
(Lesson 3)

**Objective 4:** Explain decisions about classifications of hexagons and circles and identify them by name. Make observations using variants and non-examples.  
(Lesson 4)

**Objective 5:** Describe and communicate positions of all flat shapes using the words *above, below, beside, in front of, next to, and behind.*  
(Lesson 5)
Lesson 1

Objective: Find and describe flat triangles, squares, rectangles, hexagons, and circles using informal language without naming.

Suggested Lesson Structure

- Fluency Practice: (17 minutes)
- Concept Development: (25 minutes)
- Student Debrief: (8 minutes)
- Total Time: (50 minutes)

Fluency Practice (17 minutes)

- Making 5 with 5-Group Mats K.OA.1 (6 minutes)
- Draw More to Make 5 K.OA.3 (8 minutes)
- 5-Group Hands K.CC.2 (3 minutes)

Making 5 with 5-Group Mats (6 minutes)

Materials: (S) 5-group mats, 5 linking cubes

Note: While students are working with geometry, the fluency throughout Module 2 will be to maintain and further develop number concepts to 10 (see Fluency Practice note in GK–M1–Lesson 1).

T: Touch and count your cubes.
S: 1, 2, 3, 4, 5.
T: Touch and count the dots on your mat.
S: 1, 2, 3, 4, 5.
T: Our job is to make 5. Put 4 cubes on the dots of your mat. (Check to see that students place the cubes from left to right, without skipping any dots.) Raise your hand when you know how many more cubes to make 5. (Wait until all hands are raised, then signal.) Ready?
S: 1.
T: We can tell how to make 5 like this: 4 and 1 makes 5. Echo me, please.
S: 4 and 1 makes 5.

Continue working through the decompositions of 5 in a systematic way. As students begin to demonstrate mastery, scale back the amount of guidance. (e.g., “Show me x cubes; say the number sentence.”)
Draw More to Make 5  (8 minutes)

Materials:  (S) Fluency Problem Set

Note: Go over the answers, and direct students to energetically shout “Yes!” for each correct answer.

After giving clear instructions and completing the first few problems together, allow students time to work independently. Encourage them to do as many problems as they can within a given time frame.

5-Group Hands  (3 minutes)

Materials:  (T) Large 5-group cards (5–7)

T:  (Show the 6 dot card.) Raise your hand when you know how many dots are on top. (Wait until all hands are raised, then signal.) Ready?
S:  5.
T:  Bottom?
S:  1.
T:  We can show this 5-group on our hands. 5 on top, 1 on the bottom, like this. (Demonstrate on hands, one above the other.)
S:  (Show 5 and 1 on hands, one above the other.)
T:  Push your hands out as you count on from 5, like this. 5 (extend the top hand forward), 6 (extend the bottom hand forward). Try it with me.
S:  5 (extend the top hand forward), 6 (extend the bottom hand forward).

Continue with 5, 6, 7, steadily decreasing guidance from the teacher, until students can show the 5-groups on their hands with ease.

Concept Development  (25 minutes)

Materials:  (T) Large cutouts of each shape (to be affixed to the board with tape)  (S) Clear bag containing smaller cutouts of various shapes (all of one hue so as not to allow distractions from variation in color), blank side of Problem Set affixed to clipboard, pencil, real or pretend magnifying glass (if available)

Suggestions for shape cutouts are pictured as follows, but need not be limited to these. Be sure to include at minimum a triangle, a circle, a square, a rectangle, and a hexagon for discussion purposes.

Note: Today’s lesson focuses on the attributes of the shapes but NOT their specific names. Assure students that tomorrow’s work will include naming the shapes since many may be very eager to share their knowledge.
Lesson 1

Find and describe flat triangles, squares, rectangles, hexagons, and circles using informal language without naming.

Date: 8/5/13

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T: You have a mystery bag! Open your bag and carefully shake out the surprises inside. What do you see? (Give students a moment to explore the contents of the bag and discuss with their friends.)

S: Different shapes!

T: (Select a shape from the bag.) Look at my shape. Can you find the one that looks like mine? (Affix to board.) Tell me about the shape. (In order to encourage a discussion purely about geometric attributes, select one of the more unusual cutouts to begin.)

S: It is round. → But it is pointy! → It has a piece missing. → It has 3 sides.

T: I like your observations! (Write student responses on chart paper and continue exercise with the rest of the shapes, encouraging students to verbalize attributes such as corners, curves, straight lines, number and length of sides, “missing pieces,” and so on.)

T: Arrange your shapes on your desktop. Do they have anything in common? (Various responses.) Now bend down so that you are looking across the edge of your desktop. Can you see your shapes now? Are any of them sticking up?

S: We can’t see them. → They are all flat!

T: Yes, they do have that in common! These are all flat shapes. Put your shapes back in the bag.

T: It’s time to play shape detectives! Detectives need to have special equipment, so I am going to give you and a partner a magnifying glass to use if you need it. You are going to go on a shape hunt around the room. Whenever you see an interesting shape, tell your partner about it and draw it on your clipboard. Take your bag of shapes with you to use as clues. Maybe you will see some shapes in the room that match shapes in your bag!

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

English language learners will benefit from having the words curved, straight, pointy, round, sides, etc., introduced before the lesson so that they can participate in the discussion with the class. After you have introduced them, post the vocabulary on your word wall with visuals so that students can refer to them.
Lesson 1

Find and describe flat triangles, squares, rectangles, hexagons, and circles using informal language without naming.

Date: 8/5/13

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes.

For some classes, it may be appropriate to modify the assignment by specifying which problems students should work on first. With this option, let the careful sequencing of the problem set guide your selections so that problems continue to be scaffolded. Balance word problems with other problem types to ensure a range of practice. Assign incomplete problems for homework or at another time during the day.

In this Problem Set, we suggest all students begin with sorting the shapes that clearly have or do not have curves and possibly leave any questionable shapes to the end if they still have time.

Suggestions for other ways you may ask students to sort are listed below:

- Shapes that have curves and sharp points.
- Shapes that have only curves.
- Shapes that have four or fewer corners.
- Shapes that have four or more sides.

Notes on Multiple Means of Engagement:

Push your above grade level students’ thinking by asking them questions and giving them activities that engage their thinking at higher levels: “What would that shape look like if it was not flat?” “Can you make a picture of that shape but make it so that it is sticking up?”

Key Ideas:

- Recognize and name simple shapes.
- Describe and sort shapes based on attributes.

MP.7

Common Core	Lesson 1: Find and describe flat triangles, squares, rectangles, hexagons, and circles using informal language without naming.

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Student Debrief (8 minutes)

Lesson Objective: Find and describe flat triangles, squares, rectangles, hexagons, and circles using informal language without naming.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion:

- What objects did you sort that were curved? What objects did you sort that were not curved?
- Which flat shape(s) were the hardest to sort? Why?
- Explain to your partner what shapes you drew on the back of your paper. Can you think of other objects around you that have these same shapes?
- What new (or significant) math vocabulary did we use today to communicate precisely?
- How can you tell about each shape without using the shape’s name?
- How did the Application Problem connect to today’s lesson?
Sort the shapes.

Shapes with a curve

Shapes without a curve
Find and describe flat triangles, squares, rectangles, hexagons, and circles using informal language without naming.
Draw more to make 5.

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Draw a line from the shape to its matching object.

- Square
- Clock
- Triangle
- Hexagon
- Circle
- Checkered flag
- Triangle sign

Name ___________________________ Date ____________

Lesson 1: Find and describe flat triangles, squares, rectangles, hexagons, and circles using informal language without naming. Date: 8/5/13
Lesson 2

Objective: Explain decisions about classifications of triangles into categories using variants and non-examples. Identify shapes as triangles.

Suggested Lesson Structure

- Fluency Practice (12 minutes)
- Application Problem (5 minutes)
- Concept Development (25 minutes)
- Student Debrief (8 minutes)
- Total Time (50 minutes)

Fluency Practice (12 minutes)

- Making 3 with Triangles \( \text{K.OA.3} \) (3 minutes)
- Make a Shape \( \text{K.G.4} \) (5 minutes)
- Groups of 6 \( \text{K.CC.4b} \) (4 minutes)

Making 3 with Triangles (Include the Equation) (3 minutes)

Materials: (S) 3 beans, 1 paper or foam triangle, and personal white board per student

Note: This activity was chosen because it anticipates the analysis of triangles coming in the day’s lesson.

T: Touch and count the corners of the shape.
S: 1, 2, 3.
T: Touch and count your beans.
S: 1, 2, 3.
T: Our job is to make 3. Put your 2 beans on the corners of your shape. Keep the other one in your hand. How many beans on your shape?
S: 2.
T: How many beans in your hand?
S: 1.
T: We can tell how to make 3 like this: 2 and 1 makes 3. Echo me, please.
S: 2 and 1 makes 3.
T: Show me 1 bean on your shape. Keep the rest in your hand. How many beans on your shape?
S: 1.
T: How many beans in your hand?
Lesson 2

NYS COMMON CORE MATHEMATICS CURRICULUM

Lesson 2

Explain decisions about classifications of triangles into categories using variants and non-examples. Identify shapes as triangles.

Date: 8/5/13

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S: 2.
T: Raise your hand when you can say the sentence, start with 1. (Wait until all hands are raised and then give the signal.)
S: 1 and 2 makes 3.

Help students write the equations on their personal white boards. Challenge students to list and verify that they have found all possible combinations.

Make a Shape (5 minutes)

Materials: (S) Popsicle sticks or straws of two different lengths, foam or construction paper work mat

Note: Refrain from naming the shapes at this point and ask students who may know them to keep them secret for now. If students name the shapes, have them explain their thinking by describing the shape’s attributes using informal language (e.g., I knew I made a triangle because it has three corners).

T: Let’s play make a shape. Put three popsicle sticks this size (hold up the longer of the two lengths) on your mat.
T: Move the sticks so that it makes a shape with three points.
T: Touch and count the points.
S: 1, 2, 3.
T: Touch and count the sides.
S: 1, 2, 3.
T: Are there any curved sides?
S: No.
T: Trade in your three long sticks for three short ones, like this (show students an example of the shorter length), and put them on your mat.
T: Move the sticks so that it makes a new shape with three points.
S: (Move the sticks to form a different triangle shape.)
T: Does your shape still have three points? Three sides? No curved sides? (Pause after to each question to allow students time to verify.)
S: (Respond to questions.)
T: Now put one of your sticks back. Get a stick this size (hold up the longer of the two lengths) and put it on your mat.
S: (Place the longer stick on the mat, so there are now two short and one long.)
T: Move the sticks so that it makes a new shape with three points.
S: (Move the sticks to form a different triangle shape.)

Have students count the points and sides again, and verify that there are no curved sides, so that they realize that the attributes of the shape are the same, even as the shape takes on a different appearance. Have them carefully rotate their work mats to view the shape from different angles.

Here is a suggested sequence with names of shapes listed for the teacher’s reference:

1. A triangle composed of two long sticks and one short
2. A square composed of four long sticks
3. A smaller square composed of four short sticks
4. A rectangle composed of two short sticks and two long sticks

**Groups of 6 (4 minutes)**

Note: This is a maintenance type of fluency activity that will help students gain efficiency in counting objects in varied configurations.

T: When the music starts, calmly walk around the room, visiting corners of the room until you and your classmates can make a group of 6—don’t forget to count yourself! How many can be in a group?

S: 6!
T: So, if you go to a corner that already has 5 people there, can you stay?
S: Yes!
T: What if there are already 6?
S: No.
T: Remember to check all the corners of the room. See if we can all get into groups of 6 before the music stops!

If there are not enough students to make equal groups of the designated number, supplement with puppets or stuffed animals. Allow students to share their strategy for making groups quickly.

**Application Problem (5 minutes)**

It’s pizza time! On a piece of paper, draw a large pizza pie. Don’t forget your favorite toppings! With your crayons, show how you would cut the pizza into enough slices for your family. Compare your slices to those of a partner. Are they alike? Carefully describe the shape of a slice to your partner.

Note: The purpose of this problem is two-fold; first, to have the students create three-sided figures, but second, to set up a potential non-example for use later in the lesson. The probably curved edge of the crust in their drawing will mean that the slices are not actually triangles.
Lesson 2

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Concept Development (25 minutes)

Setup: Create outlines of geometric figures on paper to be affixed to the board during the lesson. Shapes should include but not be limited to those illustrated below:

- Triangle
- Square
- Scalene triangle
- Isosceles triangle
- Equilateral triangle

Materials: (S) Geoboard and rubber band to be passed out later in the lesson

Note: If this is the first time the students have used a geoboard, allow a few extra minutes during the lesson to instruct them in proper use of the materials. Using a rubber band, the students stretch the rubber band around pegs to create various shapes. Emphasize that the rubber band must remain on the geoboard at all times.

T: Yesterday when you were telling me about your shapes, you used a lot of math words to describe them. What were some of the things you noticed?
T: We are going to look at some more shapes today to see what else you notice. (Put triangle on white board.)
T: Tell me about this shape.
S: It has three sides. → It has three corners. → It doesn’t have any curves.
T: We call a shape like this a triangle. (Write the word triangle on board and affix shape underneath. Choose another triangle outline.)
T: Tell me about this shape.
S: It has three corners and three sides. → It has straight sides. → It is a triangle!
T: (Affix to board under the first triangle.) I am beginning to see a pattern! How many corners does each shape have? (Three.) How many sides? (Three.) What do the sides look like?
S: They are all straight!
T: So a triangle has three straight sides and three corners?
S: Yes.
T: Choose . Here is another shape. It has three corners, and all of the sides are straight. It must be a triangle.
S: No! It’s open!
Lesson 2

Lesson 2

Explain decisions about classifications of triangles into categories using variants and non-examples. Identify shapes as triangles.

Date: 8/5/13

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes.

Student Debrief (8 minutes)

Lesson Objective: Explain decisions about classifications of triangles into categories using variants and non-examples. Identify shapes as triangles.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief.

Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- What new (or significant) math vocabulary did we use today to communicate precisely?
- Count how many triangles you colored. Did your partner color that same number?
Lesson 2

Explain decisions about classifications of triangles into categories using variants and non-examples. Identify shapes as triangles.

Did you color the same triangles as your partner?
Explain to your partner how you knew the objects you colored were triangles?
What do you look for in a triangle?
Were the slices of the pizza in the Application Problem triangles?
Find the triangles and color them blue. Put an X on shapes that are not triangles.

Find the triangles and color them blue. Put an X on shapes that are not triangles.

Draw some triangles.
Lesson 2 Homework

Explain decisions about classifications of triangles into categories using variants and non-examples. Identify shapes as triangles.

Date: 8/5/13

Color the triangles red and all others blue.

Can you draw 2 different triangles of your own?
Lesson 3

Objective: Explain decisions about classifications of rectangles into categories using variants and non-examples. Identify shapes as rectangles.

Suggested Lesson Structure

- Fluency Practice (12 minutes)
- Application Problem (5 minutes)
- Concept Development (25 minutes)
- Student Debrief (8 minutes)
- Total Time (50 minutes)

Fluency Practice (12 minutes)

- 5-Group Hands K.CC.2 (5 minutes)
- Making 4 with Squares and Beans K.CC. 4a (4 minutes)
- Triangle or Not K.G.2 (3 minutes)

5-Group Hands (5 minutes)

Note: We repeat work with the hands often because students simply do not achieve fluency overnight. The same exercises must be repeated again and again. As they gain in depth of understanding, they visualize. As they visualize, they no longer need their fingers.

Conduct as outlined in GK–M2–Lesson 1, but now continue to 10.

Making 4 with Squares and Beans (Include the Expression) (4 minutes)

Materials: (S) 4 beans, paper or foam squares, person white board per student

Note: We are working early in the year towards fluency with sums and differences within 5. As was said in the previous note, this takes time and lots of practice.

T: Touch and count the corners of the square.
S: 1, 2, 3, 4.
T: Touch and count your beans.
S: 1, 2, 3, 4.
T: Our job is to make 4. Put your 3 beans on the corners of your square. Keep the other one in your hand. How many beans on your square?
S: 3.
T: How many beans in your hand?
S: 1.
T: We can tell how to make 4 like this: 3 and 1 makes 4. Echo me, please.
S: 3 and 1 makes 4.
T: Show me 2 beans on your square. Keep the rest in your hand. How many beans on your square?
S: 2.
T: How many beans in your hand?
S: 2.
T: Raise your hand when you can say the sentence. (Wait until all hands are raised and then give the signal.)
S: 2 and 2 makes 4.

Continue with placing 1 bean on the square, then 4, and finally 0 to work through all of the number combinations. Have students write the equations on their personal white boards. Challenge students to list and verify that they have found all possible combinations.

Triangle or Not (3 minutes)

Materials: (T) Paper shapes of the same color in varying sizes, and a wide range of exemplars, non-examples, and variants

Note: This is a preparation type of fluency that is intended to review the previous lesson’s work with triangles and prepare students to name and identify rectangles in a similar manner.

T: I’ll show you a shape. We’ll try to decide if it’s a triangle or not. If you think it’s a triangle, give me a thumbs up. If it’s not a triangle, thumbs down. Either way, be ready to explain your choice! Here we go. (Show an exemplar triangle.)
S: (Show thumbs up sign.)
T: You’re right! It is a triangle. Who can tell us why?
S: (Responses vary. Justify with informal language and attributes of the shape.)

Continue identifying shapes as triangles or not triangles, and proceed from simple to complex by starting with the exemplar of each shape, then the non-examples, and then the variants.

Application Problem (5 minutes)

Design your own dollar bill! Draw your dollar bill on a piece of paper. Whose picture will you put in the center? Compare your dollar to that of your partner. Tell him about the shape of your bill. How are your dollars alike?

Note: In this problem, the students should, from their own general knowledge, draw some sort of a rectangle. Describing their dollars to their friends will lead them to articulate what they already know about the shape in preparation for today’s lesson.
Lesson 3

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Concept Development (25 minutes)

Setup: Create outlines of geometric figures on paper to be affixed to the board during the lesson. Shapes should include but not be limited to those illustrated below:

![Geometric Figures]

Materials: (S) Copy of dot paper (template) on cardstock to be passed out later in the lesson, wikki sticks or similar items (may use crayons or markers instead)

T: We are going to talk about another type of shape today. Look at the shape on the board. Use your math words to tell about it. (Put exemplar rectangle on the board.)

S: It has four corners. → It has four sides. → The sides are all straight.

T: This shape is called a rectangle. (Write Rectangle on board and affix shape underneath.)

T: (Place another rectangle on the board.) Tell about this shape.

S: It has four straight sides and four corners. It is a rectangle, too.

T: Hmmm. I wonder if we will have another pattern today. Let’s put this over by the other rectangle. How about this shape? (Place a square on the board.)

S: It has four corners and four sides. All the sides look the same.

T: So this is a rectangle too? (Yes.) This special rectangle, in which all the sides are the same length, is called a...

S: Square!

T: How about this one? (Affix to board.) Is this a rectangle? It has straight sides and four corners.

S: No! It’s not a rectangle! → The corners don’t look right.
Lesson 3

Explain decisions about classifications of rectangles into categories using variants and non-examples. Identify shapes as rectangles.

### Student Debrief (8 minutes)

**Lesson Objective:** Explain decisions about classifications of rectangles into categories using variants and non-examples. Identify shapes as rectangles.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions...
Lesson 3

NYS COMMON CORE MATHEMATICS CURRICULUM

Explain decisions about classifications of rectangles into categories using variants and non-examples. Identify shapes as rectangles.

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below to lead the discussion.

- How did the Application Problem connect to today’s lesson?
- What new (or significant) math vocabulary did we use today to communicate precisely?
- Count how many rectangles you colored. Did your partner color that same number?
- Did you color the same rectangles as your partner?
- Explain to your partner how you knew the objects you colored were rectangles?
- What do you look for in a rectangle?
- What shape did you draw with four sides? Can you draw more than one shape?
- How are rectangles and triangles the same and different?
- Why is a square a special kind of rectangle?
Lesson 3: Explain decisions about classifications of rectangles into categories using variants and non-examples. Identify shapes as rectangles.

Find the rectangles and color them red. Put an X on shapes that are not rectangles.

Draw rectangles.
Color all the rectangles red. Color all the triangles green.

On the back of your paper draw 2 rectangles and 3 triangles.

How many shapes did you draw? Put your answer in the circle.
Lesson 3: Explain decisions about classifications of rectangles into categories using variants and non-examples. Identify shapes as rectangles.

Date: 8/5/13
Lesson 4

Objective: Explain decisions about classifications of hexagons and circles and identify them by name. Make observations using variants and non-examples.

Suggested Lesson Structure

- Fluency Practice (12 minutes)
- Application Problem (5 minutes)
- Concept Development (25 minutes)
- Student Debrief (8 minutes)
Total Time (50 minutes)

Fluency Practice (12 minutes)

- Rectangle or Not K.G.2 (3 minutes)
- Make a Shape K.G.4 (4 minutes)
- Groups of 7 K.CC.4b (5 minutes)

Rectangle or Not (3 minutes)

Note: This is a preparation type of fluency that is intended to review the previous lesson’s work with rectangles, and prepare students to name and identify hexagons and circles in a similar manner.

This is similar to GK–M2–Lesson 3 but with rectangles.

Identify shapes as rectangles or not rectangles, from simple to complex by starting with the exemplar of each shape, then the non-examples, and then the variants.

Make a Shape (4 minutes)

Note: We repeat this activity with a new shape, thus allowing students to focus on the new component, the hexagon, rather than the logistics of the activity itself.

Conduct as outlined in GK–M2–Lesson 2, but this time include hexagons without naming.

Groups of 7 (5 minutes)

Note: This is a maintenance activity that supports efficiency in counting objects in varied configurations.

Conduct as outlined in GK–M2–Lesson 2, but with 7. Allow students to share their strategy for making groups quickly.
Application Problem (5 minutes)

Using only triangles and rectangles, design a rocket ship on your paper. Trade rocket ships with your partner. Count how many triangles and rectangles you see in his picture. Did you use the same number of each shape?

Note: This problem is designed as a review exercise prior to the introduction and definition of two new shapes in today’s lesson.

Concept Development (25 minutes)

Setup: While many objects in classrooms have a circular shape, hexagons in the classroom environment usually must be engineered. Strategically place several cutout or outlined shapes of regular and irregular hexagons around the room prior to the lesson. You may wish to include a few different hexagons constructed on geoboards or on dot paper.

Create outlines of geometric figures on paper to be affixed to the board during the lesson. Shapes should include but not be limited to those illustrated below:

Materials: (S) Clipboard with paper and pencil, pretend or real magnifying glass (if available)

T: We have talked about triangles, rectangles, and squares, and you have made many of these yourselves. Here are some new shapes for you to look at today.

Sort shape outlines to make a group of hexagons and then circles in the same manner as in Lessons 2 and 3. As during the previous lessons, begin the discussion with exemplar shapes to guide the students as they discover each shape’s defining characteristics. As you continue sorting, guide them to realize that a hexagon is a closed flat shape with six straight sides and that a circle is a flat, closed, curved shape with no straight sides.

Note: Students can become frustrated as they attempt to articulate the difference between a circle and an oval. Though they may not be able to describe the concept of equidistance from a center, they can tell you that if they had a race car, they would rather have wheels in the shape of a circle than in the shape of an oval. “Circles can roll better!” “They are not squished!”
T: We are going to have another detective hunt today. You and your partner will search for these shapes in the classroom. Use your clipboards and detective equipment, and draw any circles and hexagons that are hiding! (Allow students to investigate for five minutes before they return to their seats.)

T: Would anyone like to show and share one of the circles or hexagons they found in the classroom today? How is your circle or hexagon different from the other shapes we’ve learned about in the lesson? (Allow time for sharing and discussion.)

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes.

Since hexagons and circles are the focus of this lesson, have children first identify one of those shapes and then the other. Leave the coloring if time permits.

Student Debrief (8 minutes)

Lesson Objective: Explain decisions about classifications of hexagons and circles and identify them by name. Make observations using variants and non-examples.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- How did the Application Problem connect to today’s lesson?
- What new (or significant) math vocabulary did we use today to communicate precisely?
- Did you color the same hexagons and circles as your partner?
- Explain to your partner how you knew the objects you colored were hexagons or circles.
- Count how many circles and hexagons you colored. Did your partner color that same number?
- Which shape is more like a circle, a square or a hexagon with equal sides? What if there were more and more equal sides to our shape, could it look more and more like a circle?
Find the circles and color them green. Find the hexagons and color them yellow. Put an X on shapes that are not hexagons or circles.

Draw hexagons and circles.
Color the triangles blue.
Color the rectangles red.
Color the circles green.
Color the hexagons yellow.

On the back of your paper draw 2 triangles and 1 hexagon. How many shapes did you draw? _____
Lesson 5

Objective: Describe and communicate positions of all flat shapes using the words above, below, beside, in front of, next to, and behind.

Suggested Lesson Structure

- Fluency Practice (12 minutes)
- Application Problem (5 minutes)
- Concept Development (25 minutes)
- Student Debrief (8 minutes)
- Total Time (50 minutes)

Fluency Practice (12 minutes)

- Groups of Shapes K.G.2 (5 minutes)
- Peek-a-Boo Shapes K.G.2 (3 minutes)
- Groups of 8 K.CC.4b (4 minutes)

Groups of Shapes (5 minutes)

Materials: (T) Signs with pictures of shapes to indicate where to form each group (S) Paper cutouts of triangles, rectangles, squares, hexagons, and circles (variety of sizes, include exemplars, non-examples, and variants)

Note: Students have the opportunity to bring together all their insights from the last four lessons to now form a group defined by their shape. This allows the teacher to also use shapes with classroom management, which further embeds geometry into the classroom culture.

T: Choose a shape, and then meet me at the rug.
T: Look at your shape. Raise your hand if you know the name of your shape. When I give the signal, whisper the name of your shape to yourself. Ready?
T: Look around the room. Do you see signs with pictures of shapes?
S: Yes.
T: Do you see your shape?
S: Yes.
T: When I start the music, I want you to calmly walk to the sign that has the same shape as yours.
T: When I point to your group, say the name of your shape. (Point to the group of triangles.)
S: Triangles.
Lesson 5

Lesson 5: Describe and communicate positions of all flat shapes using the words above, below, beside, in front of, next to, and behind.

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Continue identifying the remaining groups, and then call students back to the rug to trade for a new shape. Circulate to see which students struggle with this task, and support them by having them identify the attributes of their shape and compare it to the shapes pictured on the signs.

**Peek-a-Boo Shapes (3 minutes)**

Materials: (T) Paper cutouts of triangles, rectangles, squares, hexagons, and circles (variety of sizes, include exemplars, non-examples, and variants), pictures of real world objects that are flat shapes

Note: With the teacher hiding the shapes, students get accustomed to visualizing, a skill we know they will be applying to numbers, for example, when we show a dot card. This is an imperative step in number sense. It is a significant moment when students realize they can make a mental picture of something.

Show students each shape briefly, and then take it out of view. Remind students beforehand that they are to use the listen, think, raise your hand, wait for the snap procedure to name the shape in choral response. Start with easy shapes to build confidence, and then steadily increase the level of difficulty.

**Groups of 8 (4 minutes)**

Note: This helps students gain efficiency in counting objects in varied configurations.

Conduct as outlined in GK–M2–Lesson 2, but with 8. Allow students to share their strategy for making groups quickly.

**Application Problem (5 minutes)**

Work with your partner. Stand somewhere in the classroom so that you are facing a wall but your partner is facing the other way. Tell your partner several things that you think are behind you in the room. Have him look to see if you are right. When you are done, switch places with your partner.

Note: *Behind* is a preposition with which most children are very familiar. Introducing newer directional concepts with this familiar phrase will set the stage for learning in the lesson today.

**Concept Development (25 minutes)**

Materials: (S) Scissors, glue, paper bag containing cutouts of various shapes (two non-identical shapes of each type including triangles, rectangles, circles, hexagons, and squares)

The following are suggestions:
Lesson 5: Describe and communicate positions of all flat shapes using the words above, below, beside, in front of, next to, and behind.

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T: You have new mystery bags! Carefully shake your shapes out onto your desk. Can you work with your partner and say the names of each shape?

S: (Sort out and arrange shapes.)

T: (Allow time for sharing and discussion.) Let’s play Simon Says! I will describe a shape to you, and if I say “Simon says,” hold it up and freeze. But listen carefully... I might not say “Simon says!” If I don’t, stay frozen.

T: Simon says, hold up a shape that has four corners. Simon says, hold up a shape that has no straight sides. Simon says, hold up a shape that has one more than five sides. Hold up the shape that has four sides which are exactly the same.

S: You didn’t say “Simon says!”

T: (Continue several times until students show fluency in identifying the correct shapes.)

T: Now put all of your shapes in a row on the top of your desk. We are going to play our game a different way. I am going to ask you to arrange your shapes in certain ways. Listen carefully, and don’t forget to listen for “Simon says!”

T: Simon says, put a shape with one less than four sides in the middle of your desk. Simon says, put a shape made with a curved line beside that shape. Simon says, put a shape with only one L-corner next to the shape with a curved line. Put a shape with six corners next to that shape. I didn’t say “Simon says!” (Play several more times.)

T: Simon says, put a curved shape below your chair. Simon says, hold your square above your head. Simon says, hold it behind your friend. Put a square in front of you!

S: You didn’t say “Simon says!”

T: Put your shapes in the bag. We are going to practice more words like below, above, and beside in our Problem Set.

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes.
In this Problem Set, we suggest all students begin by cutting out the shapes and lining them next to the duck sheet.

Note: Students will not use all cutout shapes in the Problem Set.

Read the directions for the Problem Set, and then circulate as students work to see if they have mastered the names of the shapes.

- Find the shape with four straight sides that are exactly the same. Color it blue. Glue the shape above the duck.
- Find the shape with no corners. Color it yellow. Glue the shape behind the duck.
- Find the shape with three straight sides. Color it green. Glue the shape below the duck.
- Find the shape with four sides. Two sides are long and the same length, and two sides are short and the same length. Color it red. Glue the shape beside the circle.
- Find the shape with six corners. Color it orange. Glue the shape in front of the duck.
- Find the shape with curves and corners. Color it purple. Glue the shape next to the square.

Student Debrief (8 minutes)

Lesson Objective: Describe and communicate positions of all flat shapes using the words above, below, beside, in front of, next to, and behind.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- What new (or significant) math vocabulary did we use today to communicate precisely?
- How did you place each object on your paper? Go through each direction (above, below, in front of, next to, and behind) and compare where students put their objects on their paper.
- Compare with your partner. Did you put your shapes in the same place as your partner?
- What shapes do you see on your paper? How did you know they were those shapes?
- How did the Application Problem connect to today’s lesson?
Describe and communicate positions of all flat shapes using the words above, below, beside, in front of, next to, and behind.

Cut out all of the shapes and put them next to your paper with the duck. Listen to the directions and glue the objects onto your paper.
Lesson 5: Describe and communicate positions of all flat shapes using the words above, below, beside, in front of, next to, and behind.

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Lesson 5: Describe and communicate positions of all flat shapes using the words above, below, beside, in front of, next to, and behind.

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Name ___________________________ Date ____________

- Draw a shape with 4 straight sides that are exactly the same length behind the elephant. Color it blue.
- Draw a shape with no corners above the elephant. Color it yellow.
- Draw a shape with 3 straight sides in front of the elephant. Color it green.
- Draw a shape with 4 sides, 2 long and 2 short, below the elephant.
- Draw a shape with 6 corners below the elephant. Color it orange.

On the back of your paper draw 1 hexagon and 4 triangles. How many shapes did you draw? Put your answer in the circle.
Topic B

Three-Dimensional Solid Shapes

K.G.1, K.G.2, K.G.4, K.MD.3

Focus Standard:  
K.G.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.  
K.G.2 Correctly name shapes regardless of their orientations or overall size.  
K.G.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

Instructional Days: 3

Coherence  
-Links from: GPK–M2 Two-Dimensional and Three-Dimensional Shapes  
-Links to: G1–M5 Identifying, Composing, and Partitioning Shapes

The lessons of Topic B reiterate those of Topic A but with solid shapes. Lesson 6 begins with students finding solid shapes in their environment. They might find bottles of paint, tissue boxes, balls, or crayons, and describe their object to their neighbor using informal language. “My ball is round and it bounces!” “This tissue box has a lot of pointy corners.” Some students might even use the flat shape vocabulary they learned in Topic A to describe their solid shape. “There are a lot of rectangles on my tissue box, too.”

Lesson 7 continues with learning the names of the solid shapes and focusing on their attributes. Students are asked to explain their thinking as they classify the solid shapes into categories. “I’m putting all the cubes and rectangular prisms together because they all have six sides.” “The spheres and the cylinders roll, they should go together.” Lesson 8 guides the students to use their new solid shape lexicon to communicate the position of solid shapes to each other. In this lesson, the students identify, name, and position shapes relative to each other.
# A Teaching Sequence Towards Mastery of Three-Dimensional Solid Shapes

**Objective 1:** Find and describe solid shapes using informal language without naming.  
(Lesson 6)

**Objective 2:** Explain decisions about classification of solid shapes into categories. Name the solid shapes.  
(Lesson 7)

**Objective 3:** Describe and communicate positions of all solid shapes using the words *above, below, beside, in front of, next to, and behind.*  
(Lesson 8)
Lesson 6

Objective: Find and describe solid shapes using informal language without naming.

Suggested Lesson Structure

- Fluency Practice (12 minutes)
- Application Problem (5 minutes)
- Concept Development (25 minutes)
- Student Debrief (8 minutes)

Total Time (50 minutes)

Fluency Practice (12 minutes)

- Beep Number  K.CC.4a  (4 minutes)
- Hide and See 5  K.OA.2  (4 minutes)
- Take Apart Groups of Circles  K.OA.1  (4 minutes)

Beep Number (4 minutes)

Note: This ensures that students gain flexibility with number order in both directions of the number line.

Optional Materials: (T) Personal white board  (S) Number path

T: Let’s play Beep Number! Listen carefully while I count. Instead of saying a number, I’ll say beep. You can touch each number on your number path as I say it. When you know what the beep number is, raise your hand. 5, beep, 7! (Wait until all hands are raised, then give the signal.)

S: 6!

T: (Turn over the personal board to reveal the number 6 so that students can verify that their answer was correct.)

T: 7, beep, 5! (Wait until all hands are raised, then give the signal.)

S: 6!

T: (Turn over the personal board to reveal the number 6.)

Continue in a thoughtful sequence, intermingling counting up and counting down sequences. Return to a simpler sequence if students have difficulty.

The teacher’s use of the personal white board is optional, but it can increase engagement, as students perceive the number as secret. Initially, students may rely heavily on the number path in order to determine
the missing number. Challenge students to solve mentally when they are ready.

**Hide and See 5 (4 minutes)**

Materials: (S) 5 linking cubes, personal white boards

Note: In this activity, students’ understanding of conservation of a number develops into part to whole thinking at the concrete level, anticipating the work of Module 4 (number bonds, addition, and subtraction).

Materials: (S) 5 linking cubes

T: Touch and count your cubes.
S: 1, 2, 3, 4, 5.
T: Hide 2 behind your back. How many can you see?
S: 3.
T: Put them back together. How many cubes do you have?
S: 5.
T: Hide 1 behind your back. How many can you see?
S: 4.
T: Put them back together. How many cubes do you have?
S: 5.

Variation: As students put the cubes together they can write the expressions on their personal white boards. Challenge students to list all possible combinations.

**Take Apart Groups of Circles (4 minutes)**

Materials: (S) Personal white boards

Note: In order to meet the goal of adding and subtracting fluently within 5, students will need to begin practicing early and regularly.

T: Draw three circles on your board. (Wait for students to do this.) Put X’s on two of them. How many circles have X’s?
S: 2.
T: How many circles do not have an X?
S: 1.
T: How many circles are on your board?
S: 3.
T: Raise your hand when you can say the number sentence starting with two (wait for all students to raise hands and then signal). Ready?
S: 2 and 1 makes 3.
T: Very good. Let’s go a little faster now. Erase. Draw four circles on your board. (Wait for students to
Lesson 6

NOTE ON MULTIPLE MEANS OF REPRESENTATION:

To help English language learners, introduce key vocabulary like flat, solid, edges, corners, sides, points, curves, and solids days before you teach the lesson. Post these terms on your word wall with visuals or a concrete example of each.

...
NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Students who are below grade level would benefit from using interactive technology such as the one found at [http://www.brainpopjr.com/math/geometry/solidshapes/search/](http://www.brainpopjr.com/math/geometry/solidshapes/search/), where they are challenged to sort solids and two-dimensional shapes.

Problem Set (10 minutes)

Students should do their personal best to complete the problem set within the allotted 10 minutes.

Note: If students finish early, have them draw solid shapes they see around them.

**Student Debrief (8 minutes)**

**Lesson Objective:** Find and describe solid shapes using informal language without naming.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- What **solids** did you match that were curved? What solids did you match that were not curved?
- Which shapes were the hardest to match? Why?
• Explain to your partner what you drew on the back of your paper. Can you think of other objects around you that are these solid shapes? Have a volunteer (or two) share their drawings.
• What new (or significant) math vocabulary did we use today to communicate precisely? How can you tell about each solid without using the solid’s name?
• How did the Application Problem connect to today’s lesson?
Match these objects and shapes by drawing a line with your ruler from the object to the shape.

On the back of the paper, draw solid shapes that you see in the classroom.
Cut a picture out of a magazine and paste it or draw something in your house that looks like these shapes.
Lesson 7

Objective: Explain decisions about classification of solid shapes into categories. Name the solid shapes.

Suggested Lesson Structure

- Fluency Practice (12 minutes)
- Application Problem (5 minutes)
- Concept Development (25 minutes)
- Student Debrief (8 minutes)
- Total Time (50 minutes)

Fluency Practice (12 minutes)

- Show Me Shapes K.G.2 (4 minutes)
- Making 5 with 5-Group Mats K.OA.1 (5 minutes)
- 5-Group Hands K.CC.2 (3 minutes)

Show Me Shapes (4 minutes)

Materials: (S) Assortment of solid shapes, possibly a mixture of everyday objects and wooden or plastic solid shapes

Note: This allows students to continue analyzing and gaining fluency with recognizing attributes and using geometric vocabulary.

Scatter the solid shapes and objects onto the students’ tables or in the center of the rug.

T: Look at the shapes that are on the rug. I will ask you to find a certain kind of shape. When you find it, hold it up. Ready? Show me shapes that have points.

S: (Hold up cubes and cones.)

T: Yes. Put them back on the rug, and listen to what I want you to find next. Show me shapes that have no points.

S: (Hold up spheres.)

T: Yes. Now show me shapes that have a curve.

S: (Hold up spheres, cones, and cylinders.)

Continue having students test each other so they use the vocabulary.
Making 5 with 5-Group Mats (5 minutes)

Note: Students work towards fluency with numbers within 5.

Conduct as outlined in GK–M2–Lesson 1, but now have students rotate their mats so that they work with 5-groups in the vertical orientation.

5-Group Hands (3 minutes)

Note: Students’ facility with their hands lays the foundation for the use of the number line.

Conduct as outlined in GK–M2–Lesson 1, but now continue to 10. Consider showing the cards in the vertical orientation so that students can gain flexibility in locating the 5-group.

Application Problem (5 minutes)

Materials: (S) Small piece of modeling clay

Think about the solids you investigated yesterday. Now, listen to the riddle and make this mystery solid with your clay: I am a solid that can roll. I don’t have any corners. I have zero edges. Make me!

When you are done, show the solid to your friend. Do your solids look alike?

Note: The purpose of this problem is to remind students of the vocabulary used in yesterday’s lesson. They will need to focus on descriptions of this type in today’s lesson. It also gives kinesthetic learners a chance to manipulate the clay.

Concept Development (25 minutes)

Materials: (S) Set of geometric solids for each pair of students including a cube, sphere, cone, and cylinder; paper and colored pencils; small smiley face stickers

T: Take your solids out of your bag. We are going to look at them carefully to see if any of them have things in common. If they do, we can sort them. Does anyone have any ideas?

S: This one rolls, but these two don’t. → These both have flat sides. → These have pointy parts.

T: I hear some good ideas! We will try some of them. (Hold up a cone.) This solid is called a cone. What do you notice about this solid?

S: It is flat on the bottom. → There is a circle on the bottom.

T: The circle, the flat part of the cone, is called a face. Take a smiley face and put it on the face of the cone. Do you have other solids that have faces?

S: This one! (Holds up a cube.)
Lesson 7: Explain decisions about classification of solid shapes into categories.

Name the solid shapes.
8/5/13

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes.
Student Debrief (8 minutes)

Lesson Objective: Explain decisions about classification of solid shapes into categories. Name the solid shapes.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- Which objects did you circle that were cylinders? (Cubes, cones, and spheres.)
- What did you need to remember when you were going to circle the cylinders? (Cubes, cones, and spheres.) Did anyone think of something else?
- What new (or significant) math vocabulary did we use today to communicate precisely? (Emphasize faces, corners, and edges.) How can you tell about each shape without using the shape’s names?
- How did the Application Problem connect to today’s lesson?
- What were some different ways we sorted our shapes?
Circle the cylinders with red.
Circle the cubes with yellow.
Circle the cones with green.
Circle the spheres with blue.
Cut one set of solid shapes. Sort the 4 solid shapes. Paste onto the chart.

These have corners.  
These do not have corners.

Cut the other set of shapes and make a rule for your sort. Paste them in this grid.
Lesson 7: Explain decisions about classification of solid shapes into categories.
Name the solid shapes.
Date: 8/5/13
Lesson 8

Objective: Describe and communicate positions of all solid shapes using the words *above, below, beside, in front of, next to, and behind.*

Suggested Lesson Structure

- Fluency Practice  (12 minutes)
- Application Problem  (5 minutes)
- Concept Development  (26 minutes)
- Student Debrief  (7 minutes)
- Total Time (50 minutes)

**Fluency Practice (12 minutes)**

- Position Words Game  *K.G.1*  (4 minutes)
- Show Me Shapes  *K.G.2*  (4 minutes)
- Rekenrek  *K.CC.4a*  (4 minutes)

**Position Words Game (4 minutes)**

Note: As students work with position words, they are analyzing their world and their relationship to that world in space. This leads to insights about measurement and distance.

Call students to the rug with their partners. Use position words such as *above, below, beside, in front of, next to,* and *behind* to give directions for activities to do with a partner. For example, “Partner A, put your hand above Partner B’s head. Stand beside your partner. Partner B, stand in front of Partner A.”

Inevitably the teacher may lose track of who is A or B, but the benefit of partner work is that they will check and correct each other, and in the process, explain their thinking.

**Show Me Shapes (4 minutes)**

Note: Now that students have had the chance to really study the attributes of shapes, we want them to visualize that shape as they say the name of it.

Conduct as outlined in GK–M2–Lesson 7, but now use the names of solid shapes.

**Rekenrek Roller Coaster (4 minutes)**

Materials:  (T) 20 Rekenrek

Note: As students gain deep understanding of the numbers in relationship to 5, the Rekenrek allows them to
start building a relationship to 10 ones, as outlined in GK–M1–Lesson 23.

T: Let’s practice counting with the Rekenrek. (Show students the 20 Rekenrek with the side panel attached.) Say how many you see. (Slide the balls you want the students to count completely to one side).

Direct the students to gradually raise their hands as the numbers increase, and lower their hands as the numbers decrease, mimicking the motion of a wave. A suggested sequence is, counting up, counting down, then in short sequences, 1, 2, 3, 2, 3, 4, 3, 4, 5, 4, 3, etc. Gradually build up to 10.

Be careful not to mouth the words or count along with the students. Listen carefully for hesitations or errors, and return to a simpler sequence if necessary. If students demonstrate mastery, consider introducing the 5-group orientation (e.g., 6 as 5 red beads on top, and 1 red bead on the bottom).

Application Problem (5 minutes)

Materials: (S) Small ball of clay for each student

Make a sphere with your ball of clay. Change your ball to a cylinder. Change it to a cube. Change it to a cone. Put your cone next to your partner’s. Partner A put your cone above Partner B’s.

Note: This problem reviews vocabulary from yesterday’s lesson and bridges to the work of positioning solids in today’s lesson.

Concept Development (26 minutes)

Materials: (T) Set of geometric solids in a paper bag; set of flashcards in paper bag showing the words above, beside, below, in front of, next to, and behind (S) Set of geometric solids per pair of students

T: We are going to play a math game today called Guess What I Am. I’m going to be calling on lots of volunteers, so be ready to be mathematicians! I have two bags in front of me. Who can guess what is in my bags? (Shake bags and elicit guesses from students.)

T: Student A, please come up to help me. I want you to put your hand in this bag and find one of the objects, but don’t look at it! See if you can guess what it is just by feeling it. Here is a hint: It is something that we looked at yesterday. (Allow student to locate one of the solids in the bag.) Can you tell us about it?

S: It feels smooth and round. It is a sphere!

T: Take it out of the bag. Is he right? (Yes.) Find your spheres and put them on your desk. (Allow time for pairs of students to put their spheres on their desks.)

T: Student B, would you help me next? Find something in the bag and see if you can tell us what it is without looking. What do you feel?

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

English language learners will be able to participate better if your flashcards have a visual showing what beside, above, in front of, next to, and behind mean. This type of multiple representation will help them learn these terms much faster.

Lesson 8:
Describe and communicate positions of all solid shapes using the words above, below, beside, in front of, next to, and behind.

Date: 8/5/13
S: I feel something with lots of corners. It has lots of flat sides. It is a cube!

T: Is he right? (Yes!) Now, Student B, take a card out of the other bag. (Student selects a card.) This card says beside. Find a cube in your bag and put it beside your sphere. Student C, it’s your turn!

S: I feel something that is flat on one side and pointy on the other. It has one face. It is a cone. (Takes it out of the bag.) I’m right!

T: Now choose a card. (Student selects a card.) The card says above. Find your cones and put them above the cube. Look! You made a building!

Play the game at a fast pace for several minutes or until all students have had a turn to identify a solid by touch. Put solids or cards back in the bags as often as necessary to continue the exercise. If the combinations create impossible situations, such as put the sphere above the cone, ask students what positional word could be used instead.

T: Now arrange the solids on your desk. You will play a similar game with your partner, but in a different way. Tell your partner, “I am the solid that is next to the cube. What am I?” When your partner guesses the solid correctly, it will be his turn to give you a riddle. (Allow students time to practice using the words of position and identifying the solids.)

T: Put your solids away in their bag. Put your bag in front of you. I will put your Problems Sets beside them.

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes.

Note: To extend this activity the teacher could run off another set of shapes and use these clues.

- Paste the shape with no faces above the train.
- Paste the shape with many faces behind the train.
- Paste the shape with two faces in front of the train.
- Paste the shape with one point below the train.
Student Debrief  (7 minutes)

Lesson Objective: Describe and communicate positions of all solid shapes using the words above, below, beside, in front of, next to, and behind.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- What new (or significant) math vocabulary did we use today to communicate precisely?
- Where did you place each solid on your paper? (Go through each direction and compare where students put their shapes on their paper.)
- Were there important words you needed to know to do this Problem Set?
- Compare with your partner. Did you put your shapes in the same place as your partner?
- What shapes do you see on your paper?
- How did the Application Problem connect to today’s lesson?
Lesson 8: Describe and communicate positions of all solid shapes using the words above, below, beside, in front of, next to, and behind.

Date: 8/5/13
Directions: Read to students.

Paste the sphere **above** the train.
Paste the cube **behind** the train.
Paste the cylinder **in front of** the train.
Paste the cone **below** the train.

Provide one strip for every student.
Directions: Tell someone at home the names of each solid shape.

Sphere   Cylinder   Cone   Cube

Color the car beside the stop sign green.
Circle the next car with blue.
Color the car behind the circled car red.
Draw a road below the cars.
Draw a policeman in front of the cars.
Draw a sun above the cars.
Topic C

Two-Dimensional and Three-Dimensional Shapes

K.MD.3, K.G.3, K.G.4, K.G.1, K.G.2

Focus Standard: K.MD.3  Classify objects into given categories: count the numbers of objects in each category and sort the categories by count.

K.G.3  Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).

K.G.4  Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length).

Instructional Days: 2

Coherence -Links from: GPK–M2  Two-Dimensional and Three-Dimensional Shapes

-Links to: G1–M5  Identifying, Composing, and Partitioning Shapes

Topic C closes the module with discrimination between flats and solids. In Lesson 9, students are identifying and sorting flat and solid shapes. The goal of this lesson is to focus the student’s attention on the attributes of a flat or solid shape instead of trusting how it looks. The students will learn to sort shapes and explain the reason for their groups.

Young children might group the first and third shapes because “they look like triangles,” but not the second shape because “it doesn’t look like other triangles.” This module closes with a culminating task which asks students to distinguish between variants, non-examples, and examples of flat shapes. The task continues as students relate the flat shapes to solid shapes as they create a solid and flat shape display.
<table>
<thead>
<tr>
<th>Objective 1: Identify and sort shapes as two-dimensional or three-dimensional and recognize two-dimensional and three-dimensional shapes in different orientations and sizes. (Lesson 9)</th>
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<td>Objective 2: Culminating task—collaborative groups create displays of different flat shapes with examples, non-examples, and a corresponding solid shape. (Lesson 10)</td>
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</tbody>
</table>
Lesson 9

Objective: Identify and sort shapes as two-dimensional or three-dimensional and recognize two-dimensional and three-dimensional shapes in different orientations and sizes.

Suggested Lesson Structure

- Fluency Practice (10 minutes)
- Application Problem (5 minutes)
- Concept Development (25 minutes)
- Student Debrief (10 minutes)

Total Time (50 minutes)

Fluency Practice (10 minutes)

- Groups of Shapes K.G.2 (3 minutes)
- Groups of 9 K.CC.4b (3 minutes)
- Hide and See 5 K.OA.2 (4 minutes)

Groups of Shapes (Solid shapes) (3 minutes)

Note: Kinesthetic learners will benefit greatly from the getting up and moving aspect of this fluency activity. As they move, they are analyzing and encouraged to talk about how they know where to go.

Materials: (T) Signs with pictures of shapes to indicate where to form each group (S) Assortment of real world objects and wooden or plastic solid shapes

Conduct as described in GK–M2–Lesson 5, but with solid shapes.

Groups of 9 (3 minutes)

Materials: (S) Small square counters

Note: As students make 9 in different configurations, they can notice now the array makes a large square and other squares within it, too (of four in four different positions).

Conduct as outlined in GK–M2–Lesson 2, but with 9. Allow students to share their strategy for making groups quickly.

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Challenge your above grade level students by asking them to draw two or more shapes and to construct solids that match faces of their shapes. Pair them up and ask them to challenge each other with shapes they have not drawn.
Lesson 9: NYS COMMON CORE MATHEMATICS CURRICULUM  K+2

Identify and sort shapes as two-dimensional or three-dimensional and recognize two-dimensional and three-dimensional shapes in different orientation and sizes.

Date: 8/5/13

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**Hide and See 5 (4 minutes)**

Note: In this activity, students’ understanding of conservation of a number develops into part to whole thinking at the concrete level, anticipating the work of Module 4 (number bonds, addition, and subtraction).

Materials: (S) 5 linking cubes, personal white boards

Conduct as described in GK–M2–Lesson 6. Challenge students to list all possible combinations.

**Application Problem (5 minutes)**

Materials: (S) Small piece of paper, pencil, and ball of clay per student

Draw one of the shapes that we have talked about most this week. Can you make a solid with your clay that has the shape you drew as one of its faces? Share your work with your partner when you are done.

Note: In addition to serving as a review, this problem will require students to think about the connections among flat shapes and solids in preparation for today’s lesson.

**Concept Development (25 minutes)**

Materials: (S) Cutouts from earlier this week, including triangles, circles, rectangles, squares, and hexagons; bag of solids including a sphere, a cylinder, a cone, and a cube

T: Take out all of your flat shapes and all of your solids and arrange them in front of you.

T: I see a lot of things on your desk! Stand up and look at your things as though you were a bird. What do you see?

S: I see flat things and solids that look like circles! → I see squares.

T: Now bend down and look across your desk as though you were an ant. What do you notice?

S: We can only see the solid shapes. → We can’t see the flat shapes now.

T: Do you think we could sort all of the things on your desk? Take a few minutes to look at all of your objects and what sorts of things they might have in common. (Allow time for thought and experimenting.)

T: Does anyone have a sorting rule for us to try?

**NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:**

For below grade level students who are experiencing difficulty with the sorting activity, using interactive technology to sort triangles such as the one found at http://www.coppschool.lancsngfl.ac.uk/Classwork/Classwork/flashaids/venn_diagram.swf and the more complex task of sorting shapes such as the one found at http://www.coppschool.lancsngfl.ac.uk/Classwork/Classwork/flashaids/carroll_diagram.swf. This kind of practice will help students improve their ability to recognize similarities and differences.
Lesson 9: Identify and sort shapes as two-dimensional or three-dimensional and recognize two-dimensional and three-dimensional shapes in different orientations and sizes.

Date: 8/5/13

S: We could put all of the things with curves over here and the things that are all straight over here.

T: Good! Let’s try. (Allow time for sorting; circulate to ensure accuracy.) Show your groups to your partner. Do your groups look alike? (Allow time for discussion.)

T: Did anyone think of a different rule for sorting?

S: Things that roll and things that don’t. → Things that are flat and things that are solid. → Things with edges and things without edges. → Things with faces and things with no faces.

T: (Continue sorting exercises and discussion for several minutes. Circulate to observe correct use of vocabulary and accuracy in grouping.)

T: Listen to my directions. I will say the name of a shape or a solid. When I do, echo me, find the object, and put it back in its bag. Then I will pass out your Problem Sets.

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes

Student Debrief (10 minutes)

Lesson Objective: Identify and sort shapes as two-dimensional or three-dimensional and recognize two-dimensional and three-dimensional shapes in different orientations and sizes.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

You may choose to use any combination of the questions below to lead the discussion.

- What new (or significant) math vocabulary did we use today to communicate precisely?
- How did you determine whether to use a red or green X? Did someone do it another way?
- Looking at your paper, who can name a flat shape? Solid shape?
- Can you name some other flat shapes that are not on your paper? Solid shapes?
- How did the Application Problem connect to today’s lesson?
Circle the pictures of the flat shapes with red. Circle the pictures of the solid shapes with green.
In each row, circle the one that doesn’t belong. Explain your choice to a grown-up.

1. Circle the one that doesn’t belong: circle, triangle, triangle.

2. Circle the one that doesn’t belong: hexagon, cylinder, cylinder.

3. Circle the one that doesn’t belong: smiley face, circle, half-circle.

4. Circle the one that doesn’t belong: cube, diamond, square.

5. Circle the one that doesn’t belong: pie chart, cylinder, cube.
Lesson 10

Objective: Culminating Task—collaborative groups create displays of different flat shapes with examples, non-examples, and a corresponding solid shape.

Suggested Lesson Structure

- Fluency Practice (5 minutes)
- Concept Development (40 minutes)
- Student Debrief (5 minutes)

Total Time (50 minutes)

Fluency Practice (5 minutes)

- Groups of Shapes K.G.2 (3 minutes)
- 5-Group Hands K.CC.2 (2 minutes)

Groups of Shapes (3 minutes)

Note: The concept of a group is foundational for the concept of a unit. There are seven objects, but it is one group, one unit; conduct as in GK–M2–Lesson 5.

5-Group Hands (2 minutes)

Note: Keep working with number all through the activities. Your students will see themselves improve. Invite them to notice their improvement and celebrate small successes and small steps towards mastery.

Conduct as outlined in GK–M2–Lesson 1, but now have students say the number sentence (for example, 5 and 2 makes 7), as they show the 5-groups on their hands.

Note: The Fluency Practice activities have been shortened, assuming more time will be needed for the culminating task.

Concept Development (40 minutes)

Setup: Today’s lesson will incorporate elements of all of the Module 2 lessons. As in the culminating lesson for Module 1, the students will be setting up stations or exhibits displaying their knowledge of the shapes and solids they have studied. They will be representing each of the five shapes in a different display and associating geometric solids with the appropriate shapes. Therefore, there will be at least five stations; you may want to have several more in order to keep the number of students working at each station to a small
group size. The materials list represents items that will be needed for each station.

Materials: (T) Bag of flat shapes containing a triangle, a rectangle, a square, a circle, and a hexagon (as many as necessary in order to assign each group or pair of students one shape) (S) Work mat from below; sets of cutouts from the module lessons; small pieces of modeling clay; geoboards and rubber bands; dot paper and markers; pattern blocks; paper and glue stick; crayons, pencils; wikki sticks if available; set of geometric solids; collection of pictures from catalogs, magazines, or newspapers representing the shapes and solids in real life situations

T: We have been studying many flat shapes and solids. Today, you will get the chance to show what you know. We will be having a Shape Fair!

T: I’m going to be calling you up with a partner to choose a shape from my bag. You will work with your partner to create an exhibit about that shape. You will go to a station and use the materials there to show what you know. You have cutouts, pictures, craft supplies, and drawing materials. What are some things you could do to show what you’ve learned about a shape?

S: We could draw it. → We could make it on a geoboard. → We could make it with our wikki sticks! → We could have a shape hunt with the pictures. → We could cut it out.

T: There will be a bag of solids at your station as well. Could they help you to show your shape?

S: We can show the faces that match our shape. We could trace the solids.

T: Yes, some of the solids might show your shape too! One last mission: I have a work mat for you to use (see below). On the mat, the left side says, “These are (        ).” The other side says, “These are not (        ).” (Hold up work mat and demonstrate appropriate placement.) You will draw your shape in the blank spaces and then use this mat to do some sorting. Show things that do and don’t match your shape in order to help your visitors understand the shape better.

T: I will give you time to work on your exhibit, and after 20 minutes I will give you a chance to visit the other exhibits in our Shape Fair. Students A, B, and C, please come choose your shape and get started at your station.

Note: Use this time as an informal assessment tool for the close of the module. Circulate to observe student discussion and work. What representations are easiest and most familiar to the students? Are there some that might need review? What vocabulary and language do the students use in their discussions? Do they exhibit thorough understanding of the shapes and solids?

T: (When preparation time is up, allow students to rotate through the other exhibits.) Now you may look at the rest of the Shape Fair. Talk with your partner about what you see at each station. What are the shapes and solids shown at each exhibit? How did you know? What ways did your friends choose to show them?

Suggestion: This would be a wonderful opportunity to have some other teachers, older students, or administrators come into the classroom to view the exhibits at the end of class. The students could explain their work to the visitors as an extension of the lesson.
Problem Set (0 minutes)

There will be no Problem Set in this lesson so as to maximize available time for the culminating activity.

Student Debrief (5 minutes)

Culminating Task—collaborative groups create displays of different flat shapes with examples, non-examples, and a corresponding solid shape.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

You may choose to use any combination of the questions below to lead the discussion.

- In what ways did you and your partner represent your shape?
- Which materials were easiest for you to use to explain your shape? Why?
- How did you decide which solids to use to represent your shape?
- Which shape(s) do you think were trickiest to make? Why?
- What new (or significant) math vocabulary did we use today to communicate precisely?
Shape Up Your Kitchen!

Search your kitchen to see what shapes and solids you can find. Trace and color the faces of the solids or draw and color the shapes or solids to make a fantastic kitchen shape collage!

These are (___).

These are not (___).
These are (___).

These are not (___).
Student Name ____________________________

**Topic A: Two-Dimensional Flat Shapes**

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<tr>
<th>Rubric Score</th>
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Materials: (S) Paper cutouts of typical triangles, squares, rectangles, hexagons, and circles; paper cutouts of variant shapes and difficult distracters (see Geometry Progression, p.6)

1. (Hold up a rectangle. Use different shapes for each student.) Point to something in this room that is the same shape and use your words to tell me all about it. How do you know they are the same shape?

2. (Place several typical, variant, distracting shapes on the desk. Be sure to include three or four triangles.) Please put all the triangles in my hand. How could you tell they were all triangles?

3. How is a triangle different from this rectangle? (Hold up a rectangle.) How is it the same?

4. (Place five typical shapes in front of the student.) Put the circle next to the rectangle. Put the square below the hexagon. Put the triangle beside the square.

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Topic B: Three-Dimensional Solid Shapes

Rubric Score: ___________ Time Elapsed __________

Materials: 1 cone, 3 cylinders, (wooden or plastic); a variety of realia solid shapes, e.g., soup can, paper towel roll, party hat, ball, dice, or an unsharpened cylindrical (not hexagonal prism) pencil

1. (Hand a cylinder to the student.) Point to something in this room that is the same solid shape and use your words to tell me all about it.

2. (Place seven solid shapes in front of the student, including three cylinders—wooden, plastic, realia.) Can you put all the cylinders in this box?

3. How is the cylinder you are holding different than this cone? How is it the same?

4. (Place the set of solid shapes in front of the student.) Put the cube in front of the cylinder. Put the sphere behind the cone. Put the cone above the cube.

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### Topic C: Two-Dimensional and Three-Dimensional Shapes

Rubric Score: ___________ Time Elapsed ____________

Materials: Set of flat and solid shapes (do not use the paper cutouts from Topic A, but rather both commercial flat shapes and classroom flat shapes, such as a slice of colored construction paper, a CD cover, or a name tag)

1. Can you sort these shapes into one group of flat shapes and one group of solid shapes?
2. Tell me about your groups. What is the same about both groups?
3. What is different about both groups?

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End-of-Module Assessment Task

Standards Addressed

Classify objects and count the number of objects in each category.

K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.)

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

K.G.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

K.G.2 Correctly name shapes regardless of their orientations or overall size.

K.G.3 Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).

Analyze, compare, create, and compose shapes.

K.G.4 Analyze, and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length).

Evaluating Student Learning Outcomes

A Progression Toward Mastery is provided to describe and quantify steps that illuminate the gradually increasing understandings that students develop on their way to proficiency. In this chart, this progress is presented from left (Step 1) to right (Step 4). The learning goal for each student is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the student CAN do now, and what they need to work on next.
## A Progression Toward Mastery

<table>
<thead>
<tr>
<th>Assessment Task Item</th>
<th>STEP 1</th>
<th>STEP 2</th>
<th>STEP 3</th>
<th>STEP 4</th>
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</thead>
<tbody>
<tr>
<td><strong>Topic A</strong></td>
<td>Little evidence of reasoning without a correct answer. (1 point)</td>
<td>Evidence of some reasoning without a correct answer. (2 points)</td>
<td>Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 points)</td>
<td>Evidence of solid reasoning with a correct answer. (4 points)</td>
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</tbody>
</table>
| K.G.1                | The student:  
  - Is unable to select, position, or describe indicated shapes.  
  - Takes considerable time to complete tasks, looks to the teacher for help often. | The student:  
  - Sorts indicated shapes randomly, resulting in some correct and some incorrect shapes in the group.  
  - Struggles to select, position, and describe indicated shapes. | The student:  
  - Identifies a shape from the environment but is unable to discuss its attributes.  
  - Sorts most of the indicated shapes.  
  - Correctly selects both of the indicated shapes but places them in the wrong position. | The student correctly:  
  - Identifies and describes several attributes of the shape from the environment that matches the shape being shown to them.  
  - Sorts all indicated shapes from several typical, variant, and distracting shapes.  
  - Selects indicated shape and positions this shape above, below, beside, in front of, behind, or next to another indicated shape. |
| K.G.2                | The student:  
  - Sorts indicated solids randomly, resulting in some correct and some incorrect solids in the group.  
  - Struggles to select, position, and describe indicated solids. | The student:  
  - Identifies a solid from the environment but is unable to discuss its attributes.  
  - Sorts most of the indicated solids.  
  - Correctly selects both of the indicated solids but places them in the wrong position. | The student correctly:  
  - Identifies and describes several attributes of the solid from the environment that matches the solid being shown to them.  
  - Sorts all indicated solids.  
  - Selects indicated solid and positions this solid above, below, beside, in |
| K.G.4                | The student:  
  - Identifies a shape from the environment but is unable to describe its attributes.  
  - Sorts most of the indicated shapes.  
  - Correctly selects both of the indicated shapes but places them in the wrong position. | The student:  
  - Identifies and describes several attributes of the solid from the environment that matches the solid being shown to them.  
  - Sorts all indicated solids.  
  - Selects indicated solid and positions this solid above, below, beside, in |

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<table>
<thead>
<tr>
<th>Topic C</th>
<th>The student:</th>
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</thead>
<tbody>
<tr>
<td>K.G.3 K.MD.3</td>
<td>▪ Incorrectly groups the shapes.</td>
<td>▪ Can sort the shapes into a group and may or may not be able to verbalize reasoning.</td>
<td>▪ Is able to sort the shapes into two groups but is not able to verbalize reasoning.</td>
<td>▪ Correctly sorts the shapes into two groups and is able to clearly state the reason the shapes belong to that group.</td>
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<td>▪ Is not able to verbalize reasoning, or reasoning is not sound.</td>
<td>▪ Cannot make a second grouping.</td>
<td>▪ Is able to sort the shapes a second time but is unable to verbalize reasoning.</td>
<td>▪ Is able to sort the shapes again according to a different attribute and is able to state such attribute.</td>
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<tr>
<td>Student Names:</td>
<td>Topic A: Two-Dimensional Flat Shapes</td>
<td>Topic B: Three-Dimensional Solid Shapes</td>
<td>Topic C: Two-Dimensional and Three-Dimensional Shapes</td>
<td>Next Steps:</td>
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