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GRADE K • MODULE 6

Analyzing, Comparing, and Composing Shapes

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Grade K • Module 6

Analyzing, Comparing, and Composing Shapes

OVERVIEW

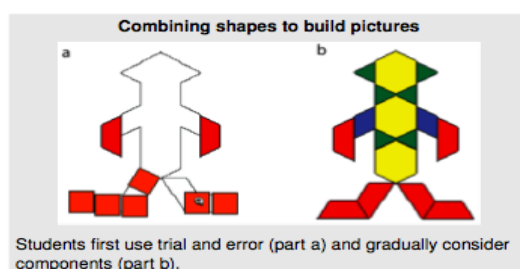
The kindergarten chapter of *A Story of Units* comes to a close with another opportunity for students to explore geometry. Throughout the year, students have built an intuitive understanding of two- and three-dimensional figures by examining exemplars, variants, and non-examples. They have used geometry as a context for exploring numerals as well as comparing attributes and quantities. To wrap up the year, students further develop their spatial reasoning skills and begin laying the groundwork for an understanding of area through composition of geometric figures.

Topic A begins with students applying their knowledge of attributes to analyze two- and three-dimensional shapes from the real world and construct models using straws and clay (**K.G.5**). “Let’s use the straws to make the sides of the rectangle, and we’ll stick the straws together at each corner using clay!” Students use their understanding of ordination to thirds to share and communicate the systematic construction of flats and solids. “First, I cut four straws to be the same length. Second, I made a square by placing the four straws so they look like a frame. Third, I connected the sides at the corners with four little clay balls” (**K.CC.4d**).

As in Module 2, students explore the relationship between flats and solids, this time using flats to build solids. “I made my square into a cube. First, I made another square the same size. Second, I attached the two squares with four straws the same length.” They also apply their knowledge of ordinal numbers to describe the relative position of shapes within a set (**K.CC.4d**). “The yellow circle is first, and the red square is tenth.”

The lessons of Topic B focus on composition and decomposition of flat shapes (**K.G.6**). Students begin by using flats to compose geometric shapes. “I put two triangles together to make a square.” They then decompose shapes by covering part of a larger shape with a smaller shape and analyzing the remaining space. “When I cover part of my square with this triangle, I can see another triangle in the empty space.”¹

As they build competence in combining and composing shapes, students build toward more complex pictures and designs. Students progress through stages as they build competence in combining shapes to form



¹ This descriptive image plus further clarification is found in the Geometry progressions document, p. 7.

pictures: beginning with trial and error and gradually considering the systematic combination of components. “This square fits here because the corners match the puzzle.” The culminating task of this module is set up as a Math Olympics, a celebration of student learning from the whole year. Students complete tasks related to number, measurement, operations, and geometry.

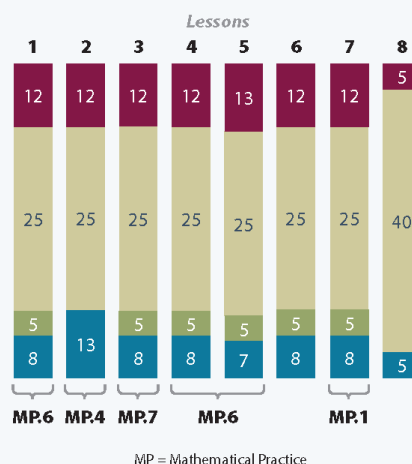
Composition and decomposition of geometric figures reinforce the idea that smaller units can combine to form larger units. This concept, central to *A Story of Units*, underlies not only area concepts but also the base ten number system. Students leave this module and the kindergarten year prepared to tackle the mathematical concepts of first grade and beyond.



Distribution of Instructional Minutes

This diagram represents a suggested distribution of instructional minutes based on the emphasis of particular lesson components in different lessons throughout the module.

- **Fluency Practice**
- **Concept Development**
- **Application Problems**
- **Student Debrief**



Focus Grade Level Standards

Count to tell the number of objects.²

- K.CC.4** Understand the relationship between numbers and quantities; connect counting to cardinality.
- d. Develop understanding of ordinal numbers (first through tenth) to describe the relative position and magnitude of whole numbers.

Analyze, compare, create, and compose shapes.³

- K.G.5** Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

² Ordinality is introduced in the context of constructing and manipulating shapes. The balance of this cluster is addressed in Modules 1 and 5.

³ K.G.4 is addressed in Module 2.

- K.G.6** Compose simple shapes to form larger shapes. *For example, “Can you join these two triangles with full sides touching to make a rectangle?”*

Foundational Standards

- PK.CC.6** Identify “first” and “last” related to order or position.
- 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.** Students persist in their use of trial and error until they begin to use the attributes of a puzzle to determine which shape fits into an open space. “The empty space has a long side like my triangle. Let’s see if my triangle fits.”
- MP.4** **Model with mathematics.** Students use shapes to create pictures of common objects and use straws and clay to create models of two- and three-dimensional objects in their environment.
- MP.6** **Attend to precision.** Ordinal numbers provide students with vocabulary to precisely describe the spatial organization of ten shapes in a straight line.
- MP.7** **Look for and make use of structure.** Students make use of their understanding of a shape’s attributes to build three-dimensional shapes from two-dimensional shapes.

Overview of Module Topics and Lesson Objectives

Standards	Topics and Objectives	Days
K.CC.4d K.G.5 K.G.2 K.G.4	A Building and Drawing Flat and Solid Shapes Lesson 1: Describe the systematic construction of flat shapes using ordinal numbers. Lesson 2: Build flat shapes with varying side lengths and record with drawings. Lesson 3: Compose solids using flat shapes as a foundation. Lesson 4: Describe the relative position of shapes using ordinal numbers.	4
K.G.6 K.G.1 K.G.4	B Composing and Decomposing Shapes Lesson 5: Compose flat shapes using pattern blocks and drawings. Lesson 6: Decompose flat shapes into two or more shapes. Lesson 7: Compose simple shapes to form a larger shape described by an outline. Lesson 8: Culminating task—review selected topics to create a cumulative year-end project.	4
	End-of-Module Assessment: Topics A–B	2
Total Number of Instructional Days		10

Terminology

New or Recently Introduced Terms

- First, second, third, fourth, fifth, sixth, seventh, eighth, ninth, tenth (ordinal numbers)

Familiar Terms and Symbols⁴

- Above, below, beside, in front of, next to, behind (position words)
- Circle
- Cube (three-dimensional shape)
- Cylinder (three-dimensional shape)
- Face (two-dimensional side of a shape)
- 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)



Suggested Tools and Representations

- Pattern block activity cards or attribute block activity cards
- Three-dimensional shapes: cone, sphere, cylinder, and cube
- Two-dimensional shapes: circle, hexagon, rectangle, square, and triangle



Scaffolds⁵

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 organized by Universal Design for Learning (UDL) principles and are applicable to more than one population. To read more about the approach to differentiated instruction in *A Story of Units*, please refer to “How to Implement *A Story of Units*.”

⁴ These are terms and symbols students have seen previously.

⁵ 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

Type	Administered	Format	Standards Addressed
End-of-Module Assessment Task	After Topic B	Constructed response with rubric	K.CC.4d K.G.5 K.G.6
Culminating Task	Lesson 8	Collaborative project: Review selected topics to create a cumulative year-end project.	K.G.6



Topic A

Building and Drawing Flat and Solid Shapes

K.CC.4d, K.G.5, K.G.2, K.G.4

Focus Standard:	K.CC.4d	Understand the relationship between numbers and quantities; connect counting to cardinality. d. Develop understanding of ordinal numbers (first through tenth) to describe the relative position and magnitude of whole numbers.
	K.G.5	Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
Instructional Days:	4	
Coherence -Links from:	GPK–M2	Two-Dimensional and Three-Dimensional Shapes
-Links to:	G1–M5	Identifying, Composing, and Partitioning Shapes

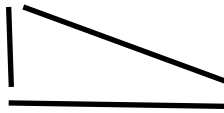
In this final kindergarten module, students will extend and build upon their learning about two- and three-dimensional shapes from Module 2. Students use their knowledge about common features of flats and solids to create, construct, and compose shapes by building and drawing. Throughout, they use ordinal numbers to describe the systematic construction of their flats (**K.CC.4d**).

Lesson 1 asks students to apply their knowledge of shape attributes (number and type of sides and corners) by constructing flat shapes using straws and clay (**K.G.5**). For example, when constructing a triangle, the student uses three equal, unconnected straws and connects the endpoints to form a three-sided, closed figure. This represents a departure from viewing the figure as being inclusive of the interior to now considering the shape as represented only by the outline, a perspective that will eventually develop into formal definitions of triangles, quadrilaterals, and polygons (e.g., a triangle is formally defined in Grade 4 as consisting of three non-collinear points together with the three segments joining them). Students will use ordination to thirds to tell the steps they take to build their flat shapes (**K.CC.4d**).

In Lesson 2, students investigate whether varied side length affects their ability to construct a shape. “What happens if I use two long straws and one short straw to build my triangle?”



3 equal straws



3 unequal straws

Lessons 3 and 4 build upon the comparisons students made between two- and three-dimensional shapes in Module 2 (**K.G.4**). In Lesson 3, students use the flats created from straws and clay in Lesson 1 as the foundation for composing solids that model real world shapes and figures (**K.G.5**). They use these solids to count faces, edges, and corners. In Lesson 4, they relate spatial understanding (relative position) and number (magnitude) by using ordinal numbers to describe the position of flat shapes within a set of 10 (**K.CC.4d**).

A Teaching Sequence Towards Mastery of Building and Drawing Flat and Solid Shapes

Objective 1: Describe the systematic construction of flat shapes using ordinal numbers.
(Lesson 1)

Objective 2: Build flat shapes with varying side lengths and record with drawings.
(Lesson 2)

Objective 3: Compose solids using flat shapes as a foundation.
(Lesson 3)

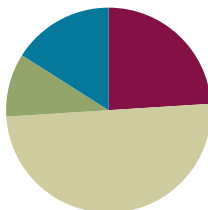
Objective 4: Describe the relative position of shapes using ordinal numbers.
(Lesson 4)

Lesson 1

Objective: Describe the systematic construction of flat shapes using ordinal numbers.

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)

- Count to 100 by Ones **K.CC.1** (3 minutes)
- If You're Happy and You Know It **K.CC.4d** (5 minutes)
- Peek-a-Boo Shapes **K.G.2** (4 minutes)

Count to 100 by Ones (3 minutes)

Materials: (S) Rekenrek dot paper (fluency template)

Note: This activity maintains the rote counting skills acquired in GK–Module 5, and calls attention to the structure of numbers to 100 with the use of the Rekenrek's rows of 10 and the verbal cue as they cross decades.

Students count to 100 (or as high as they can in three minutes) by touching the beads on the Rekenrek dot paper. Have them say *buzz* after the last number of each row.

If You're Happy and You Know It (5 minutes)

Note: This fun, familiar song gives students the opportunity to practice putting events in sequence, preparing them for today's work with ordinal numbers and step-by-step procedures.

T: Raise your hand if you know the song "If you're happy and you know it."

S: (Raise hands.)

T: Even if you don't know all of the words, you can still do all of the moves, and that's the part that will help us in math today. We'll sing the song three times, and use a different movement each time. Then, we'll sing it a final time, and put all three movements together. Ready?

Verse 1: If you're happy and you know it, clap your hands. (Clap, clap.)

Verse 2: If you're happy and you know it, stomp your feet. (Stomp, stomp.)

Verse 3: If you're happy and you know it shout *hooray*. "Hooray!"

Verse 4 (combined): If you're happy and you know it do all three. (Clap, clap. Stomp, stomp.) "Hooray!"

Invite students to make up three new verses and actions, then combine all three at the end.

Peek-a-Boo Shapes (4 minutes)

Materials: (T) Paper cutouts of triangles, rectangles, squares, hexagons, and circles (variety of sizes, including exemplars, non-exemplars, and variants), pictures of objects that have flat shapes

Note: This quick review of the work of GK–Module 2 prepares students to work with flat shapes in today's lesson.

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. After they have named the shapes, have students tell the number of sides.

Application Problem (5 minutes)

Materials: (S) Markers, paper

We are going to be talking about shapes again! Draw several things you saw this past week that looked like shapes you know. What are the different shapes called?

Share your picture with your partner. Talk about each of the shapes and how you knew its name. Does your partner agree with you?

Note: Use this time to review the definitions of squares, circles, rectangles, triangles, and hexagons with the students. Circulate to ensure accuracy in the students' definitions and precision in their discussions. Coupled with the fluency work, the Application Problem will serve as a brief review prior to construction of shapes in today's lesson.



NOTES ON MULTIPLE MEANS OF REPRESENTATIONS:

Help English language learners work with partners by giving them sentence starters such as, "This is a ___ because it has ___ sides," and "I drew a ___ which has ___ corners." Be sure to post labeled pictures of shapes on the word wall for students to refer to.

Concept Development (25 minutes)

Materials: (S) 15 coffee stir sticks or similar material marked at the midpoint with permanent marker, scissors, small ball of clay, pencil, piece of construction paper, ruler

T: Listen to my directions. **First**, stand up. **Second**, put your hands on your shoulders. Go!

S: (Stand up and then put hands on their shoulders.)

- T: What did I ask you to do first?
 S: Stand up!
 T: What was the second thing I asked you to do?
 S: Put our hands on our shoulders.
 T: Good! Please sit down. Listen to my directions. First, stand up. Second, put your hands on your shoulders. **Third**, jump up and down! (Allow time for activity.) Please sit down. What did I ask you to do first?
 S: Stand up!
 T: What was the second thing I asked you to do?
 S: Put our hands on our shoulders.
 T: And the third thing?
 S: Jump up and down!
 T: Good listening! Let's play one more time. Listen carefully! First, clap two times. Second, stomp three times. Third, shout "Hooray!" once. (Allow time for activity.) What did you do first?
 S: Clapped two times!
 T: Second?
 S: We stomped three times!
 T: Third?
 S: We shouted "Hooray!"
 T: You are going to be builders today. We are going to be making shapes. Look at the materials you have. What do you notice?
 S: We have some sticks! → There is clay, too.
 T: Pick up your sticks and arrange them on your desk. Try to make a shape. Who has an idea?
 S: I used four sticks. I made a square.
 T: How do you know it is a square?
 S: There are four sides, and they are all the same! → It has four corners. → It is closed.
 T: Did anyone think of something else?
 S: I only used three sticks. I made a triangle.
 T: How do you know it is a triangle?
 S: There are three straight sides. → There are three corners, and they are all connected.
 T: We are going to practice more shape-making.

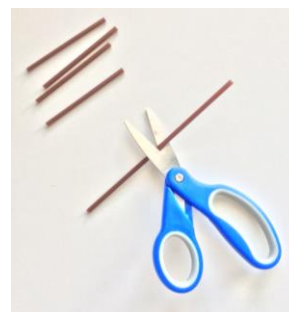
First, use your scissors to cut each of your sticks at the mark in the middle.

Second, arrange your little sticks to make different flat shapes.

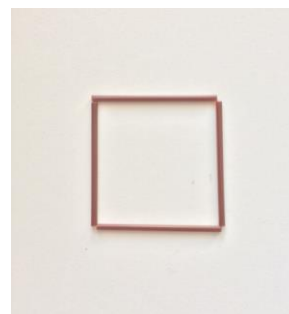


NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

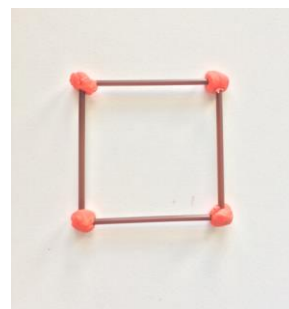
Scaffold below grade level students' understanding of ordinal numbers by modeling for them. Ask students to get up one at a time to demonstrate *first* in line, *second* in line, and *third* in line. Have students practice saying who is *first*, *second*, and *third* in line as you point to each corresponding student.



First



Second

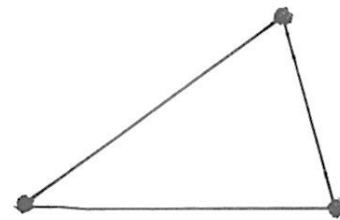
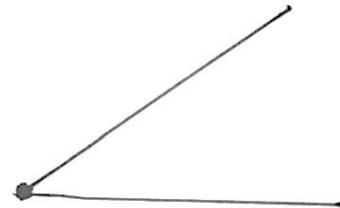


Third

MP.6

Third, use bits of clay to connect the corners of your new shapes.

- T: If you haven't made a square already, please do so now. Then, you may experiment. How many different shapes can you make? We will have a shape show when you are done. (Allow ample time for experimentation and construction.)
- T: Who would like to share one of their shapes? Tell us what you did first, second, and third. Use your math words!
- S: I made a triangle! First, I cut the sticks. Second, I picked three sticks for the sides. Third, I stuck them together with clay!
- S: I made a hexagon. First, I cut the sticks. Second, I chose six and put them on my desk. Third, I used balls of clay to connect them.
- T: Listen again. Get your pencil and construction paper ready. First, put a dot on the left side of your paper. Second, draw a line that starts at that dot with your ruler. Third, draw another line that starts at the same dot with your ruler.
- S: (Work.)
- T: Show me your work.
- S: (Show their work.)
- T: Listen again. First, put a dot at the ends of both your lines. Second, draw a line with your ruler to connect those dots. Third, show your work to a friend and tell him or her what shape you drew. (Allow time for sharing.)
- T: Now, share about *all* your shapes with your friends, the ones we made with straws *and* the one we made with your ruler.



Allow time for sharing and discussion. If students built shapes with five sides, or more than six sides, casually mention the name of the shape. Five sides is a pentagon. Seven sides is a heptagon. Eight sides is an octagon. Nine sides is a nonagon. Ten sides is a decagon.

- T: Listen carefully. First, put your name on your construction paper. Second, carefully lift your shapes onto your paper. Third, stand up and get ready to look at the shapes the rest of the class created! It's time for a shape show! (Allow students to circulate to view and discuss one another's work. Encourage mathematical discussion and precision in vocabulary. When they are done, move the papers carefully to a part of the room where they may be saved for use in Lesson 3 of this module.)

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: Describe the systematic construction of flat shapes using ordinal numbers.

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.

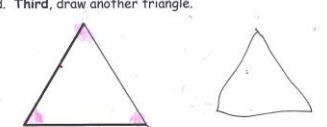
- What words did we use to help us complete our Problem Set in order?
- What was the first thing we did in our Problem Set? Did everyone draw a line to complete the triangle first, before they colored their triangle green?
- Look at the triangles and squares you drew in your Problem Set. Are all the sides equal in length? Find someone who drew their shapes with equal length sides; find someone who drew their shapes with unequal length sides.
- How did the words **first**, **second**, and **third** help us be good builders today?
- Can you think of a time when order is important? What would happen if we put our shoes on first and our socks on second?
- Can you think of other ways that we use words like *first*, *second*, and *third*?

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 1 Problem Set K•6

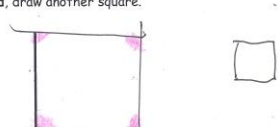
Name Robin Date 5-24-13

Listen to the directions.

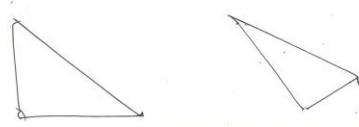
First, draw the missing line to finish the triangle using a ruler. Second, color the corners red. Third, draw another triangle.



First, use your ruler to draw 2 lines to make a square. Second, color the corners red. Third, draw another square.



First, draw a triangle using your ruler. Second, draw a different triangle using your ruler. Third, show your pictures to your partner.



COMMON CORE Lesson 1: Describe the systematic construction of flat shapes using ordinal numbers. 10/18/13 engage^{ny} 6.A.7

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 1 Problem Set K•6

$4 + 1 = 5$ $3 = 2 + 1$ $3 + 2 = 5$ $3 + 1 = 4$ $5 = 5 + 0$	$5 - 1 = 4$ $3 = 4 - 1$ $3 - 2 = 1$ $3 - 0 = 3$ $1 = 5 - 4$
$2 - 1 = 1$ $0 = 3 - 3$ $1 - 0 = 1$ $3 - 0 = 3$ $0 = 4 - 4$	$2 + 2 = 4$ $2 = 5 - 3$ $1 + 1 = 2$ $4 - 0 = 4$ $5 = 4 + 1$

COMMON CORE Lesson 1: Describe the systematic construction of flat shapes using ordinal numbers. 10/18/13 engage^{ny} 6.A.8

Exit Ticket (3 minutes)

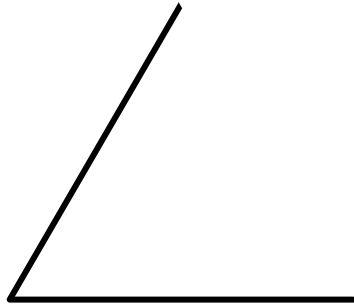
After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the student.

Name _____

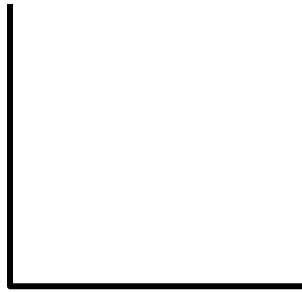
Date _____

Listen to the directions.

First, draw the missing line to finish the triangle using a ruler. **Second**, color the corners red. **Third**, draw another triangle.



First, use your ruler to draw 2 lines to make a square. **Second**, color the corners red. **Third**, draw another square.



First, draw a triangle using your ruler. **Second**, draw a different triangle using your ruler. **Third**, show your pictures to your partner.

$$4 + 1 = \underline{\quad}$$

$$\underline{\quad} = 2 + 1$$

$$3 + 2 = \underline{\quad}$$

$$3 + 1 = \underline{\quad}$$

$$\underline{\quad} = 5 + 0$$

$$5 - 1 = \underline{\quad}$$

$$\underline{\quad} = 4 - 1$$

$$3 - 2 = \underline{\quad}$$

$$3 - 0 = \underline{\quad}$$

$$\underline{\quad} = 5 - 4$$

$$2 - 1 = \underline{\quad}$$

$$\underline{\quad} = 3 - 3$$

$$1 - 0 = \underline{\quad}$$

$$3 - 0 = \underline{\quad}$$

$$\underline{\quad} = 4 - 4$$

$$2 + 2 = \underline{\quad}$$

$$\underline{\quad} = 5 - 3$$

$$1 + 1 = \underline{\quad}$$

$$4 - 0 = \underline{\quad}$$

$$\underline{\quad} = 4 + 1$$

Name _____

Date _____

Use your ruler.

First, draw a straight line from the dot.

Second, draw a different straight line from the dot.

Third, draw another straight line to make a triangle.



Name _____

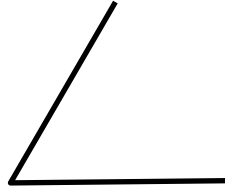
Date _____

Follow the directions.

First, use your ruler to draw a line finishing the triangle.

Second, color the triangle green.

Third, use your ruler to draw a bigger triangle next to the green



First, draw 2 lines to make a rectangle.

Second, put a red circle on all the corners.

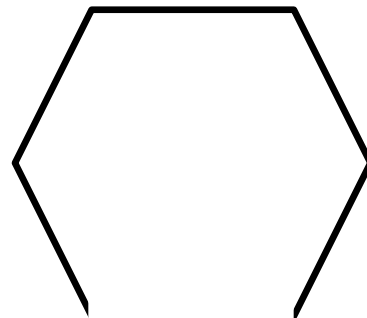
Third, put an X on the longer sides.



First, draw a line to complete the hexagon.

Second, color the hexagon blue.

Third, write the number of sides the hexagon has in the box below.

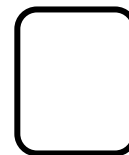


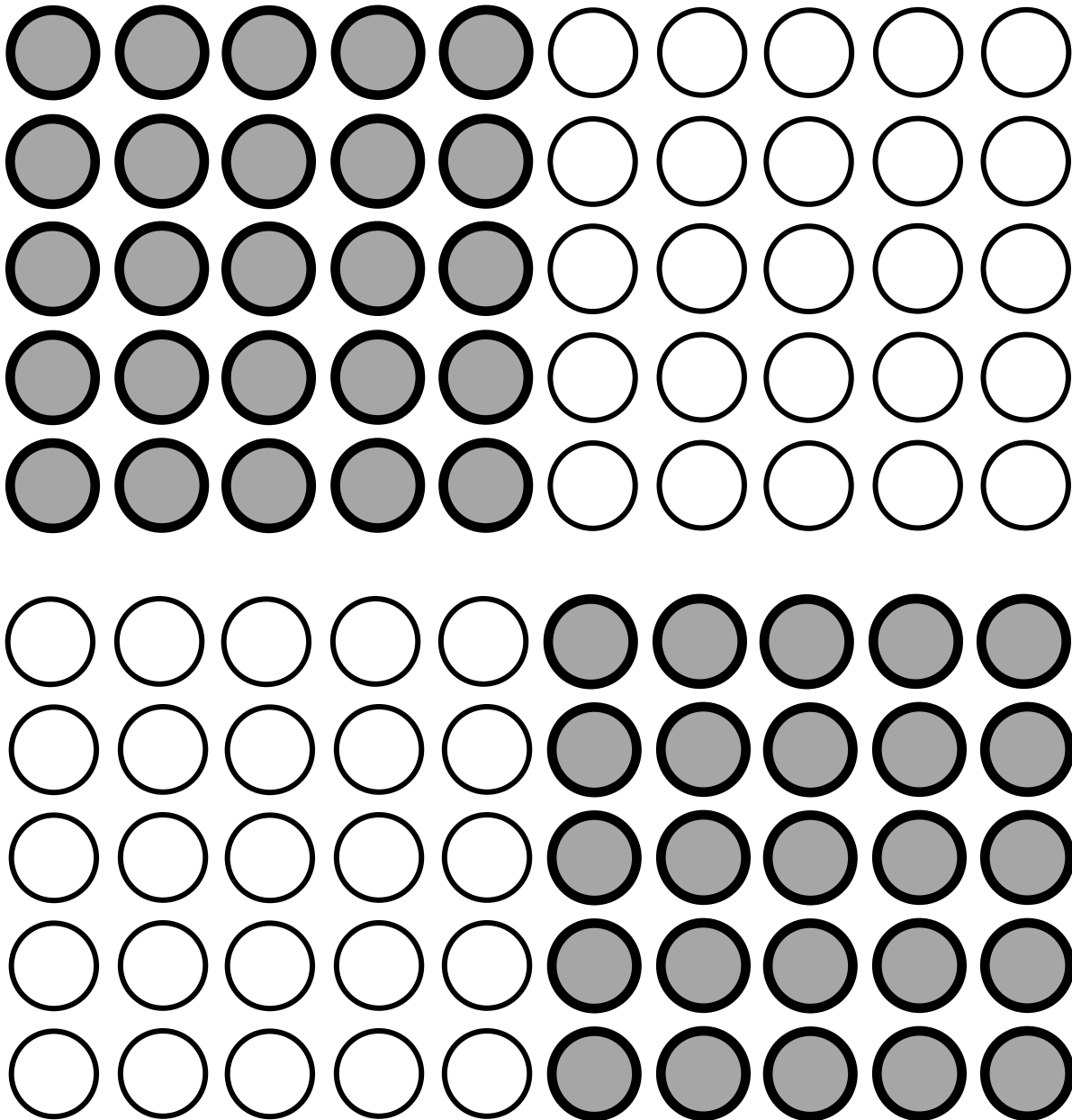
On the back of your paper draw:

A shape with 3 straight sides.

A shape with 4 straight sides.

A shape with 6 straight sides.



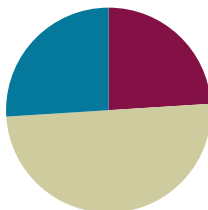


Lesson 2

Objective: Build flat shapes with varying side lengths and record with drawings.

Suggested Lesson Structure

■ Fluency Practice	(12 minutes)
■ Concept Development	(25 minutes)
■ Student Debrief	(13 minutes)
Total Time	(50 minutes)



Fluency Practice (12 minutes)

- Sprint: Core Fluency **K.OA.5** (9 minutes)
- Compose Teen Numbers **K.NBT.1** (3 minutes)

Sprint: Core Fluency (9 minutes)

Materials: (S) Core Fluency Sprint A, B, C, or D

Note: This activity continues students' progress toward mastery of the required fluency for kindergarten.

Decide on a core fluency skill in which students would benefit from extra practice: addition, subtraction, or mixed addition with subtraction within 5. Select the Sprint that is most appropriate for the class: Core Fluency Sprint A, B, C, or D in the materials that follow. In order to correct the work as a class, all students take the same Sprint.

T: It's time for a Sprint! (Briefly recall previous Sprint preparation activities, and distribute Sprints facedown.) Take out your pencil and one crayon, any color. (Demonstrate the first problem as needed.)

Continue to follow the familiar Sprint procedure. Have students work on the same Sprint a second time. Continue to emphasize that the goal is simply to do better than the first time and celebrate improvement.

Compose Teen Numbers (3 minutes)

Materials: (T) Hide Zero cards (optional)

Note: This maintenance activity ensures that students stay sharp on the work of the previous module.

T: (Show cards, or say the numbers 10 and 6.) Raise your hand when you can say the number the Say Ten way. (Wait for all hands to go up, then signal.) Ready?

- S: Ten 6.
 T: Now say it the regular way, please.
 S: 16.
 T: (If using Hide Zero cards, slide them together to form the number 16.)

Continue with the following sequence: 17, 18, 19, 13, 14, 15, 11, 12, 10, 20.

Variation: Students can write the number bond, or write two addition sentences on their personal boards.



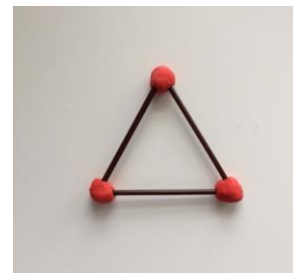
NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

As more shapes are introduced, be sure to put the shapes with pictures or models on the word wall. This will help English language learners study the names of the shapes and allow teachers to point to the shapes while talking about them, making a clear connection between the words and the meaning.

Concept Development (25 minutes)

Materials: (S) Approximately 15 coffee stir sticks, scissors, personal white board, small ball of clay

- T: Who can remind us about what we did in math class yesterday? Can you use your math words to tell us, in order, the steps that we took in our lesson?
- S: First, we cut our sticks. They were all the same length!
 → Second, we made flat shapes with them on our desks. → Third, we stuck the ends together with clay at the corners.
- T: That's right. We are going to make more flat shapes today. Yesterday, we made special rectangles that had equal sides. What did we call them?
- S: Squares.
- T: Today, use your sticks and your clay to create another type of rectangle, one that has corners like an L but whose sides are not all the same length.
- T: (Pause.) You may cut one or two of your sticks if you need to. (Allow time for students to plan and create the shape. Circulate to support students who may need further assistance.) Hold up your rectangles! How do you know they are rectangles?
- S: It looks like a square but the lengths of the sides are not the same!
 → It has two longer sides and two shorter sides. → I had to cut one of my sticks in half! → They have corners that look like an L. → It has four sides.
- T: Take three sticks that are the same length. Now use those sticks to make a closed shape with three straight sides. (Allow time for students to experiment.) Hold up your shapes. What do we call this shape?



MP.4

- S: It is a triangle!
- T: What if you take one of the sides of your triangle, cut it to be shorter and then put one of the pieces back into your shape? (Allow time for students to experiment.) What do you notice?
- S: It is still a triangle. → It just has one side that is shorter. → It looks pointier, but it still has three sides and three corners. → Two sides are the same length!
- T: Great job! With your partner, use your sticks and your clay to make several different flat shapes. You may cut the sticks to be any lengths you like. Be creative! (Allow ample time for student work. Encourage students to think about not only convex but also concave figures. Hold up any interesting examples you observe for extra inspiration. Again, if students ask, casually mention the names of created shapes they may not have studied yet.)
- T: Wow! You made a lot of different shapes! Would anyone like to show their favorite and tell the class about it? (Allow time for discussion.)
- T: With your ruler and your marker, try to copy each of your new shapes on your board.

Allow time for students to replicate their shapes on paper. Circulate to offer assistance to students who may still need help in keeping their rulers straight and still during construction. If time permits, allow students to turn and talk to their partners to describe the shapes they drew.



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Students with disabilities who might have difficulty with fine motor activities could benefit from using a geoboard and rubber bands to make different shapes or by allowing them to use interactive technology such as the one found at

http://www.glencoe.com/sites/common_assets/mathematics/ebook_assets/vmf/VMF-Interface.html.

(In the Select Grade drop-down menu, click Kindergarten. In the Manipulatives drop-down menu, click Geoboard/Bands.)

Problem Set (10 minutes)

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

Student Debrief (13 minutes)

Lesson Objective: Build flat shapes with varying side lengths and record with drawings.

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

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 2 Problem Set K•6

Name Ben Date 5-25-13

First, use a ruler to trace the shapes. Second, draw the shapes using your ruler following the directions in the box.

Draw 3 different triangles.

Draw 2 different rectangles.

Draw 1 hexagon.

COMMON CORE Lesson 2: Build flat shapes with varying side lengths and record with drawings. 10/10/13 engage^{ny} 6.A.9

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lesson.

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

- Look at all the triangles on your Problem Set. Tell your partner what they all have in common. Choose two triangles that are different. Tell your partner how they are different.
- Does a triangle need to be closed? Can it have gaps between the sides?
- I heard you say that all of the triangles are closed and have three sides and three corners. Do they all look the same? Tell your partner how many different looking triangles you think you could draw.
- When you made a shape with four straws and corners like an L, what did you call it? What did you call the special shape you made where all four straws were the same length?
- (Hold up a set of three equal straws and a set of three straws with different lengths.) If I asked you to make a triangle, which set of straws would you choose? Why?
- Look carefully at your flat shapes and at those of your peers. What are some ways we could sort them? (Take time to allow several iterations of shape-sorting with the students. Encourage them to be creative in their thinking. Apart from the number of sides, also guide them to think about attributes such as concave vs. convex, regular vs. irregular, etc.)

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 2 Problem Set K•6

$5 - 4 = \underline{1}$	$0 + 1 = \underline{1}$
$5 - 3 = \underline{2}$	$1 + 1 = \underline{2}$
$5 - 2 = \underline{3}$	$2 + 1 = \underline{3}$
$5 - 1 = \underline{4}$	$3 + 1 = \underline{4}$
$5 - 0 = \underline{5}$	$4 + 1 = \underline{5}$

$4 - 2 = \underline{2}$	$4 - 3 = \underline{1}$
$2 - 1 = \underline{1}$	$2 + 1 = \underline{3}$
$3 - 2 = \underline{1}$	$3 + 2 = \underline{5}$
$3 - 1 = \underline{2}$	$4 - 1 = \underline{3}$
$5 - 0 = \underline{5}$	$5 - 4 = \underline{1}$

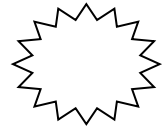
COMMON CORE Lesson 2: Build flat shapes with varying side lengths and record with drawings. Date: 10/28/13 engage^{ny} 6.A.10

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Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.

Number correct:



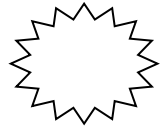
Name _____

Date _____

Write the missing number.

1	$2 + 1 =$ <input type="text"/>	11	<input type="text"/> $= 3 + 2$
2	$1 + 1 =$ <input type="text"/>	12	$1 + 3 =$ <input type="text"/>
3	$1 + 4 =$ <input type="text"/>	13	<input type="text"/> $= 2 + 2$
4	$3 + 1 =$ <input type="text"/>	14	<input type="text"/> $= 1 + 2$
5	$2 + 2 =$ <input type="text"/>	15	$1 + 4 =$ <input type="text"/>
6	$2 + 3 =$ <input type="text"/>	16	<input type="text"/> $= 2 + 3$
7	$1 + 2 =$ <input type="text"/>	17	<input type="text"/> $= 5 + 1$
8	$4 + 1 =$ <input type="text"/>	18	$5 + 2 =$ <input type="text"/>
9	$3 + 2 =$ <input type="text"/>	19	$1 + 0 =$ <input type="text"/>
10	$1 + 3 =$ <input type="text"/>	20	$5 + 0 =$ <input type="text"/>

Number correct:



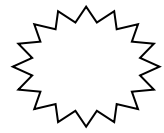
Name _____

Date _____

Write the missing number.

1	$2 - 1 = \square$	11	$\square = 4 - 2$
2	$4 - 1 = \square$	12	$5 - 3 = \square$
3	$5 - 1 = \square$	13	$\square = 3 - 1$
4	$3 - 1 = \square$	14	$\square = 5 - 2$
5	$3 - 2 = \square$	15	$4 - 1 = \square$
6	$4 - 2 = \square$	16	$\square = 5 - 4$
7	$5 - 3 = \square$	17	$\square = 5 - 1$
8	$5 - 2 = \square$	18	$6 - 1 = \square$
9	$4 - 3 = \square$	19	$1 - 0 = \square$
10	$5 - 4 = \square$	20	$5 - 5 = \square$

Number correct:



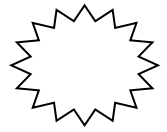
Name _____

Date _____

Write the missing number.

1	$2 + 1 =$ <input type="text"/>	11	$3 + 2 =$ <input type="text"/>
2	$2 - 1 =$ <input type="text"/>	12	$3 - 2 =$ <input type="text"/>
3	$3 + 1 =$ <input type="text"/>	13	$4 + 0 =$ <input type="text"/>
4	$3 - 1 =$ <input type="text"/>	14	$4 - 0 =$ <input type="text"/>
5	$4 + 1 =$ <input type="text"/>	15	$5 + 0 =$ <input type="text"/>
6	$4 - 1 =$ <input type="text"/>	16	$5 - 0 =$ <input type="text"/>
7	$1 + 1 =$ <input type="text"/>	17	$5 - 5 =$ <input type="text"/>
8	$1 - 1 =$ <input type="text"/>	18	$4 + 1 =$ <input type="text"/>
9	$2 + 2 =$ <input type="text"/>	19	$5 - 4 =$ <input type="text"/>
10	$2 - 2 =$ <input type="text"/>	20	$5 - 1 =$ <input type="text"/>

Number correct:



Name _____

Date _____

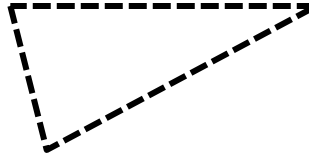
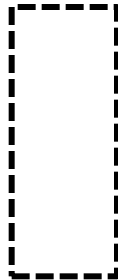
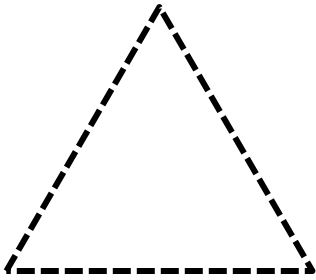
Write the missing number.

1	$2 + 1 = \square$	11	$\square = 1 + 2$
2	$4 + 1 = \square$	12	$5 + 0 = \square$
3	$5 - 1 = \square$	13	$\square = 3 - 1$
4	$3 + 1 = \square$	14	$\square = 2 + 2$
5	$3 + 2 = \square$	15	$4 - 1 = \square$
6	$4 - 2 = \square$	16	$\square = 5 - 4$
7	$5 - 3 = \square$	17	$\square = 5 - 1$
8	$5 - 2 = \square$	18	$3 + 0 = \square$
9	$2 + 3 = \square$	19	$1 - 0 = \square$
10	$5 - 4 = \square$	20	$5 - 5 = \square$

Name _____

Date _____

First, use a ruler to trace the shapes. Second, draw the shapes using your ruler following the directions in the box.



Draw 3 different triangles.

Draw 2 different rectangles.

Draw 1 hexagon.

$$5 - 4 = \underline{\quad}$$

$$5 - 3 = \underline{\quad}$$

$$5 - 2 = \underline{\quad}$$

$$5 - 1 = \underline{\quad}$$

$$5 - 0 = \underline{\quad}$$

$$0 + 1 = \underline{\quad}$$

$$1 + 1 = \underline{\quad}$$

$$2 + 1 = \underline{\quad}$$

$$3 + 1 = \underline{\quad}$$

$$4 + 1 = \underline{\quad}$$

$$4 - 2 = \underline{\quad}$$

$$2 - 1 = \underline{\quad}$$

$$3 - 2 = \underline{\quad}$$

$$3 - 1 = \underline{\quad}$$

$$5 - 0 = \underline{\quad}$$

$$4 - 3 = \underline{\quad}$$

$$2 + 1 = \underline{\quad}$$

$$3 + 2 = \underline{\quad}$$

$$4 - 1 = \underline{\quad}$$

$$5 - 4 = \underline{\quad}$$

Name _____

Date _____

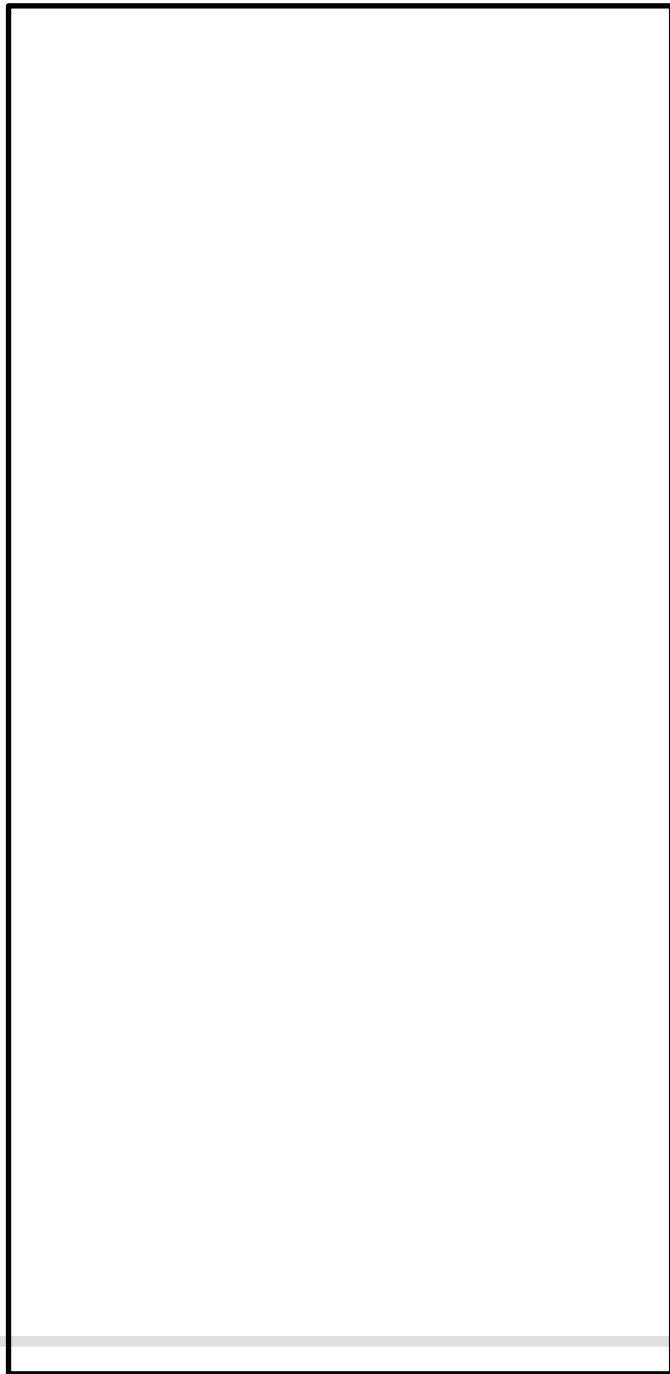
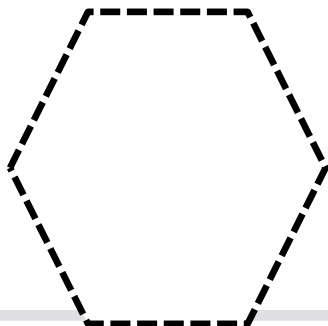
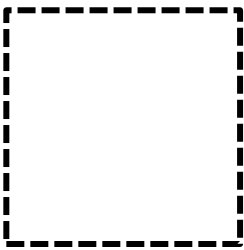
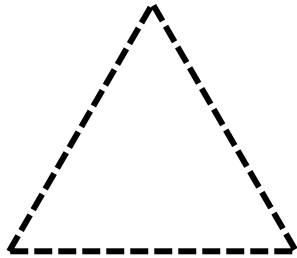
First, draw a triangle so all of the sides are different lengths.

Second, draw a triangle with your ruler that has 2 sides that are about the same length.

Name _____

Date _____

Trace the shapes. Then use a ruler to draw other related shapes on your own in the large rectangle. Draw more shapes on the back of your paper if you would like!



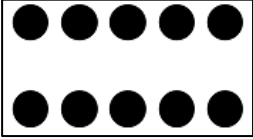



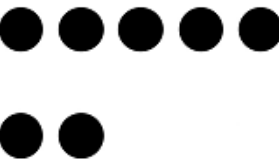
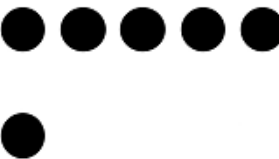


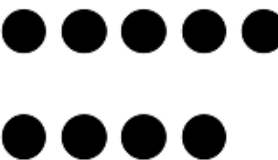
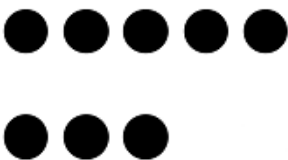
Hide Zero Cards. Copy double-sided.

Numerals

1	0		
0	1	2	3
4	5	<u>6</u>	7
8	<u>9</u>		

Hide Zero Cards. Copy double-sided.

5-groups

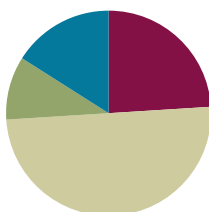
			
			
			
			

Lesson 3

Objective: Compose solids using flat shapes as a foundation.

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)

- Color by Answer Addition **K.OA.5** (6 minutes)
- Color by Answer Subtraction **K.OA.5** (6 minutes)

Color by Answer Addition (6 minutes)

Materials: (S) Copies of the Fluency Problem Set, crayons

Note: This activity gives students an opportunity to practice the core fluency of addition within 5, and calls students' attention to the patterns within the chart.

After giving clear instructions and demonstrating a few problems as needed, allow students time to work independently. Early finishers can analyze the patterns they see within the chart.

Color by Answer Subtraction (6 minutes)

Materials: (S) Copies of the Fluency Problem Set, crayons

Note: This activity gives students an opportunity to practice the core fluency of subtraction within 5, and calls students' attention to the patterns within the chart.

Conduct as above.

Application Problem (5 minutes)

Materials: (S) Geoboard and rubber bands per pair (or dot paper, markers, ruler if geoboards are not available)

You have a challenge today! Work with your partner. On your geoboard, make a shape with three sides. Now leave your shape on your board and let your partner make a three-sided shape as well. Do they look the same? Name the shapes.

Now make a shape with four sides. Have your partner make another four-sided shape. Do they look alike? Name the shapes.

Try it with five sides! Then, six! How far can you and your partner go?

Note: Reviewing the construction of a variety of flat shapes will serve as the anticipatory set for extending a flat shape into a solid in today's lesson.



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Below grade level students, as well as students with disabilities, will benefit from extra practice creating a variety of three- and four-sided shapes. Give them extended time with a geoboard, or make time for using interactive technology as that found at <http://www.mathlearningcenter.org/web-apps/geoboard/>.

Concept Development (25 minutes)

Materials: (T) Set of geometric solids (S) Student squares from GK–M6–Lesson 1, 12 coffee stir sticks, small ball of clay

Part 1: Review the attributes and names of solids.

T: (Hold up each solid as a review exercise.) What do we call this solid?

S: A cone!

T: How did you know?

S: It looks like an ice cream cone. → It looks like the orange cones in the lunch area.

T: What is special about a cone? Talk to your partner.

S: It has a circle on the bottom. → It rolls funny, not in a straight line like a ball. → It kind of looks like a triangle when you look at it from the side. → It's flat on the bottom, smooth, and round in the middle and pointy on the top.



Continue reviewing the other solids, asking students to explain how they knew the name of the solid and to describe its attributes.

Part 2: Construct a cube.

T: In our last lesson you made some great shapes out of your straws! I want to use some of the squares you constructed to make a new shape like one of our solids. Does anyone have any ideas?

S: Maybe we could make something like a cube! → You could use one square to be on the bottom like the floor of a room. → Some of the others could be like the faces. We need one for the top, too.

T: Look at the cube we already have. (Hold it up.) How many squares will I need to use? Let's count together.

S: 1, 2, 3, 4, 5, 6.

T: Let's use this one as the bottom of the cube. Now, I will use some of your other squares for the

MP.7

sides. (Demonstrate.) What does it look like now?

S: It looks like a box. → It is still open, though.

T: What if I trace one of the squares on my paper and cut it out? (Demonstrate.) I will attach it to one of the squares. (Cover one side of the skeleton with the paper to create a face and hold the shape up for observation.) What do you notice?

S: It fits. → We still need more faces to close it up!

T: I will trace and cut some more. (Demonstrate with the remaining 5 faces to create a cube.)

T: Let's double-check. How many faces do we have? First let's count the faces on the top and bottom. Say what we are counting.

S: (Point and touch.) 1 face, 2 faces.

T: Second, let's count the ones around the middle. This is our third face so start at the number?

S: 3!

T: Go.

S: 3 faces, 4 faces, 5 faces, 6 faces.

T: Have we counted all of the faces? Did we miss any? How many faces are there on the cube?

S: 6 faces.

T: Now count the edges for me. First we'll count the ones on the bottom. I'll start with this one.

S: (Touch as they count.) 1 edge, 2 edges, 3 edges, 4 edges.

T: Second, let's count the edges in the middle. Start at the number after 4.

S: 5 edges, 6 edges, 7 edges, 8 edges.

T: Third, let's count the ones at the top. How many edges have we counted so far?

S: 8.

T: So, the next edge we count will be number...?

S: 9!

T: Count when I touch.

S: 9 edges, 10 edges, 11 edges, 12 edges.

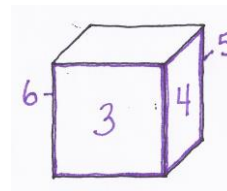
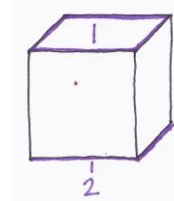
T: Are there any more edges?

S: No!

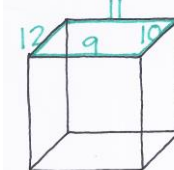
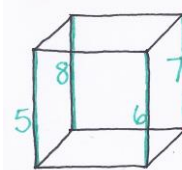
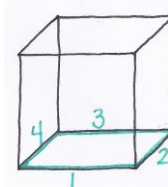
T: Tell your partner how we counted. What did we do first, second, and third?

S: First, we counted the edges on the bottom. Second, we counted the ones in the middle. And third, we counted the edges on the top.

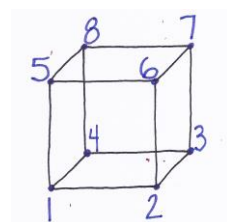
T: Let's count them once more without stopping and without saying what we are counting.



Counting Faces



Counting Edges

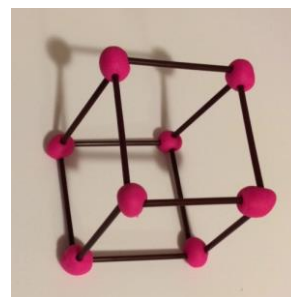


Counting Corners

MP.7

MP.7

- S: (Touch systematically as students count.) 1, 2, ...11, 12.
- T: Now count the corners. (Repeat the same process with the corners, having them count the corners on the bottom and then the top, saying what they are counting.)
- T: It is time to make a shape like this on your own. Begin by making a square out of your straws for the bottom. Make another one for the top, too. (Allow time for students to work.)
- T: What do we need now?
- S: We need to make the edges. Let's stick straws into the corners of our bottom squares so they are poking up. → They will look like table legs. → Then we can put on the top!
- T: Please finish your shapes. (Allow time for students to construct the shape. Circulate to observe understanding and offer support as necessary.)
- T: You have made wonderful shapes! Hold them up. What do you notice about them?
- S: They look like little boxes! → They are the same on every side.
- T: Work with your partner to count the faces, edges, and corners of your pretend cube like we did earlier.
- T: (Circulate and support the counting, which is challenging for kindergarten students.) What shapes are the invisible faces?
- S: They are all squares.
- T: I wonder what would happen if we put two of these shapes together. With your partner, see what you can create if you use more than one.
- S: Now ours is taller, like a building! → Ours looks like a train.
- T: What are the shapes of the new invisible faces?
- S: Squares. → Rectangles!
- T: Wait for my signal. How many corners do you have now? Count them using our system. (Signal and give students sufficient time to count.)
- S: 8 corners.
- T: How many faces? (Give students time to count.)
- S: 6 faces!
- T: How many edges? (Give students time to count.)
- S: 12 edges!
- T: Great work. Take a minute to compare your new shape with another pair's.
- S: (Compare shapes.)



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: Compose solids using flat shapes as a foundation.

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 many squares did you trace on your Problem Set before you started cutting? What did you have to do to make a cube out of all the squares you traced?
- What two shapes did you trace to make your cylinder? (Circle and rectangle.) What happened to the rectangle when you cut and folded the paper to make the cylinder? Could we say that a rectangle is a face of a cylinder? Why or why not? (No. Faces are flat. Once we roll up the rectangle to make a cylinder, it is no longer flat.) What about the circle? Is a circle a face of the cylinder?
- When you counted the faces of your cube, how did you keep track of your count? How did you make sure that you didn't count any face twice?
- Describe a cube to me. Tell me about its faces, edges, and corners.
- Describe a cylinder to me. Tell me about its faces, edges, and corners.

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.

Name _____ Date _____

Add. Color the blocks using the code for the total.

1-RED

2-ORANGE

3-YELLOW

4-GREEN

5-BLUE

$0 + 1$	$1 + 1$	$2 + 1$	$3 + 1$	$4 + 1$
$0 + 2$	$1 + 2$	$2 + 2$	$3 + 2$	
$0 + 3$	$1 + 3$	$2 + 3$		
$0 + 4$	$1 + 4$			
$0 + 5$				

Name _____ Date _____

Subtract. Color the blocks using the code for the difference.

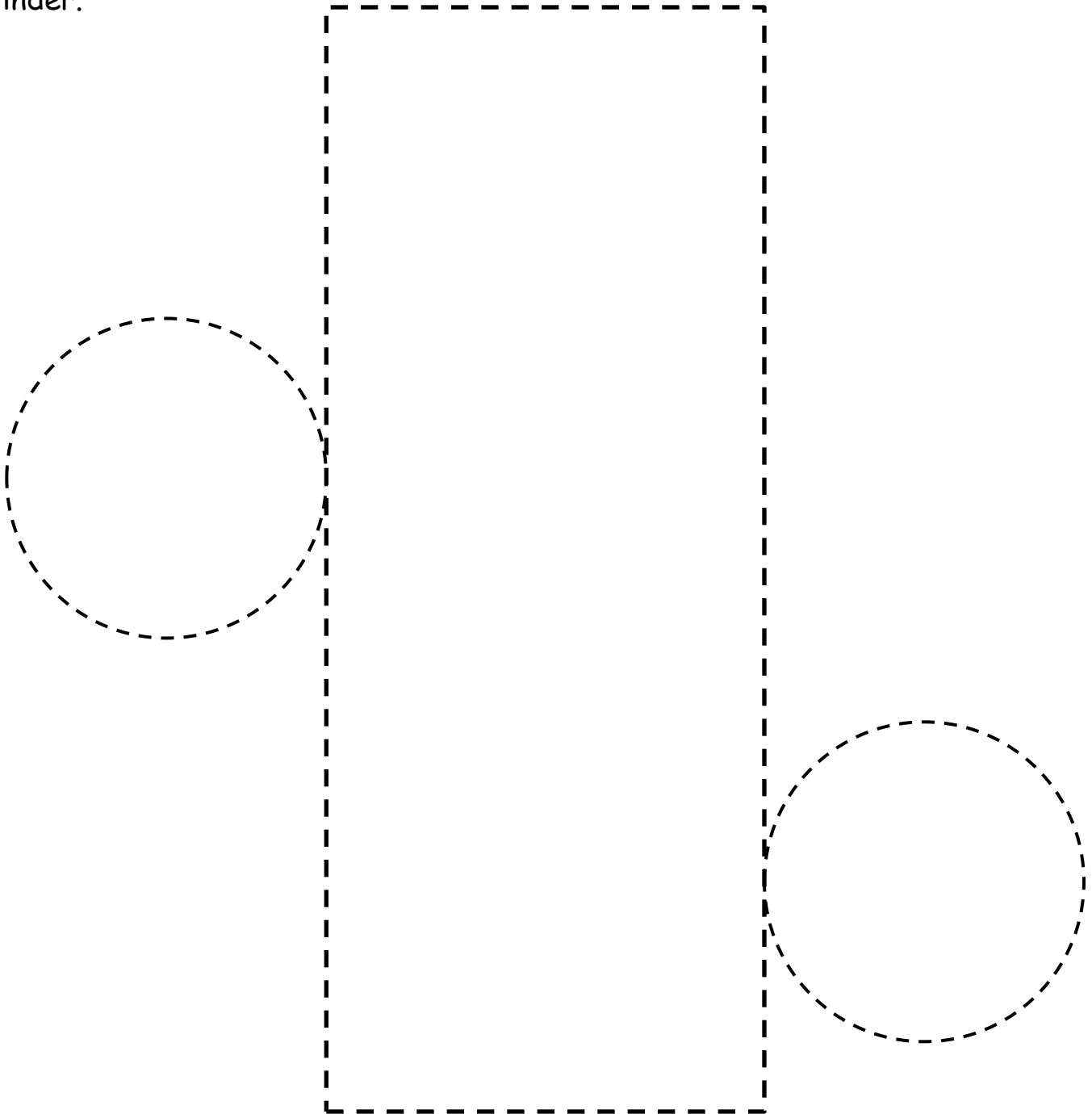
0-PURPLE	1-RED	2-ORANGE	3-YELLOW
4-GREEN	5-BLUE		

1 - 0	2 - 0	3 - 0	4 - 0	5 - 0
1 - 1	2 - 1	3 - 1	4 - 1	5 - 1
	2 - 2	3 - 2	4 - 2	5 - 2
		3 - 3	4 - 3	5 - 3
			4 - 4	5 - 4
				5 - 5

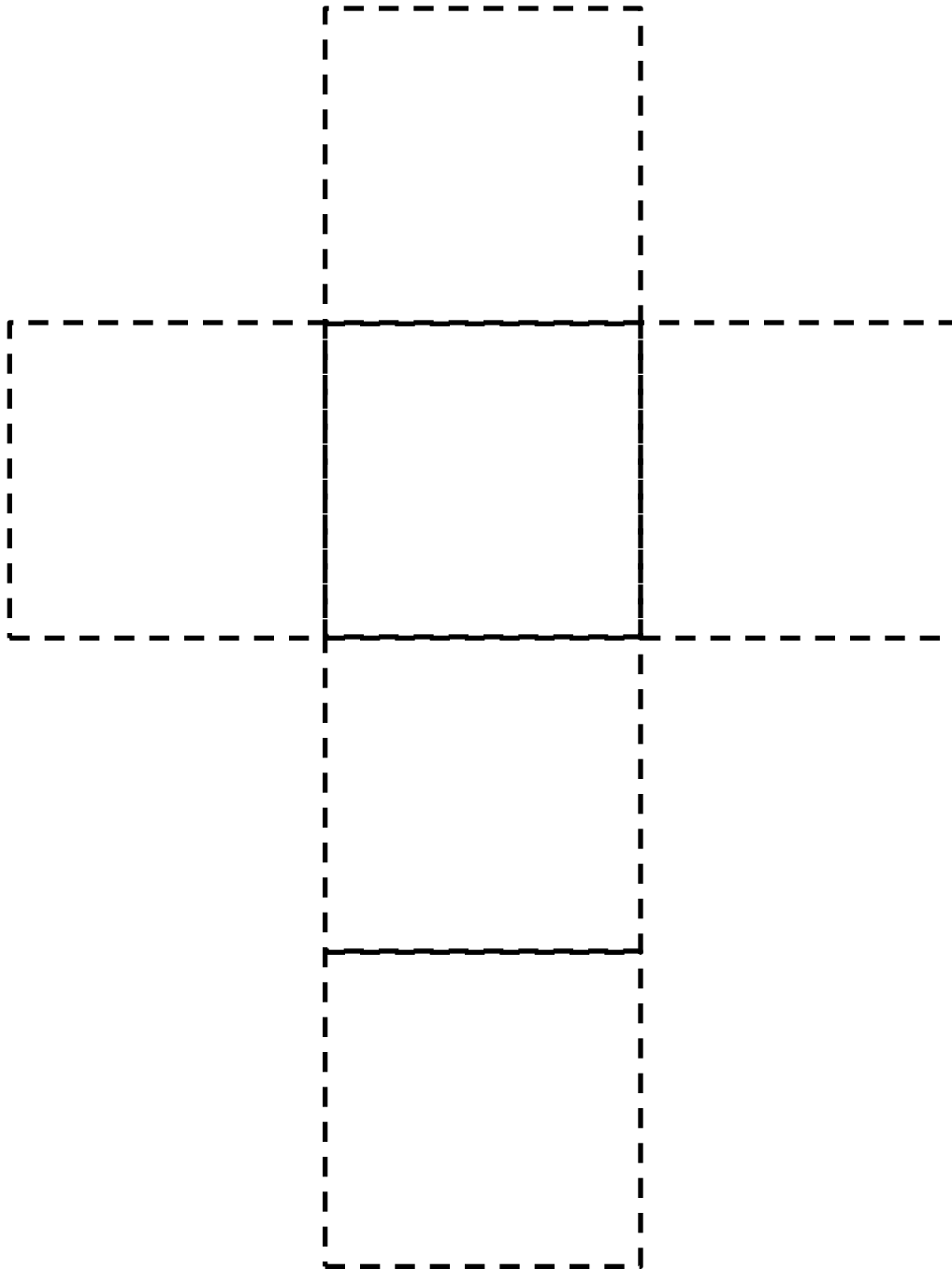
Name _____

Date _____

Trace the circles and rectangle. Cut out the shape. Fold and tape to create a cylinder.



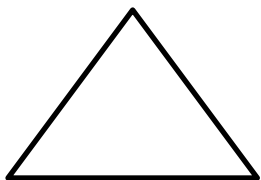
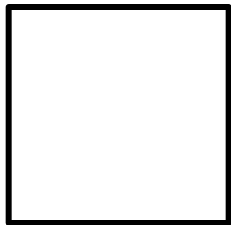
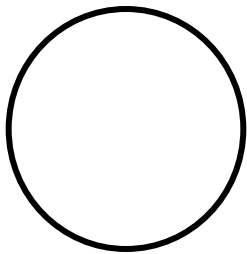
Trace the squares. Cut out the shape. Fold and tape to create a cube.



Name _____

Date _____

Draw a line from the flat shape to the object that has a face with that flat shape.



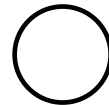
Name _____

Date _____



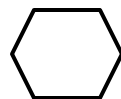
Draw something that is a cylinder.

Circle the flat shape you can see in a



Draw something that is a cube.

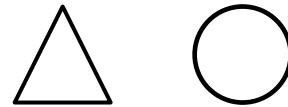
Circle the flat shape you can see in a





Draw something that is a cone.

Circle the flat shape you can see in a .



Draw a 3-dimensional solid. Draw one of your solid's faces. Tell an adult about the shapes you drew.

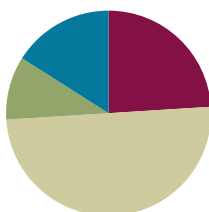
Note to Family Helpers: Your student knows how to name some three-dimensional solids: cylinders, cones, cubes, and spheres. You can often find these 3D shapes around the house in objects like soup cans, ice cream cones, boxes, and balls. For the last question, it is acceptable for your student to find and draw a different type of three-dimensional solid. Talk about the number of edges, corners, and faces on the object.

Lesson 4

Objective: Describe the relative position of shapes using ordinal numbers.

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)

- Rekenrek Counting to 100 **K.CC.1** (4 minutes)
- Make a Shape to Find Hidden Numbers in 4 **K.OA.1, K.G.6** (4 minutes)
- Make a Shape to Find Hidden Numbers in 5 **K.OA.1, K.G.6** (4 minutes)

Rekenrek Counting to 100 (4 minutes)

Materials: (T) 100-bead Rekenrek (preferably one that shows the color change at 50)

Note: This activity promotes proficiency in counting to 100 by tens (**K.CC.1**) and lays the foundation for understanding place value.

T: Let's count the Say Ten way. Ready?

S: (Slide the beads back and forth as students count up and down.) Ten, 2 tens, 3 tens, 2 tens, 3 tens, 4 tens, 5 tens, 6 tens, 5 tens, 6 tens, 5 tens, 6 tens, 7 tens, 8 tens, 9 tens, 8 tens, 9 tens, 10 tens.

T: 10 tens is the same as...

S: 100!

T: Now let's count the regular way. Ready?

Use a sequence similar to that used in counting the Say Ten way, with extra attention to the transition from 50 to 60.

T: Wow! You're getting good at counting both ways. Now let's mix it up. Start counting the Say Ten way, but then be ready to switch to the regular way.

S: Ten, 2 tens, 3 tens.

T: Stop! 3 tens the regular way is...

S: 30!

T: Keep counting the regular way.

- S: 40, 50, 60....
 T: Stop! 60 the Say Ten way is...
 S: 6 tens!
 T: Keep going the Say Ten way.
 S: 7 tens, 8 tens, 9 tens....
 T: Stop! 9 tens the regular way is...
 S: 90!
 T: Say the next number the regular way.
 S: 100!

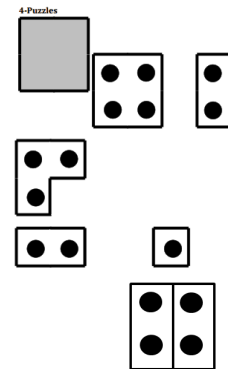
Count back down to 0, alternating periodically between both ways of counting. If students are ready for a challenge, use more of a wave style sequence.

Make a Shape to Find Hidden Numbers in 4 (4 minutes)

Materials: (S) 4-dot puzzle cards (pictured below), plus extra 1-dot and 2-dot pieces per student

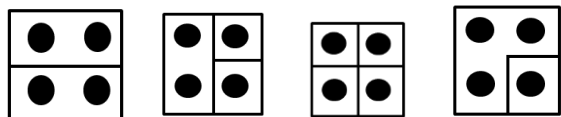
Note: This activity combines students' knowledge of embedded numbers and part-whole thinking, and previews composition of shapes.

- T: (Distribute the 4-dot array card.) Raise your hand when you know how many dots. Ready?
 S: 4.
 T: Raise your hand when you know the name of this shape. Ready?
 S: Square.
 T: Very good. We're going to use puzzle pieces to make a square, and at the same time, show different ways to make 4. Here is one way you could do it.
 T: How many dots are on this puzzle piece? (Hold up one of the 2-dot rectangle pieces.)
 S: 2.
 T: And on this one? (Hold up the other 2-dot rectangle.)
 S: 2.
 T: On the whole puzzle? (Replace the piece and point to indicate the entire puzzle.)
 S: 4.
 T: So then, what numbers are hiding in 4?
 S: 2 and 2.
 T: What shapes did I use to make the square?
 S: 2 rectangles.
 T: Do you see other puzzle pieces I could use to make a square that has 4 dots?
 S: Yes!
 T: Give it a try! (Distribute additional pieces and allow students to work for some time, then allow



them to confer with a partner. Circulate and ask students to identify the hidden numbers in 4, and the name and quantity of the shapes they used to compose the square.)

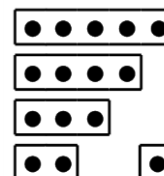
More possibilities:



Variation: Have students work with a friend to make a rectangle that is not a square.

Make a Shape to Find Hidden Numbers in 5 (4 minutes)

Materials: (S) 5-dot puzzle cards (pictured at right), plus extra 1-dot and 2-dot pieces per student



Repeat the process laid out in the previous activity, but this time use the 5-dot puzzle cards.

Invite students to combine puzzle pieces with up to four friends to have fun making numbers to 20.

Application Problem (5 minutes)

Materials: (S) Personal white boards

- First, draw 3 three-sided shapes on your board.
- Second, draw 4 four-sided shapes on your paper.
- Third, draw a number bond and write a number sentence to tell how many shapes you have in all.

Share your work with your partner. Do your shapes look the same? Do your number bonds look the same? How about your number sentences?

Note: Today's Application Problem serves as a link among the ordinal number discussions, shape constructions, number bonds, and number sentences. It serves as a review of some of the concepts from earlier modules as well as providing the anticipatory set for today's lesson.



NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Break the third step into smaller steps for students working below grade level. Ask, "How many three-sided shapes? How many four-sided shapes? How many altogether?" They can also work directly on a number bond template.

Concept Development (25 minutes)

Materials: (S) Shape template, scissors

T: How many shapes do you see on your paper? Raise your hand when you know. Call it out at my signal! (Wait until most hands are raised and then signal.)

S: 10!

- T: Cut out your shapes on the dotted lines and put them on your desk. (Allow students time to cut.)
- T: Make a row out of your shapes. Now, rearrange your shapes so that the first shape from the left is a circle. (If necessary, review left and right.) Make your second shape the smaller triangle. Keep your row straight! Now arrange it so that your third shape is a circle with a chunk missing. Share with your partner. What is the next shape in your row?
- S: It is a heart. → Mine is a square. → Mine is a different triangle.
- T: Student A, count your shapes starting from the left, stopping at the cross.
- S: 1, 2, 3, 4.
- T: You stopped at shape number 4. We would say that the heart is your fourth shape!
- T: Tell your partner your fourth shape. Use the words, "My fourth shape is _____."
- S: (Do so.)
- T: Student B, what is the last shape in your row?
- S: Mine is the big triangle.
- T: Student B, count your shapes starting from the left and stopping at the big triangle.
- S: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.
- T: Tell your partner what your tenth shape is. Use the words, "My tenth shape is _____."
- S: My tenth shape is the one that looks like the outside of a can. → My tenth shape is the heart.
- T: Mix up all of your shapes again.
- T: This time, we are going to make a column of your shapes. Our columns will all be the same, so listen carefully.
- Make the first shape, the one at the top of your column, a square.
 - Second, the large triangle.
 - Third, a cross.
 - Fourth, a circle.
 - Fifth, a heart.
 - Sixth, the hexagon.
 - Seventh, the circle with a chunk out of it.



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Challenge students performing above grade level by giving them an opportunity to call out an arrangement of shapes using ordinal numbers. Explain what they are to do clearly, e.g., "call out different shapes by saying, for instance, first put your square on the table, put your triangle second in the row, etc.," and let them lead the game for the whole class in small groups.



MP.6

MP.6

- Eighth, the small triangle.
- Ninth, the diamond.
- Tenth, the one that looks like part of a can.

T: Start at the top of your column and count down 5 shapes. What is your fifth shape? Use the words, “My fifth shape is _____.”

S: My fifth shape is a heart.

T: Count from the top and then put your finger on the last shape in your column. How many shapes did you count?

S: 10.

T: Yes, your finger is on your tenth shape. What is your tenth shape? Use your words.

S: My tenth shape is the one that looks like a can.

Continue practicing this way until students demonstrate an understanding of the relationship between the positions of the shapes and the resulting ordinal descriptions.

T: We are going to play Simon Says with your shapes. Simon says, make a row of shapes. Simon says, make your sixth shape a heart. Simon says, make your ninth shape a square. Simon says, make sure that your first shape is a triangle. Put your finger on the third shape.

S: You didn’t say Simon Says!

Continue the game in this manner, monitoring accuracy and allowing students to gain fluency in identifying the ordinal positions in preparation for the Problem Set.

T: Turn to your partner and tell him about your column of shapes. Use your math words to describe the position of each shape in the line.

S: My first shape is a circle. My second shape is a heart. My third shape is a circle with a chunk missing. (Continue through to tenth.)

Circulate to observe the conversations and to encourage precision in the language.

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: Describe the relative position of shapes using ordinal numbers.

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.

- Tell your partner how you marked the second, fifth, and ninth truck. Did you start counting from the beginning each time or did you count on each time you were marking the next truck?
- Look at the next problem with the vehicles. Could you use the counting on strategy this time? Why or why not? (In the first problem the students were asked to mark the trucks in sequential order; in this next problem they are asked to mark the vehicles out of order.)
- What's different about the line of horses and the first two problems we did with the vehicles? (All the horses are exactly the same.) Did that make it easier or harder to find the one to mark?
- Today we talked about standing up *first* and then about putting a shape *first* in the row. How are those ideas similar? How are they different? Is it fair to use first in both of those sentences?

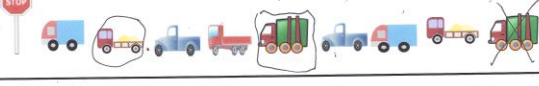
Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.

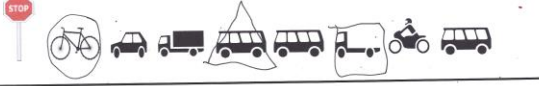
NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 4 Problem Set K•6

Name Adam Date 5-27-14


Circle the 2nd truck from the stop sign. Draw a square around the 5th truck. Draw an X on the 9th truck.



Draw a triangle around the 4th vehicle from the stop sign. Draw a circle around the 1st vehicle. Draw a square on the 6th vehicle.



Put an X on the 10th horse from the stop sign. Draw a triangle around the 7th horse. Draw a circle around the 3rd horse. Draw a square around the 8th horse.

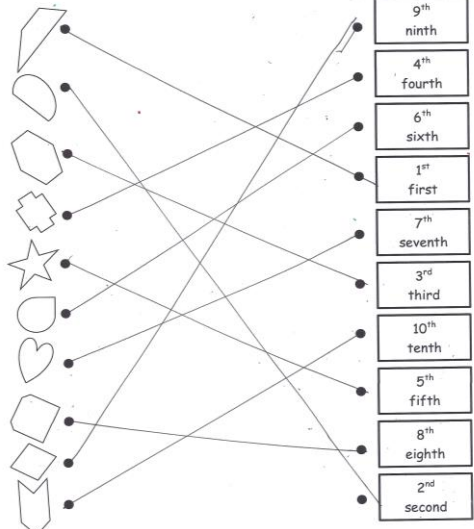


COMMON CORE Lesson 4: Describe the relative positions of shapes using ordinal numbers. 10/18/13 engage^{ny} 6.A.6

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NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 4 Problem Set K•6

Draw a line from the shape to the correct ordinal number starting at the top.



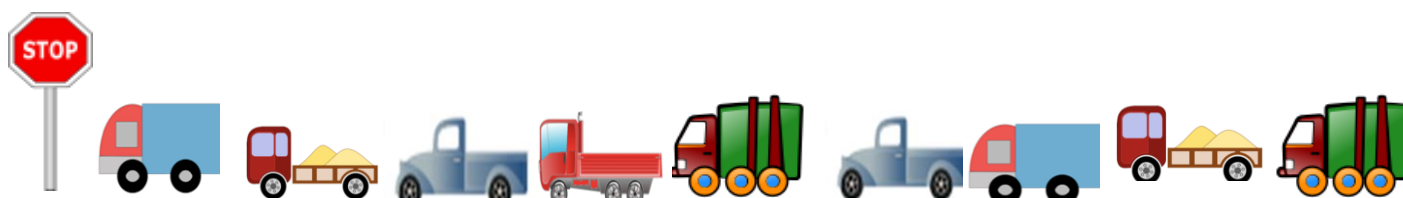
COMMON CORE Lesson 4: Describe the relative positions of shapes using ordinal numbers. 10/18/13 engage^{ny} 6.A.7

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Name _____

Date _____

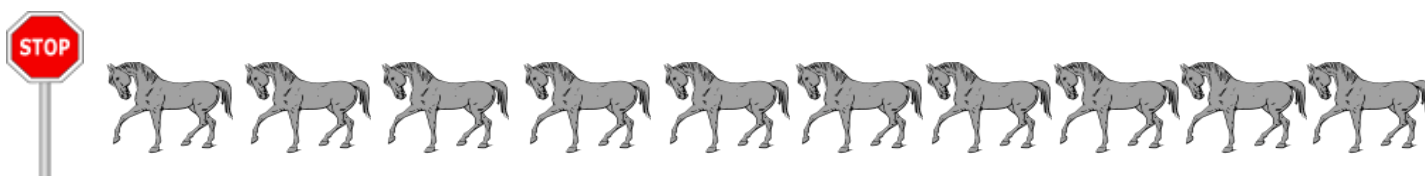
Circle the 2nd truck from the stop sign. Draw a square around the 5th truck.
Draw an X on the 9th truck.



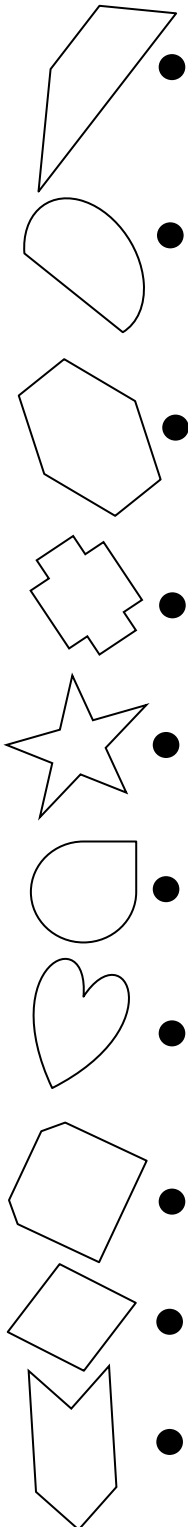
Draw a triangle around the 4th vehicle from the stop sign. Draw a circle around the 1st vehicle. Draw a square on the 6th vehicle.



Put an X on the 10th horse from the stop sign. Draw a triangle around the 7th horse. Draw a circle around the 3rd horse. Draw a square around the 8th horse.



Draw a line from the shape to the correct ordinal number, starting at the top.



- 9th
ninth
- 4th
fourth
- 6th
sixth
- 1st
first
- 7th
seventh
- 3rd
third
- 10th
tenth
- 5th
fifth
- 8th
eighth
- 2nd
second

Name _____ Date _____

Listen to the directions. Start at the circle when counting.

Color the 5th shape red.

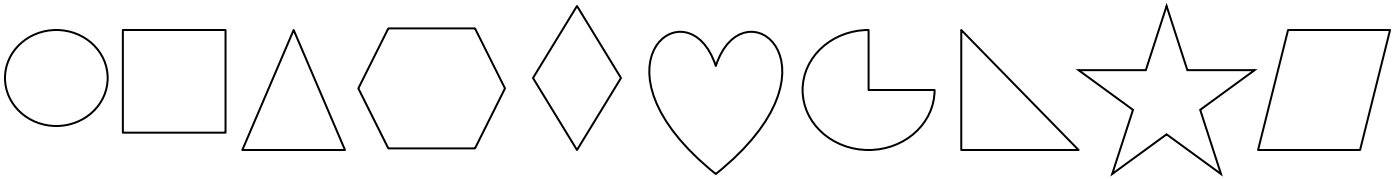
Color the 2nd shape green.

Color the 10th shape yellow.

Color the 7th shape blue.

Color the 1st shape pink.

Color the 8th shape orange.



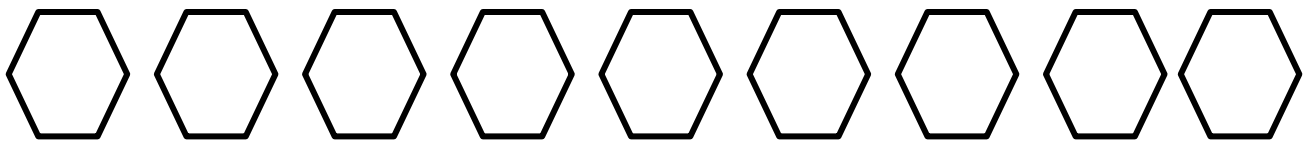
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Date _____

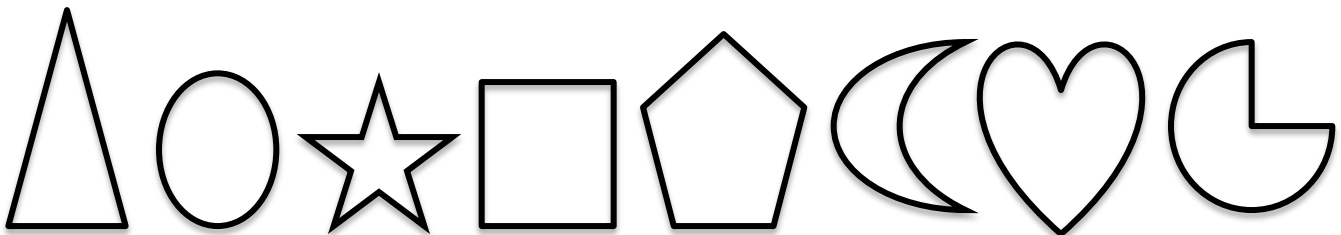
Color the 1st ☆ red.
 Color the 3rd ☆ blue.
 Color the 5th ☆ green.
 Color the 8th ☆ purple.



Put an X on the 2nd shape.
 Draw a triangle in the 4th shape.
 Draw a circle around the 6th shape.
 Draw a square in the 9th shape.



Draw a circle in the 7th shape.
 Put an X on the 1st shape.
 Draw a square in the 5th shape.
 Draw a triangle in the 3rd shape.



Match each animal to the place it finished the race.

4
fourth

2
second

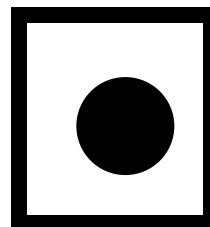
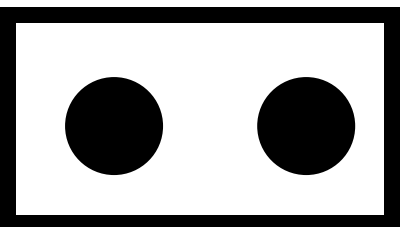
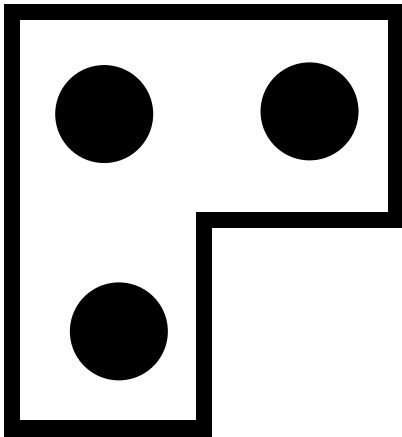
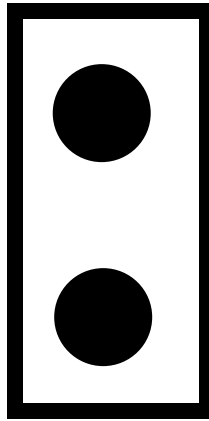
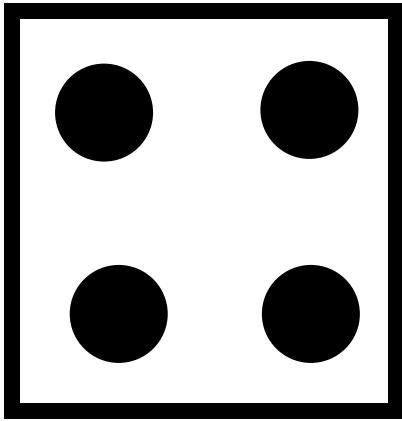
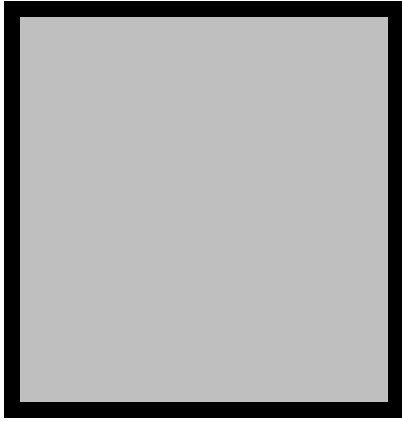
1
first

3
third

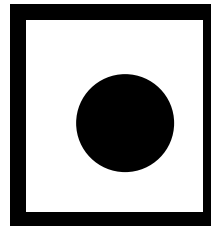
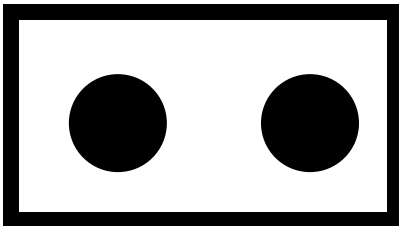
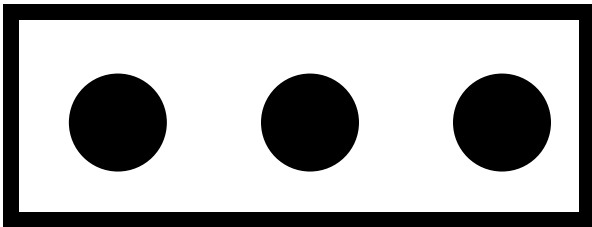
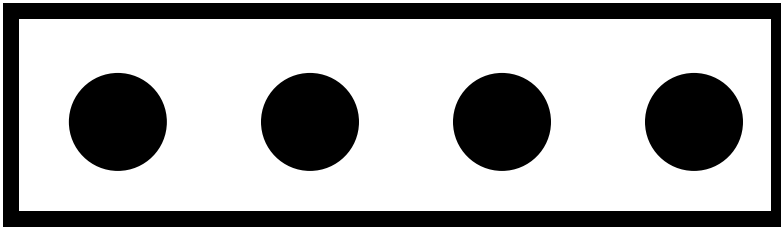
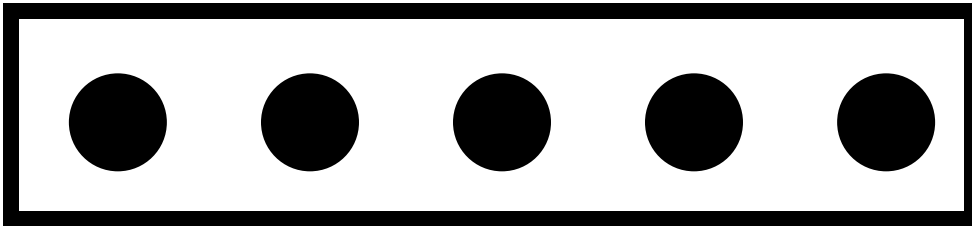
6
sixth

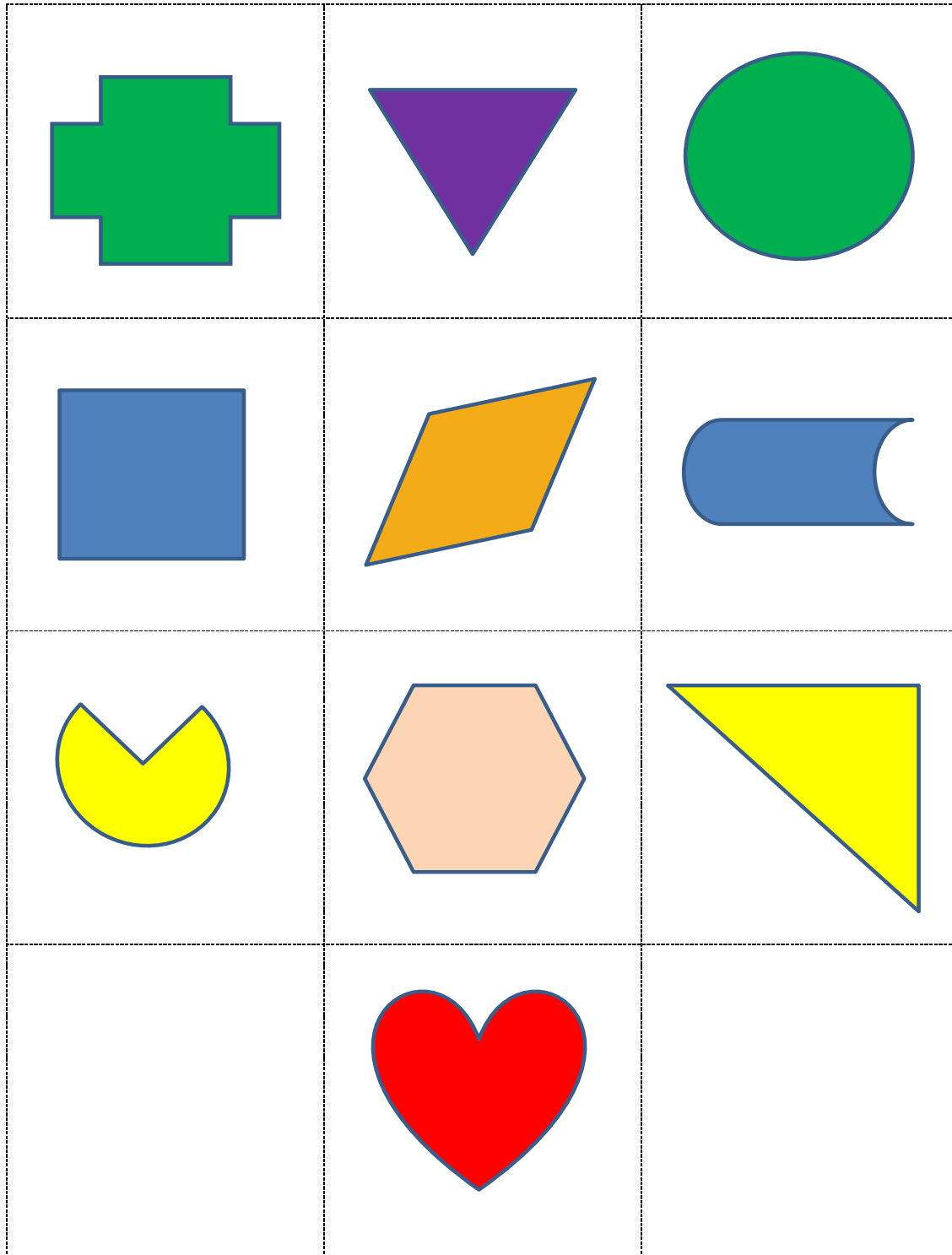
5
fifth

4-Dot Puzzles



5-Dot Puzzles





Topic B

Composing and Decomposing Shapes

K.G.6, K.G.1, K.G.4

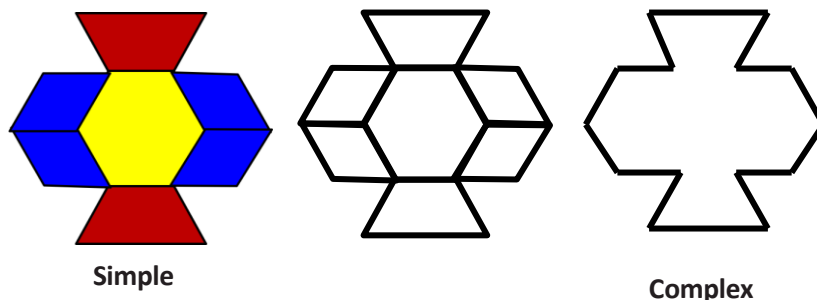
Focus Standard:	K.G.6	Compose simple shapes to form larger shapes. <i>For example, “Can you join these two triangles with full sides touching to make a rectangle?”</i>
Instructional Days:	4	
Coherence -Links from:	GPK–M2	Two-Dimensional and Three-Dimensional Shapes
-Links to:	G1–M5	Identifying, Composing, and Partitioning Shapes

Thus far students have considered shapes independently, rather than in conjunction with other shapes. Topic B expands students’ thinking about shape by introducing the notion that simple shapes can be combined to compose larger shapes (**K.G.6**). This supports *A Story of Units’* overarching theme, that smaller units can be used to make a larger unit. “These two triangles make a square! These two squares make a rectangle!”

In Lesson 5, students use pattern blocks as templates to compose other shapes and pictures. For example, they make a rectangle from two squares and use a square and a triangle to make a pentagon or “house” shape.

Lesson 6 has students explore how to decompose a flat shape into two or more flat shapes. For example, students find that a rectangle can be decomposed into two triangles, two squares, or even a square and two smaller rectangles. Students record their explorations by drawing the hidden shapes within a larger shape. The Problem Set extends puzzle work as students combine shapes to complete pattern block templates of increasing complexity (see Geometry progressions document, p. 7).

This leads into Lesson 7 wherein students cut a square to form simple three-piece puzzles and intuitively use geometric motions such as flips, turns, and slides as they work to solve one another’s puzzles. Lesson 8 hosts the Math Olympics, a culminating task that celebrates student learning from the whole year. Students complete tasks related to measurement, operations, and geometry.



A Teaching Sequence Towards Mastery of Composing and Decomposing Shapes

Objective 1: Compose flat shapes using pattern blocks and drawings.
(Lesson 5)

Objective 2: Decompose flat shapes into two or more shapes.
(Lesson 6)

Objective 3: Compose simple shapes to form a larger shape described by an outline.
(Lesson 7)

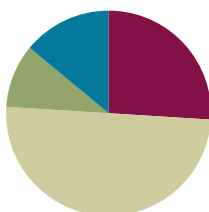
Objective 4: Culminating task—review selected topics to create a cumulative year-end project.
(Lesson 8)

Lesson 5

Objective: Compose flat shapes using pattern blocks and drawings.

Suggested Lesson Structure

■ Fluency Practice	(13 minutes)
■ Application Problem	(5 minutes)
■ Concept Development	(25 minutes)
■ Student Debrief	(7 minutes)
Total Time	(50 minutes)



Fluency Practice (13 minutes)

- Sprint: Core Fluency **K.OA.5** (9 minutes)
- Finish Line **K.CC.4d** (4 minutes)

Sprint: Core Fluency (9 minutes)

Materials: (S) Core Fluency Sprint A, B, C, or D from GK–M6–Lesson 2

Note: This activity continues students' progress toward mastery of the required fluency for kindergarten.

Decide on a core fluency skill in which students would benefit from extra practice: addition, subtraction, or mixed addition with subtraction within 5. Select the Sprint that is most appropriate for the class from the Core Fluency Sprints in GK–M6–Lesson 2.

Follow the procedure outlined in GK–M6–Lesson 2.

Finish Line (4 minutes)

Materials: (T/S) Personal white board (turned to landscape orientation), 10 linking cubes

Note: This activity gives students practice in using ordinal numbers to describe relative position.

- T: (Distribute linking cubes as 10-sticks.) How many cubes do you have? (Give students time to count if necessary.)
- S: 10.
- T: Pretend that your 10-stick of cubes is a little train. (Have students orient their trains the same way by giving them a point of reference in the classroom.) Put your finger on the first cube.
- S: (Touch the first cube.)
- T: Let's use our number order words as we touch each cube. Ready?

- S: First, second, third, fourth, fifth, sixth, seventh, eighth, ninth, tenth.
- T: Good. Now break apart your cubes so none are connected. (Give students a moment to do this.) This time I want you to pretend that they are little people running in a race! The start line is the edge of your personal board. The finish line is the opposite side of your board. Watch me make my people run. (Demonstrate how to make cubes run.)
- T: On your mark, get set, go!
- S: (Move the cubes around as if running.)
- T: Stop! The race is over. (Do not allow students to change the position of the cubes at this point.) Get out your marker. Listen carefully to what I want you to do. Circle the first runner.
- S: (Circle the cube that is closest to the finish line.)
- T: Make an X next to the tenth runner.
- S: (Make an X next to the cube that is farthest from the finish line.)
- T: Underline the fifth runner.
- S: (Underline the fifth cube.)
- T: Now point and show your partner who is first, second, and so on.

Have students clear their boards and play again alone or with a partner. Give instructions to mark different ordinal positions each time.

Have students change the location of the finish line so that they can describe the position of the runners relative to it.

Application Problem (5 minutes)

Materials: (S) Personal white boards

Listen carefully to my instructions. You are going to draw a house!

- First, draw a square to make the big part of your house.
- Second, use a triangle to make a roof.
- Third, use a shape of your choice for a door.
- Fourth, find somewhere in your picture where you can use two more squares or rectangles.
- Fifth, use a circle somewhere in your scene.
- Sixth, find a place where you could draw a hexagon in your scene.



NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Because drawing might present a further challenge, below grade level students and those with disabilities would benefit from using manipulatives to create a house. Provide attribute blocks or pattern blocks to make the house as the first step toward drawing the shapes on personal white boards.

Take another minute to finish your scene with more shapes and details. Don't forget to draw yourself!

Now show your picture to your partner. Tell her about each of your shapes. Do your houses look alike? How did you use shapes differently in your pictures?

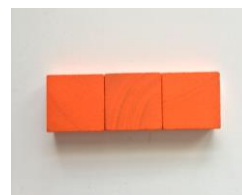
Note: The activity of creating a scene using a number of assigned shapes is an opportunity for students to

practice drawing the shapes. It also will serve as an anticipatory set for composition with shapes in today's lesson. Circulate during the activity to see if there are students who still need help drawing any of the basic shapes.

Concept Development (25 minutes)

Materials: (S) Pattern blocks, personal white board, recording sheet

- T: Find two squares in your pattern block box. How do you know they are squares?
- S: They each have four sides. → The sides are all the same length. → They have corners like an L. → They look like the face of a cube!
- T: Place the squares on your board. See if you can make a different rectangle from your squares. (Pause.) Tell me about your work.
- S: I put them right next to each other. → Now two of the sides are long! → It is a different rectangle now.
- T: I like how you put your squares together so that the edges are fully touching. While you hold your pattern blocks down, trace your new shape with your marker. Hold up your boards to show me your work! (Pause.)
- T: Put your squares back inside your new shape outline. I wonder what would happen if we added another square?
- S: I think it would just get longer. → I think it might be another rectangle. → I have a different idea!
- T: Try it and see! Trace your new shape. (Pause.)
- S: I have a longer rectangle now. → I decided to put my square on top! → I don't have a rectangle anymore. I have an L. → Now it looks like a building!
- T: Turn and talk to your partner about your drawings. (Pause.)
- T: Take out one more square. Can you use the four small squares to make a larger square?
- S: Yes. I put two next to each other and two on top. → All of my squares are touching in the corners.
- T: How do you know that you built a square?
- S: It looks like a carpet square. → Four sides and four corners. → All the sides are the same. The corners are like an L.
- T: Let's try another one. Take a square and a triangle out of your pattern block box. On your board, find a way to put their sides together to make a new shape. (Pause.) Tell me about your work.
- S: I made a house shape! → It looks like the one we made in our drawing



before! → I think mine looks like a rocket ship.

T: Trace your pattern blocks to show your new shape. (Pause.) Hold up your boards to show me your work! (Briefly observe to ensure understanding and to see which students might need additional support with the tracing activity.)

T: Now, you are going to get a chance to make up your own new shapes! Work with your partner, taking turns to be the shape artist.

- First, choose two shapes from your pattern block box.
- Second, put them together to make a new shape.
- Third, trace your shape on your recording sheet.
- Fourth, tell your partner about your new shape. How many sides does it have? How many corners? What would you name your new shape?

MP.6

Allow time for exploration and composition of new shapes. Listen to the conversations to observe precision in the descriptive language such as *sides*, *corners*, *straight lines*, and so on. If time permits and students demonstrate ability, they may choose to use three shapes at a time.

T: Would anyone like to hold up their recording sheet and share one of their new shapes?

S: Mine looks like a bird! → I made a snowman shape. → I made a person!

Note: Save student recording sheets for additional work in tomorrow's lesson.

Problem Set (10 minutes)

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

Student Debrief (7 minutes)

Lesson Objective: Compose flat shapes using pattern blocks and drawings.

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



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

In order to facilitate the partner share after students create their own new shapes, give English language learners a review of key vocabulary needed to tell about their new shapes: *sides*, *corners*, and *straight lines*, etc.

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 5 Problem Set K•6

Name Shelley Date 5-31-14

Choose 4 shapes to create a new shape in box 1. Give the same 4 shapes to your partner. Have your partner create a different shape in box 2.

1

2

COMMON CORE Lesson 5: Compose flat shapes using pattern blocks and drawings. engage^{ny} 6.B.6

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below to lead the discussion.

- In your Problem Set, what did you think about when you were arranging your pattern blocks to make new shapes?
- What if you had left spaces in between the blocks?
- Look around the classroom. Can you see anything that is made out of different shapes?
- How did you choose names for the shapes you created? (Many students will name shapes after a real world object they resemble, but look for some students to start naming based on attributes.)
- How does our work with the pattern blocks remind you of when you drew your house at the beginning of the lesson?

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 5 Problem Set K•6

Choose 5 shapes to create a new shape in box 3. Give the same 5 shapes to your partner. Have your partner create a different shape in box 4.

3

4

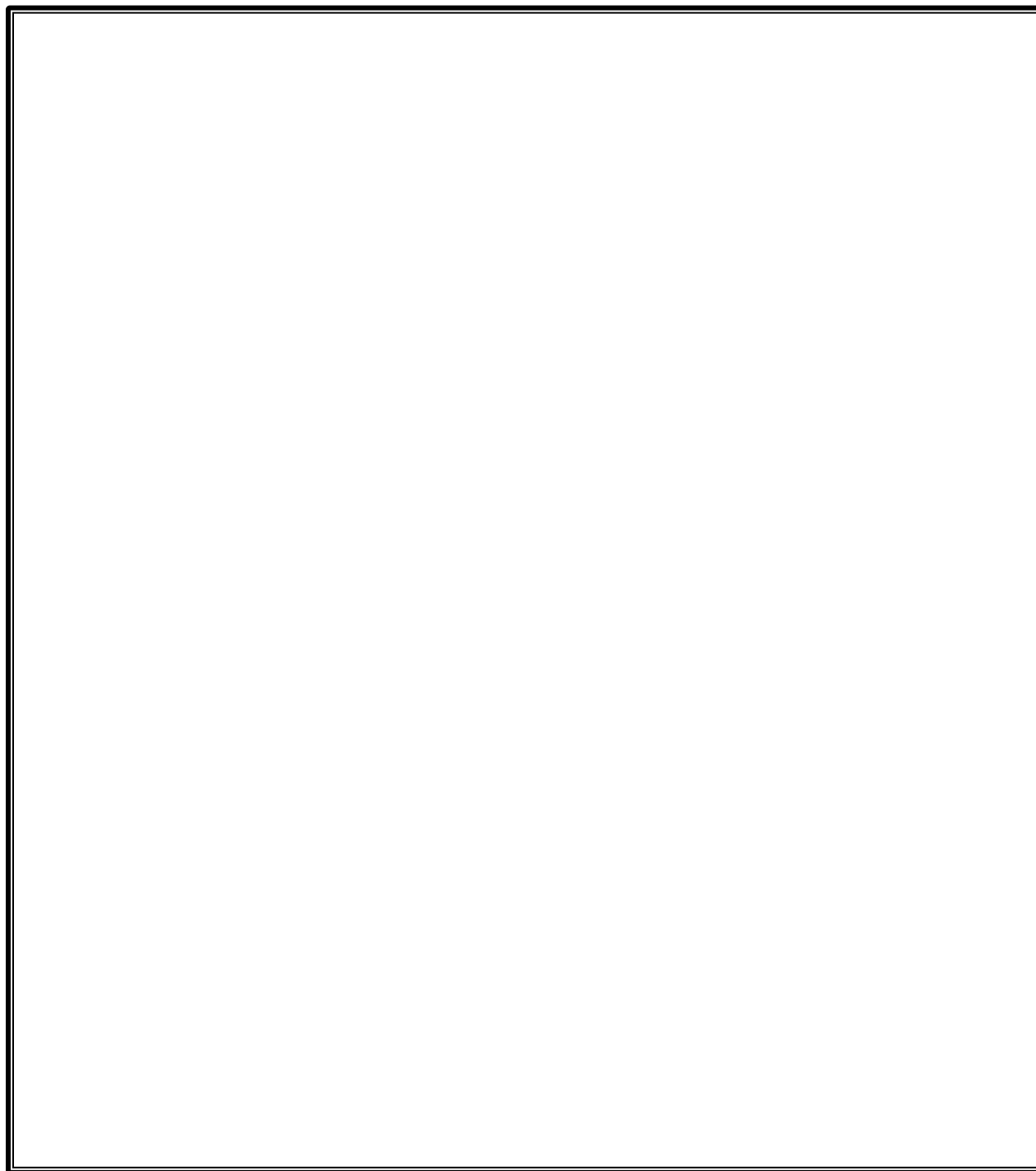
Subtract.

5 - 1 = 5 - 2 = 5 - 3 = 5 - 4 =

COMMON CORE Lesson 5: 10/16/13 Compose flat shapes using pattern blocks and drawings. engage^{ny} 6.B.7

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I Can Make New Shapes!



Name _____ Date _____

Choose 4 shapes to create a new shape in Box 1. Give the same 4 shapes to your partner. Have your partner create a different shape in Box 2.

1

2

Choose 5 shapes to create a new shape in Box 3. Give the same 5 shapes to your partner. Have your partner create a different shape in Box 4.

3

4

Subtract.

$$5 - 1 = \square \quad 5 - 2 = \square \quad 5 - 3 = \square \quad 5 - 4 = \square$$

Name _____

Date _____

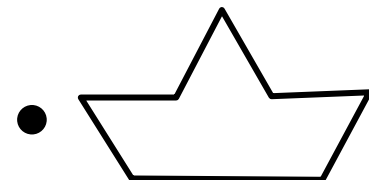
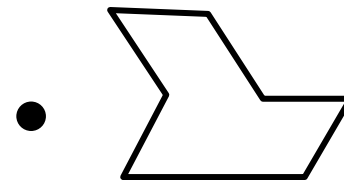
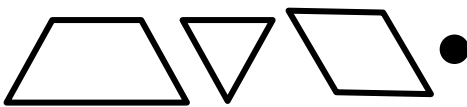
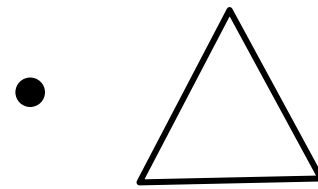
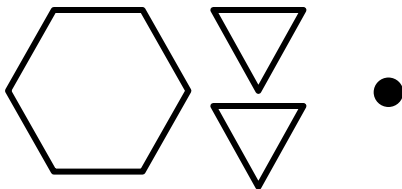
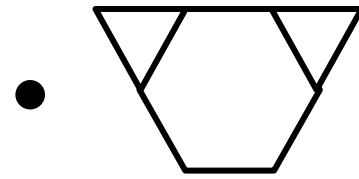
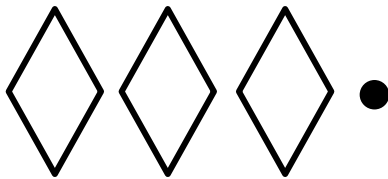
Use your pattern blocks to help you solve the problem.

Use 2 blocks to make a rectangle. Trace your blocks to show your rectangle.

Name _____

Date _____

Match each group of shapes on the left with the new shape they make when they are put together.

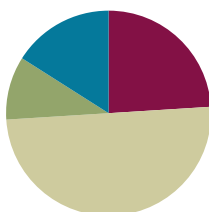


Lesson 6

Objective: Decompose flat shapes into two or more 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)

- Sprint: Make 10 **K.OA.4** (12 minutes)

Sprint: Make 10 (12 minutes)

Materials: (S) 2 copies of the Make 10 Sprint per student

Note: This Sprint maintains students' knowledge of making 10 from GK–Module 4.

T: It's time for a Sprint!

Briefly recall previous Sprint preparation activities, and distribute Sprints facedown.

T: Take out your pencil and one crayon of any color. For this Sprint, you are going to write the missing number needed to make 10. (Demonstrate one example if needed.)

Continue to follow the Sprint procedure as outlined in GK–M4–Lesson 3. Have students work on the Sprint for a second time. Continue to emphasize that the goal is simply to do better than the first time and celebrate improvement.

Application Problem (5 minutes)

Materials: (S) Personal white boards

You are going to be a detective today!

- First, look around the classroom to see if you can find things made of more than one shape, like we did yesterday.



NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Encourage English language learners to use the words in their native language to name the shapes they find in the classroom. For instance, a native Spanish speaker can say *triángulo* and *rectángulo* instead of *triangle* and *rectangle*. Ask the student to share with the class, and then ask everyone else to say the English word as well.

- Second, draw it on your personal board.
- Third, use your marker to show the shapes inside.

If necessary, give hints about items such as tiles, bricks, windowpanes, and so on. Encourage students to look for and highlight the shapes within shapes on their boards.

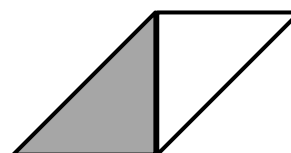
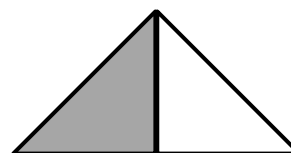
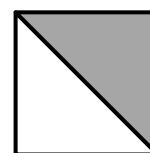
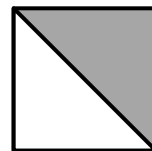
T: Turn and talk to your partner about the hidden shapes that you found!

Note: Careful observation of shapes in the environment serves as the basis for today's decomposition lesson.

Concept Development (25 minutes)

Materials: (S) Scissors, shape sheet template, pattern blocks, recording sheets from yesterday's lesson

- T: What do you see on your paper?
- S: We have different shapes! → I see squares, rectangles, and triangles.
- T: Cut out your shapes and talk about them with your friends. (Allow time for activity and discussion.)
- T: Hold up your gray square. Hold up your white triangle. Put your white triangle on your gray square, making two of the sides match. What do you notice?
- S: When I put the white triangle on, it leaves an empty space like another triangle! → There are two triangles now!
- T: Yes! You made your square into two triangles. Find your gray rectangle and your square. What happens if we cover as much as we can of the gray rectangle with the square?
- S: I have two squares now! → I have a square in the middle and two little rectangles on the ends.
- T: You found more shapes inside your rectangle, didn't you? Hold up your white and gray triangles. Put them together. What shapes can you make with them?
- S: A square that is the same as the big square with the dotted line! → A bigger triangle. → This one that looks like a diamond (parallelogram).
- T: Fold your gray triangle on the dotted line. What do you notice?
- S: It's still a triangle, but now it is smaller. → When I unfold it, I see two little triangles inside.
- T: Now look at your white rectangle with the dotted line. Fold it on the dotted line.
- S: Now I have two rectangles! → They are smaller but when I unfold it I see the big rectangle again.
- T: Is there another way you could fold it?
- S: Yes! When I fold it the other way and then unfold it again, I have four rectangles in all! → I left mine folded and folded again. Now I have a square.



- T: Now take your large gray square and fold it on the dotted line. What shapes do you see?
- S: Two triangles! → And they are the same size and shape as the white and gray triangle!
- T: You found a lot of little shapes inside other ones. What does this make you think of?
- S: It's like inside one thing is another that is smaller. → It's like folding napkins for dinner. They start square and then make a rectangle. → Or triangle. → It's like our numbers! → We found number pairs hiding inside big numbers. These are shapes hiding in bigger shapes.
- T: Excellent thinking. Just like we can break our numbers into smaller parts, we can make smaller shapes out of bigger shapes too.
- T: Yesterday you made some wonderful new shapes on your recording sheet. Today, you are going to trade sheets with your partner to see if you can use pattern blocks to fill in the new shapes that she made. If you need help... ask your partner! You can take turns being the teacher! (Allow time for partner work and discussion.)



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Give above grade level students pattern blocks to use in creating different shapes. Challenge them by asking them to be sure to use at least one of each of the pattern blocks (including the orange square and the light rhombus) and to make sure not to leave any gaps in their design. Have them describe their designs with a partner.

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. Provide pattern blocks for each student to use while completing the Problem Set.

Note: Look for additional pattern block activity cards at education stores or online to challenge students who finish the Problem Set quickly. These make great center activities during assessments.

Student Debrief (8 minutes)

Lesson Objective: Decompose flat shapes into two or more shapes.

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 you decide which pattern blocks you needed to fill in the shapes in the Problem Set?
- Did you and your neighbor use the same blocks?
- Do you think there are shapes hiding inside your pattern blocks, too? Give me an example. How can you use this to help you find more than one way to fill in the big shapes?

- How is finding hidden shapes inside other shapes like what we did yesterday? (In the previous lesson, students put shapes together to make new shapes.)
- How is finding hidden shapes inside a bigger shape like finding hidden numbers inside a bigger number?
- Could you think of something at home that is made out of more than one shape and tell us about it?


Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students. Allow students to use pattern blocks to solve.


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 6 Problem Set K•6

Name NUHAD Date 6-1-14


Trace to show 2 ways to make each shape. How many shapes did you use?




I used 3 shapes.




I used 2 shapes.




I used 4 shapes.



I used 5 shapes.



I used 1 shapes.






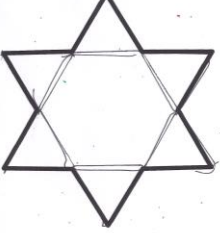

I used 3 shapes.

COMMON CORE Lesson 6: Decompose flat shapes. 10/18/13 engage^{ny} 6.B.6

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NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 6 Problem Set K•6

Fill in each shape with pattern blocks. Trace to show the shapes you used.

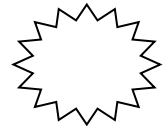






How many different ways can you cover the sun with pattern blocks?

COMMON CORE Lesson 6: Decompose flat shapes. 10/18/13 engage^{ny} 6.B.7

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Number correct:



Name _____

Date _____

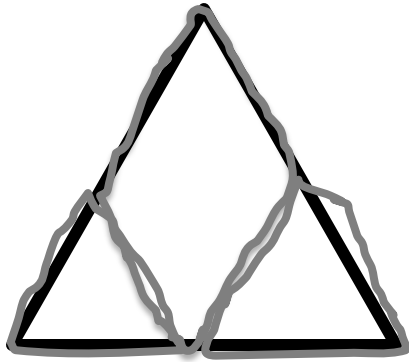
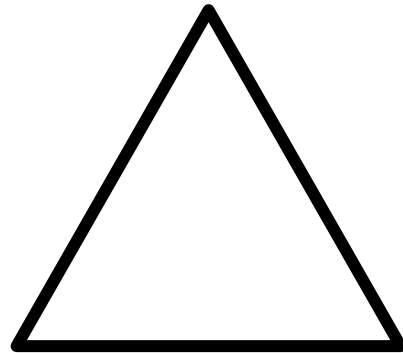
Write the number of dots needed to make 10 dots.

1	 	9	
2	 	10	 
3	 	11	 
4	 	12	
5		13	 
6		14	
7		15	 
8		16	

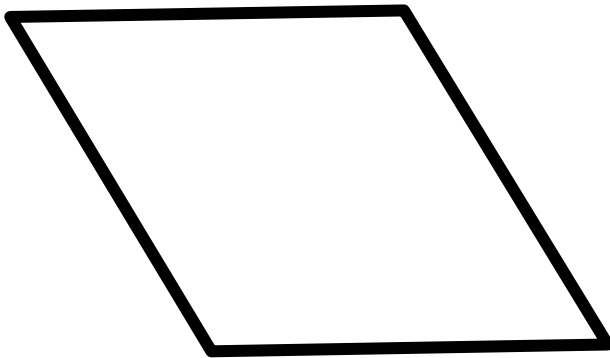
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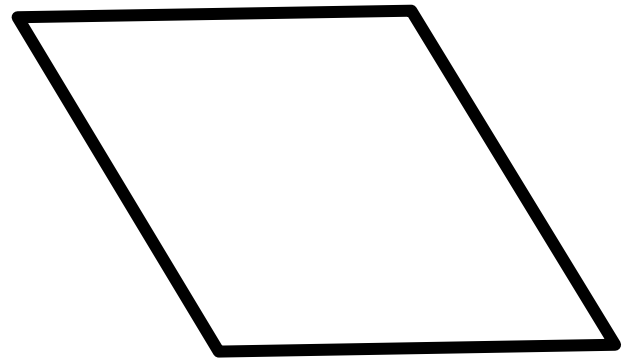
Trace to show 2 ways to make each shape. How many shapes did you use?

I used 3 shapes.

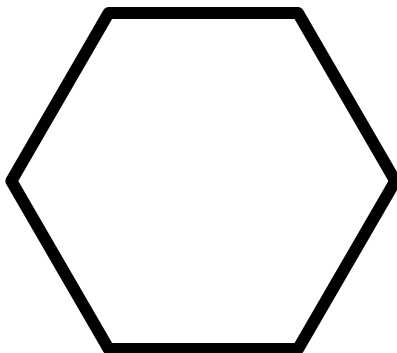
I used _____ shapes.



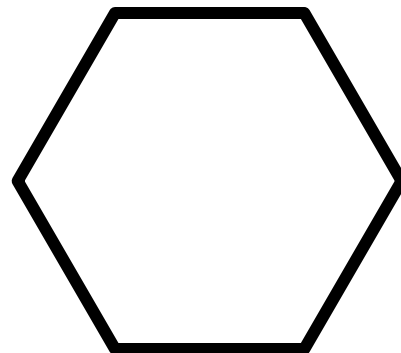
I used _____ shapes.



I used _____ shapes.

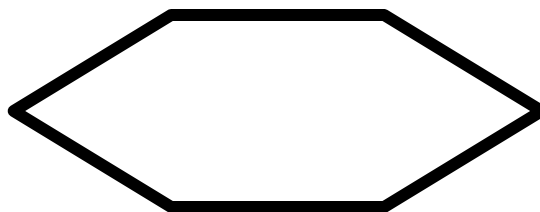
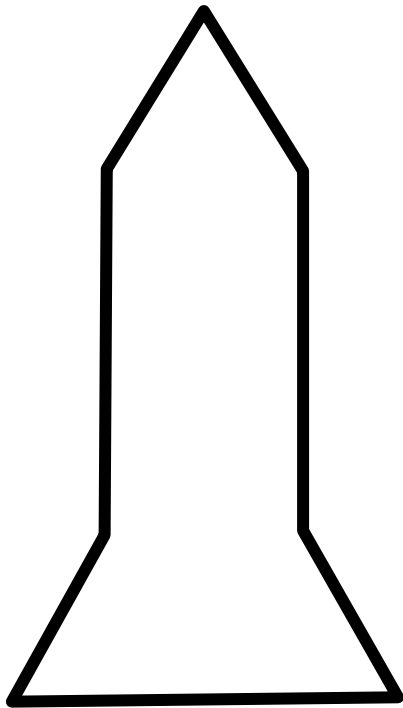
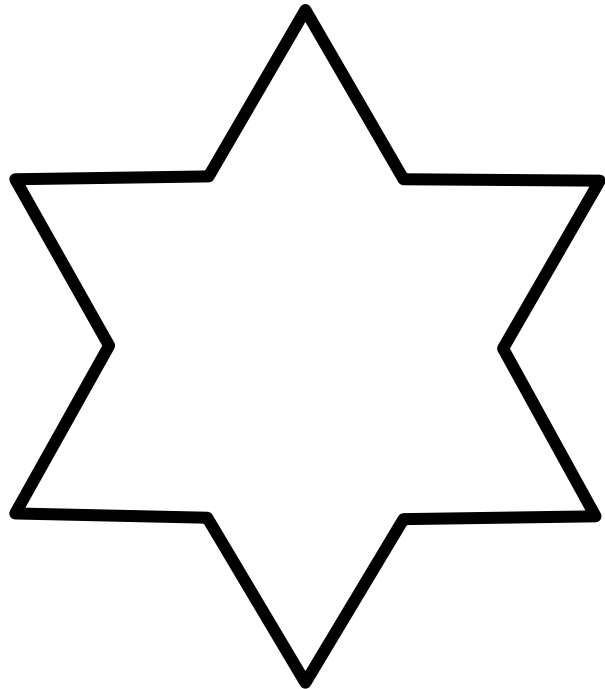


I used _____ shapes.



I used _____ shapes.

Fill in each shape with pattern blocks. Trace to show the shapes you used.



How many different ways can you cover the sun with pattern blocks?

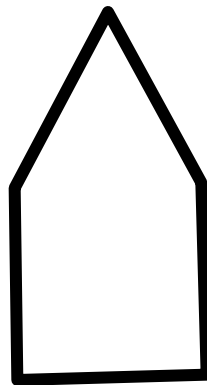
Name _____

Date _____

Draw 2 shapes used to build the rectangle.



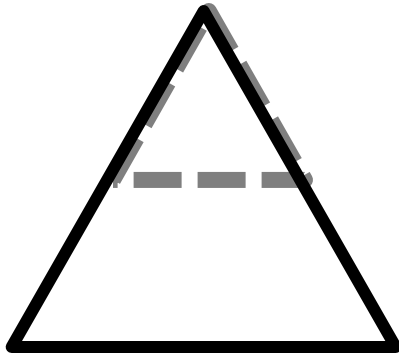
Draw 2 shapes used to build the house.



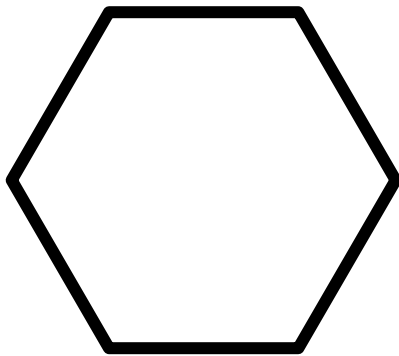
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Date _____

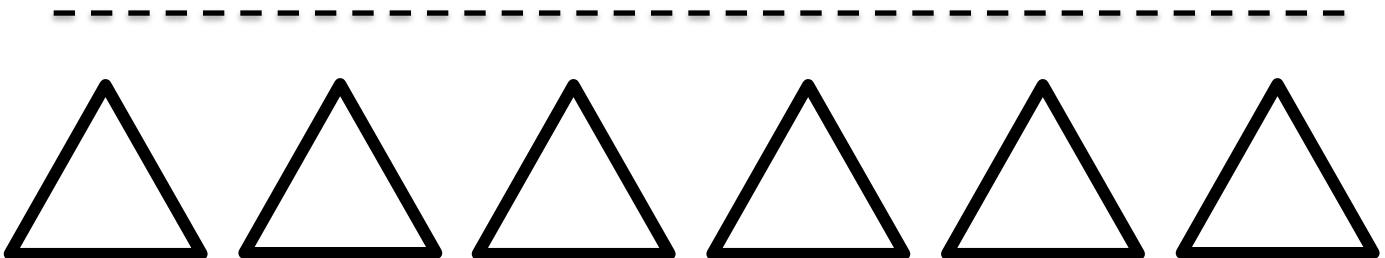
Cut out the triangles at the bottom of the paper. Use the small triangles to make the big shapes. Draw lines to show where the triangles fit. Count how many small triangles you used to make the big shapes.

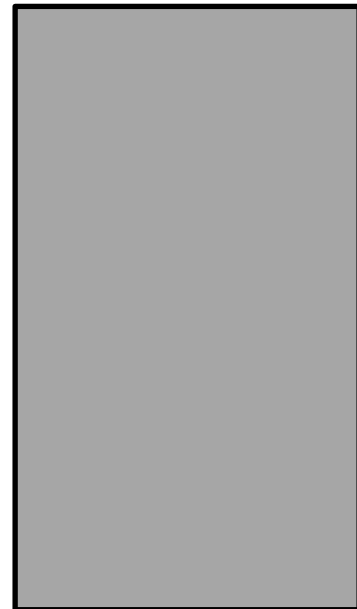
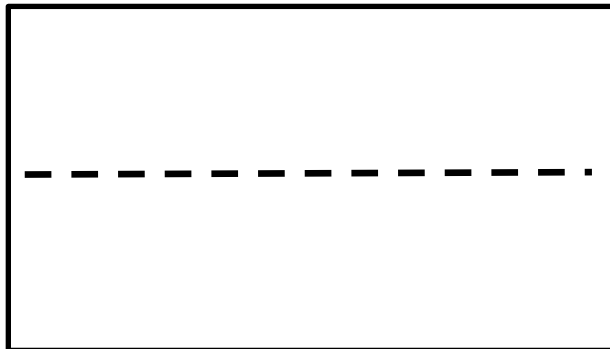
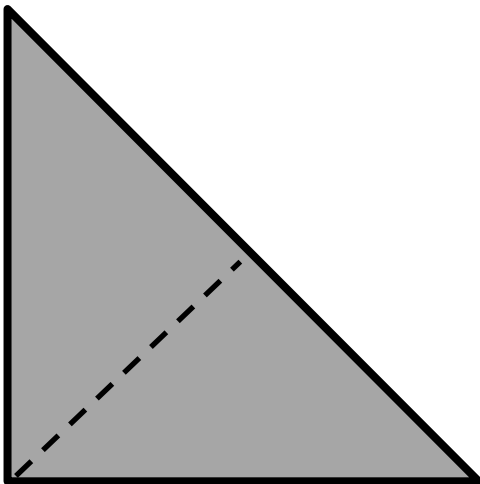
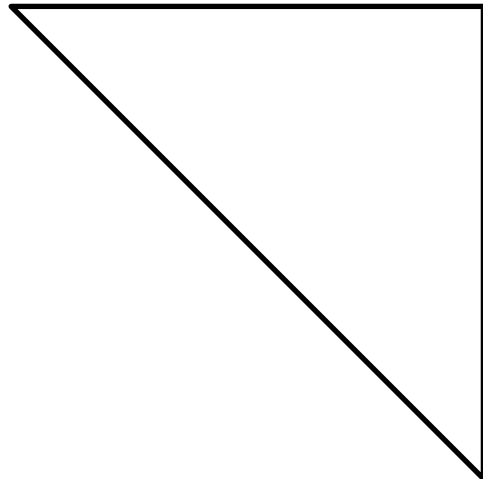
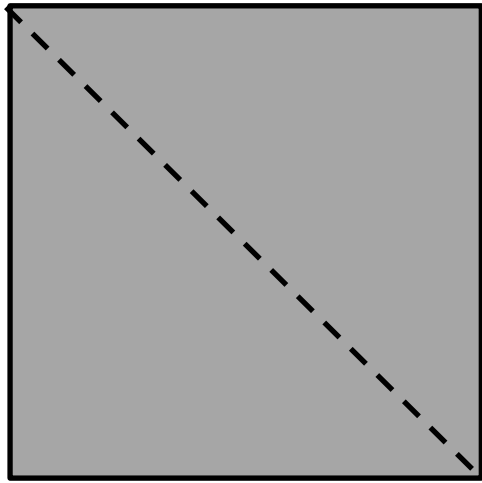


This big triangle is made with _____ small triangles.



This hexagon is made with _____ small triangles.



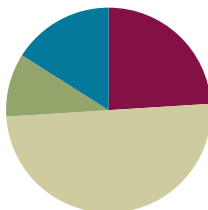


Lesson 7

Objective: Compose simple shapes to form a larger shape described by an outline.

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)

- Getting Ready for First Grade! (12 minutes)

Getting Ready for First Grade! (12 minutes)

Materials: (S) Folders, baggies, personal white boards, copies of Sprints, personal Rekenreks (made in GK–Module 5), and other consumable fluency materials

Generate a conversation about the necessity of practicing math over the summer to maintain skills students have learned in kindergarten. Emphasize the importance of getting ready for first grade, and tell students that they will get some things today to take home and use over the summer. Tell students that you will send home a letter telling parents and families how they can help.

Select materials in advance based on individual student's needs. Take into consideration the amount of support students can be expected to receive at home, and choose activities that can be done somewhat independently. Distribute copies of Sprints and Fluency Problem Sets. Demonstrate how to use them in a personal board, so that they can be used multiple times over the summer.

You may wish to enlist the help of parents or older students to assemble students' materials into packets. Hold students' packets until tomorrow so that they can share them with guests at the culminating activity!

Application Problem (5 minutes)

Materials: (S) Personal white board, ruler

- T: Pretend you are a baker! Draw a big rectangle on your personal board to show a delicious pretend chocolate cake.

- T: Now, use your ruler and draw lines to show how you would slice it to serve his or her friends. Where would you draw the lines? How many pieces did you make?
- T: Compare your cake to your partner's. Did you both do it the same way? Who has more pieces?

Note: Thinking about decomposing the rectangle in the problem leads the way to the creation of square puzzles in today's lesson.



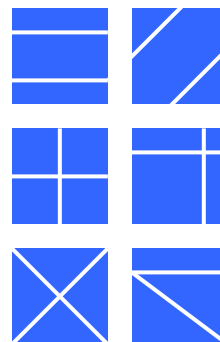
NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Help English language learners discuss their work with a partner by providing them with sentence starters such as, "I have more pieces because...." The sentence starters will not only help them communicate but will also hold students accountable for staying on topic.

Concept Development (25 minutes)

Materials: (S) Ruler, shape template, scissors, pattern blocks, personal white board, envelope to contain student puzzle pieces (optional)

- T: What do you see on your paper?
- S: I see four shapes! → Two are colored (or grey), and two are white. → There are two squares and two rectangles.
- T: Yes! Today you are going to be puzzle makers! Your first job is to cut the paper down the dotted line. Then cut out your colored (or grey) shapes. Leave the white ones, because you are going to use those for puzzle frames. (Allow time for cutting.)
- T: Use your ruler to draw two lines through your square, just like you did in the cake problem. Make sure that your lines go from side to side (Pause.) Do you see some new shapes inside your square now?
- S: I have three shapes! → I made rectangles. → I made four new shapes. → I have little squares. → I have four triangles!
- T: Use your pencil to put your initials inside each of your new shapes. Now, cut the new shapes apart with your scissors. You are making a puzzle! (Allow time for cutting.)
- T: Mix up your puzzle pieces! Now, trade your puzzle pieces with your partner. Try to put his square back together. Use the frame on your paper to help you. (Allow time for practice and experimentation. Circulate to listen to the mathematical language being used. Encourage students to describe unfamiliar shapes by focusing on the number of sides and corners.) Tell me about your work.
- S1: I can't figure this one out. The triangle won't fit inside the square.
- T: Could you move the triangle to make it fit?
- S1: I can turn it around. That doesn't work.
- T: Think about another way to move it.
- S1: I can turn it over. That works!
- T: You needed to flip it! I like how you kept trying until you found a way to solve the puzzle.



MP.1

- S: I got the square back together! → I had to flip this piece over to make it fit. → I had to turn this one around!
- T: Great job! Trade with another partner and try again! (Allow time for more experimentation.)
- T: Let's make another puzzle! This time, use your ruler to draw two lines through your rectangle. Make sure that your lines go from side to side. Remember to put your initials in each of the new shapes before you cut them apart.

MP.1

Repeat the activity with the rectangle, again circulating to observe precision in the language during the discussion of the shapes. Allow students to try solving a few different puzzles. In the spirit of MP.1, allow the students to struggle and persevere, to experience the joy of the accomplishment without interference.

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: Compose simple shapes to form a larger shape described by an outline.

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 many shapes did Carlos have after he cut? How did you know which shapes to circle?
- How many shapes did India have after she cut? How did you know which shapes to circle?
- We all started with the same square, but all of your puzzles were different. Why is that?



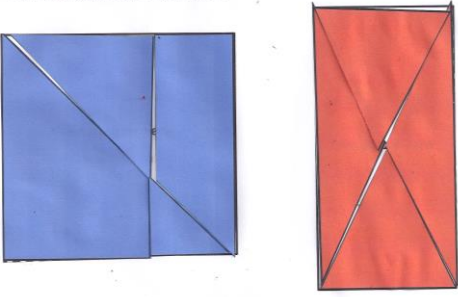
NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Challenge your above grade level students by offering them tangram puzzles to solve. You can give them tangram manipulatives and outlines to solve the more simple puzzles or you can download and give students printable tangrams like the ones found at <http://www.museumofplay.org/flash-games/tangrams/>. Students who finish their work early can form teams to solve the more challenging puzzles together.

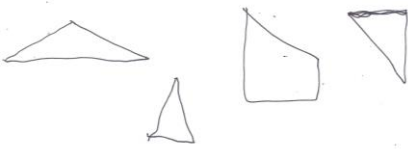
NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 7 Problem Set K•6

Name Ananya Date 6-2-14

Glue your puzzles into the frames.



Draw some of the shapes that you had after you cut your rectangles.



COMMON CORE Lesson 7: Compose simple shapes to form a larger shape described by an outline. 3/18/13

engage^{ny} 6.B.8

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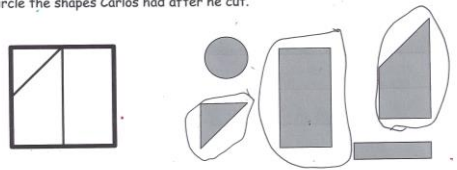
- Everyone drew two lines, but some people ended up with three pieces and some people had four pieces. Why?
- How did you know how to put your partner's puzzle together?
- Did you have to do anything to the shapes to make them fit into your puzzle? (Look for students to describe turns, flips, and slides.)
- How is the cake drawing like the rectangle puzzle that you made?

Exit Ticket (3 minutes)

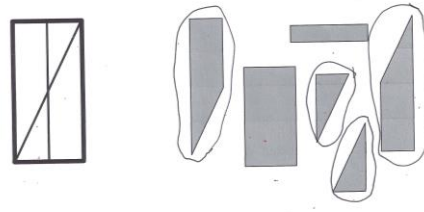
After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 7 Problem Set K•6

Carlos drew 2 lines on his square. You can see his square before he cut it. Circle the shapes Carlos had after he cut.



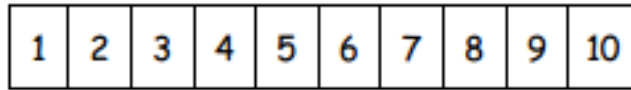
India drew 2 lines on her rectangle. You can see her rectangle before she cut it. Circle the shapes India had after she cut.



COMMON CORE Lesson 7: Compose simple shapes to form a larger shape described by an outline. 10/18/13 engage^{ny} 6.B.9

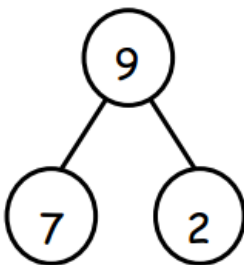
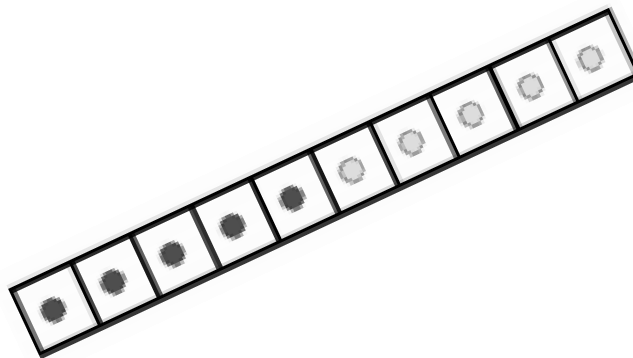
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I'm Getting Ready for 1st Grade!

My Math Fluency Kit



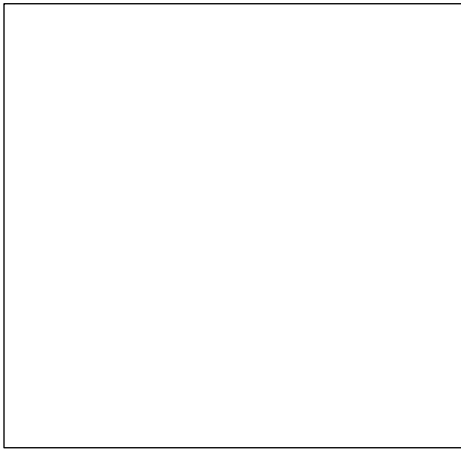
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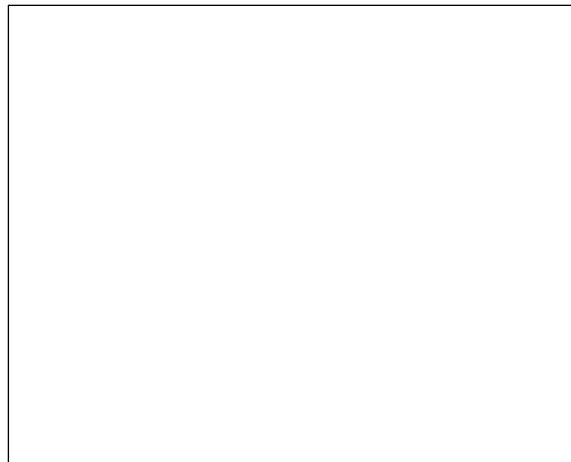
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My Plan to Get Ready for 1st Grade Math

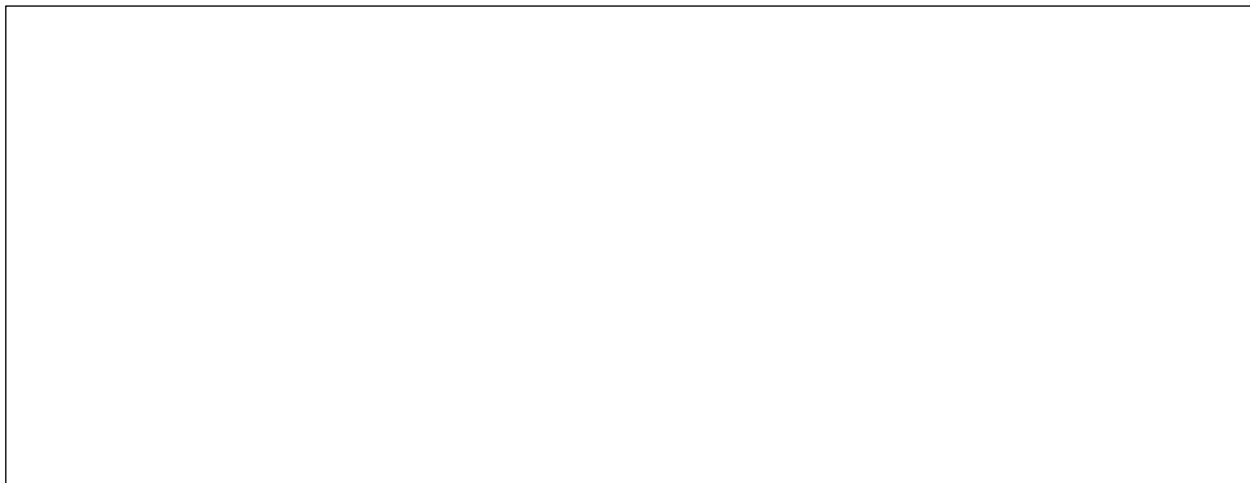
This is a picture of someone
who can help me practice.



This is a picture of where I will
practice.



This is ME getting ready for 1st grade!



Name _____

My Sprint Progress Log

Practice your number sentences and Sprints on your personal board. Ask an adult to time you. Keep track of how you improve over the summer.



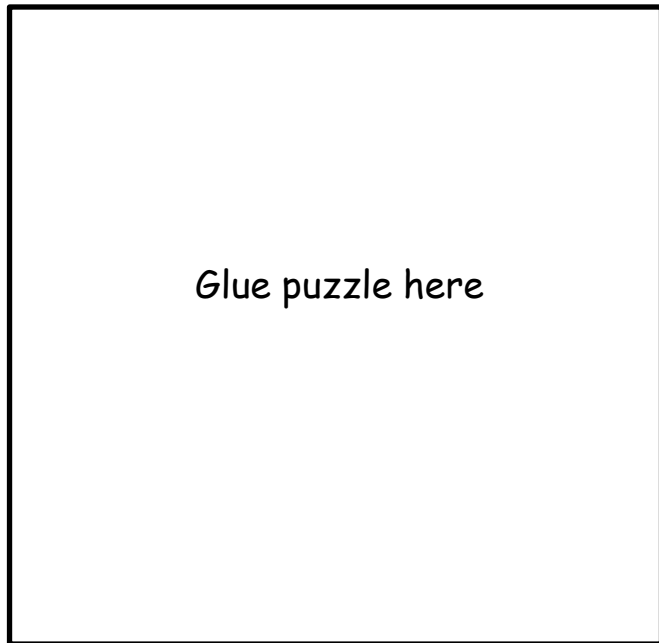
Date	Time

Are you getting better at your number sentences?

Name _____

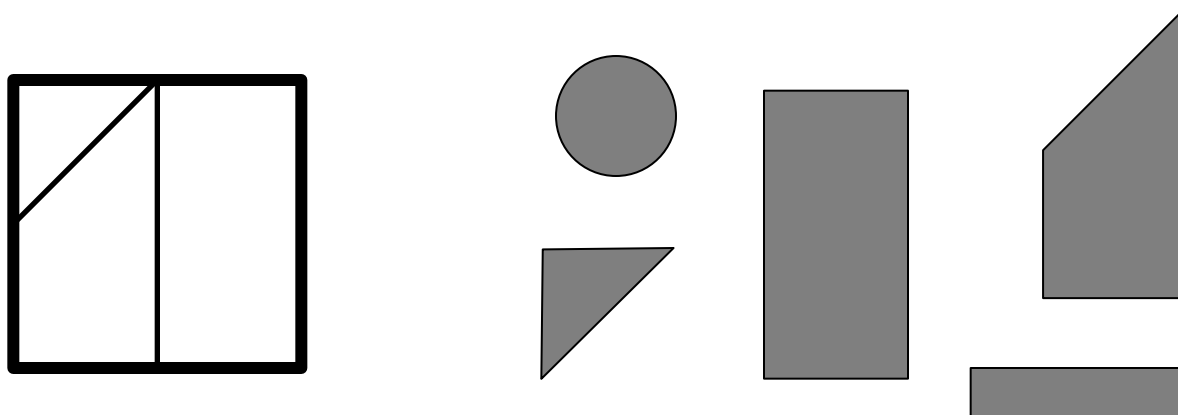
Date _____

Glue your puzzles into the frames.

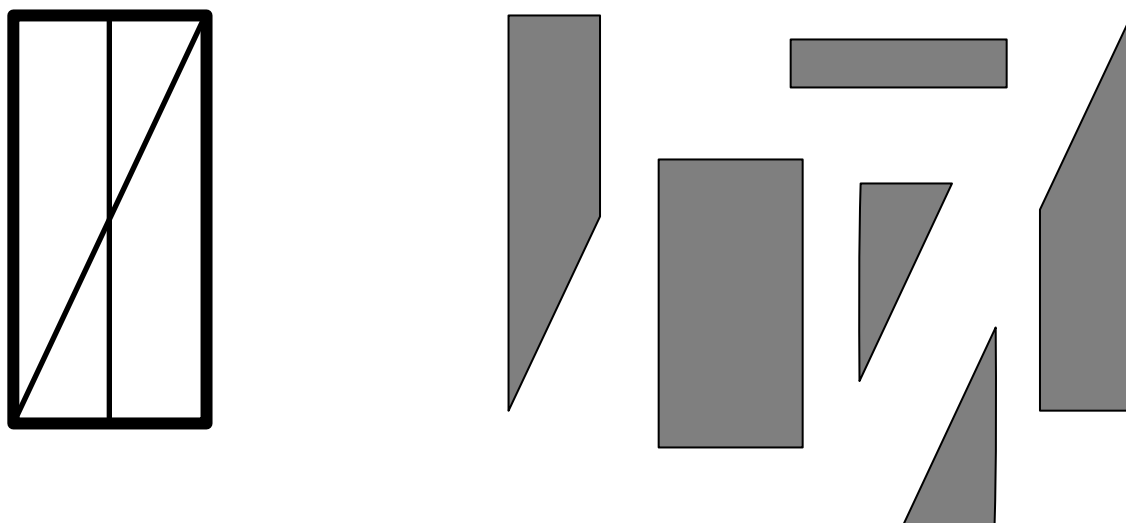


Draw some of the shapes that you had after you cut your rectangles.

Carlos drew 2 lines on his square. You can see his square before he cut it. Circle the shapes Carlos had after he cut.



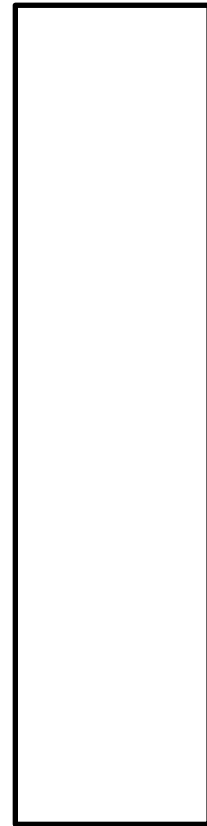
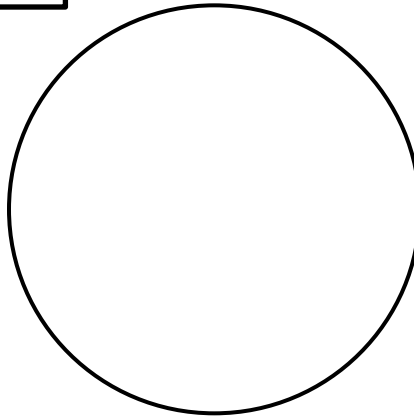
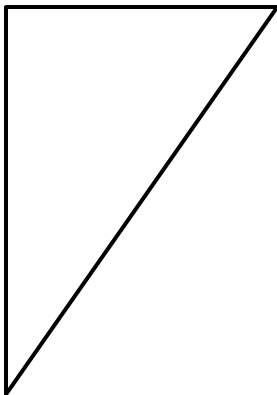
India drew 2 lines on her rectangle. You can see her rectangle before she cut it. Circle the shapes India had after she cut.



Name _____

Date _____

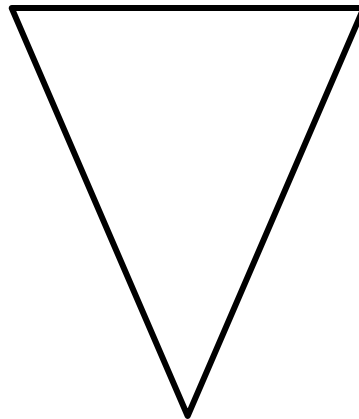
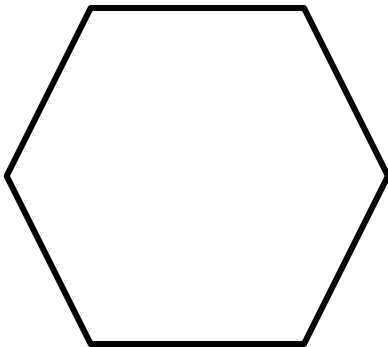
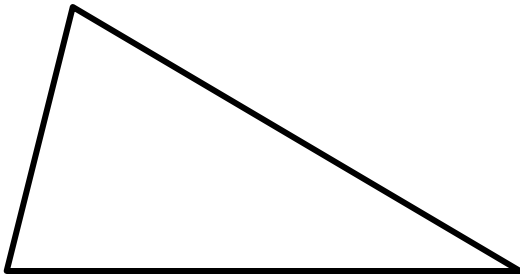
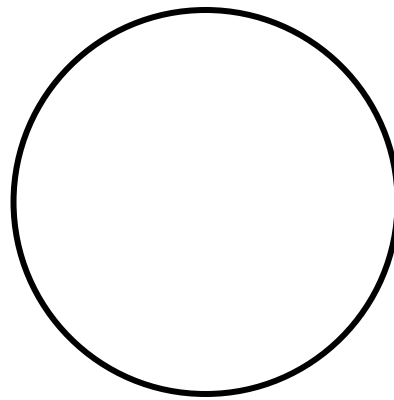
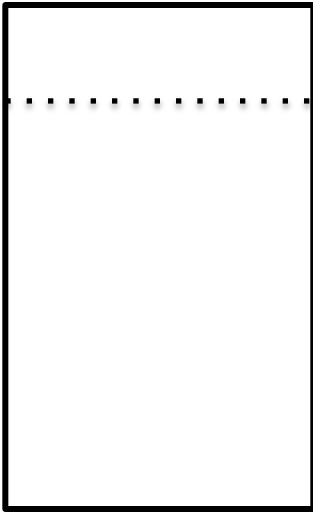
If you drew 2 straight lines inside the gray rectangle, what shapes might you find? Circle them.

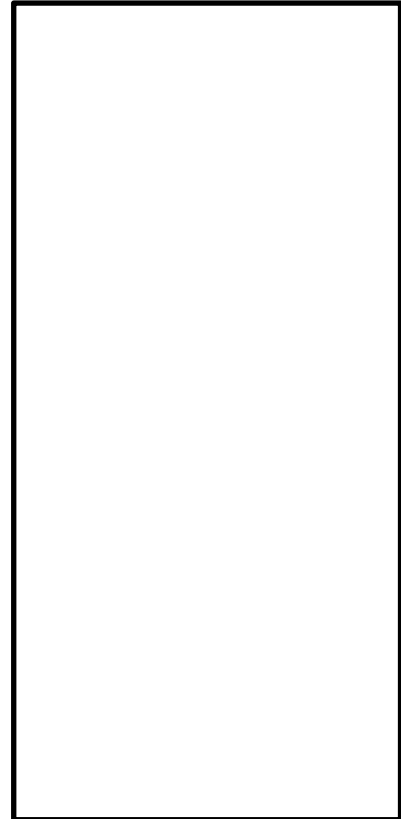
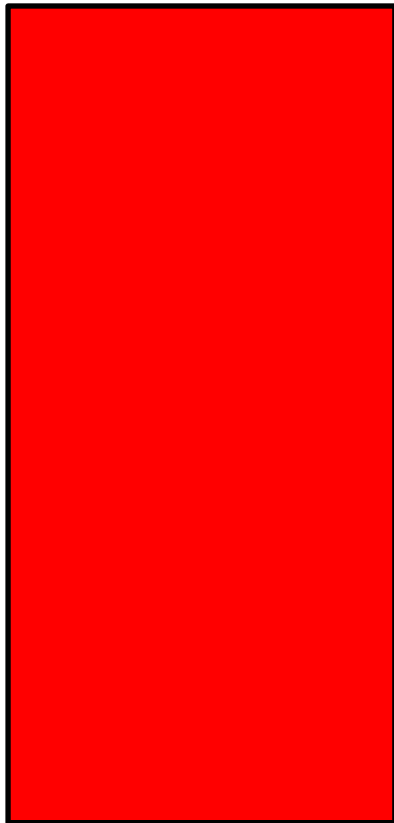
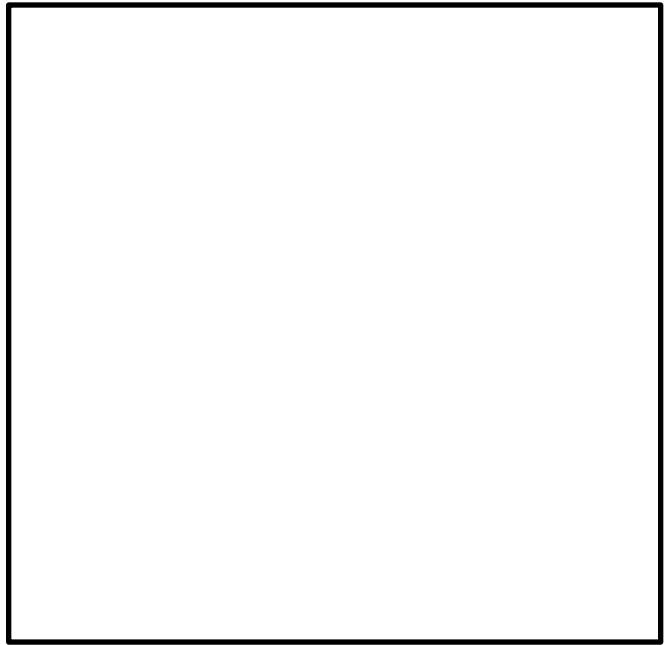
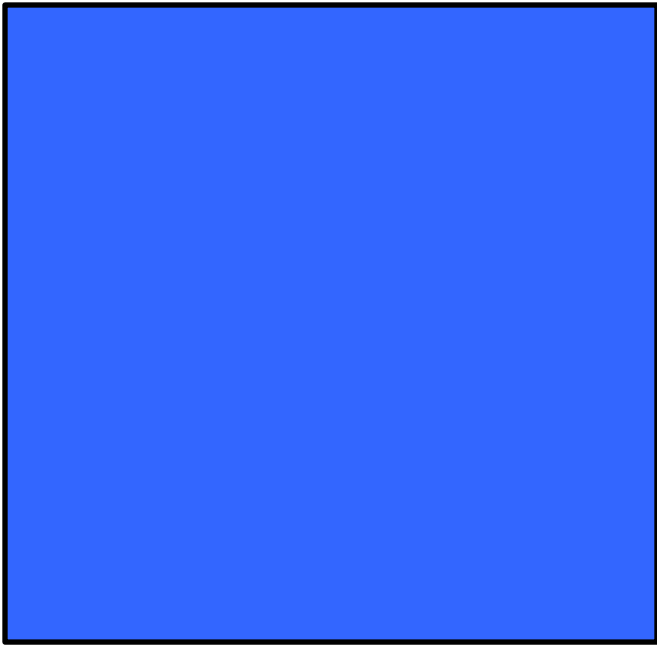


Name _____

Date _____

Using your ruler, draw 2 straight lines from side to side through the shape. The first one has been started for you. Describe the new shapes you made to an adult.



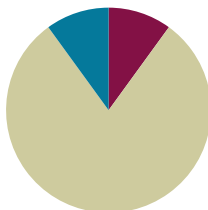


Lesson 8

Objective: Culminating task—review selected topics to create a cumulative year-end project.

Suggested Lesson Structure

■ Fluency Practice	(5 minutes)
■ Concept Development	(40 minutes)
■ Student Debrief	(5 minutes)
Total Time	(50 minutes)



Fluency Practice (5 minutes)

- My Favorite Fluency (5 minutes)

My Favorite Fluency (5 minutes)

Materials: (S) Summer materials from previous lesson

Note: Today's activity is a fluency celebration.

Using their Getting Ready for First Grade packets, students practice their favorite fluency activity, or teach it to a guest attending the Math Olympics. If available, invite Pre-K students to learn a fluency activity from their older kindergarten buddies.

Application Problem

There will be no Application Problem today in order to allow more time for the cumulative project.

Concept Development (40 minutes)

Materials and Note: Today's lesson is a celebratory Math Olympics. There are activities set up in five different "events" or stations around the classroom through which small groups of students rotate, for seven minutes each. At each station, the students have paper, pencils, and markers in addition to many copies of the half-page recording sheets. (Some students may be able to complete more than one at each station in the time allotted.) Teachers might wish to supply popcorn, ribbons, or small prizes for the participants during the end of the lesson Student Debrief celebration. The students use the materials they create at the stations to make a book reviewing some of the main concepts that they learned this year.

In addition to the recording sheets and writing tools, individual station materials are as follows:

- A. Make-10 Mania: Linking cube 10-sticks
- B. Five-Group Frenzy: Digit cards 1–20
- C. Shape Shifters: Pattern blocks and markers
- D. The Weigh Station: 2 pan balances, bags of pennies, mystery bag of small objects to weigh
- E. Awesome Authors: Large foam die, linking cubes to serve as addition support if necessary

Fun signs for the individual stations may be made up in advance, if desired. It is suggested that, if possible, older students, parents, administrators, or community volunteers be enlisted to help oversee the individual events in the Math Olympics. That way, the following lengthy explanation can be omitted and students can instead receive the directions for a particular station upon arrival.

- T: We are going to have a special **Math Olympics** celebration today! You are going to use many of the things that you learned to make your own math book to take home for the summer. We have several special stations set up today. (Demonstrate.)
- T: (Station A, Make Ten Mania.) Here, you break apart 10-sticks and create number bonds and number sentences showing different ways to make 10. Find as many different pairs as you can and write them on the recording sheets.
- T: (Station B, Five-Group Frenzy.) Here, you choose digit cards, write the numbers in your best penmanship, and show them on recording sheets the 5-group way. In the last box, show your number in another way, too!
- T: (Station C, Shape Shifters.) Here, you choose up to 5 pattern blocks, make a shape with them on your paper, and trace the outline. If you have time, you trade with a friend and see if you can fill in their outline with the blocks!
- T: (Station D, The Weigh Station.) Here you choose an object from the mystery bag. After you've held it and tested its weight with your hands, guess how many pennies are the same weight as your object. Then, check your guess and record your work! If you have time, you can weigh more

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 8 Recording Sheet K•6

Name Lavy Date 6-3-14

A. Make 10 Mania: Show how you made 10

$10 = 4 + 6$
 $10 = 5 + 5$
 $10 = 6 + 4$
 $10 = 7 + 3$
 $10 = 8 + 2$
 $10 = 9 + 1$

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 8 Recording Sheet K•6

Name Melanie Date 6-3-14

B. Five-Group Frenzy: Write the number, draw the number in the 5-group way, draw the number in any configuration.

COMMON CORE Lesson 8: Review selected topics to create a cumulative year-end project. Date: 10/18/13 engage^{ny} 6.B.4

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 8 Recording Sheet K•6

Name Kate Date 6-3-14

C. Shape Shifters: Choose 5 pattern blocks and create a shape. Trace your shape, then trade with a partner.

COMMON CORE Lesson 8: Review selected topics to create a cumulative year-end project. Date: 10/18/13 engage^{ny} 6.B.5

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 8 Recording Sheet K•6

Name Nancy Date 6-3-14

D. The Weigh Station: Choose an object. Guess how many pennies are the same weight as the object. Then, see if you guessed correctly! Draw a picture of the object and write how many pennies it weighs.

COMMON CORE Lesson 8: Review selected topics to create a cumulative year-end project. Date: 10/18/13 engage^{ny} 6.B.5

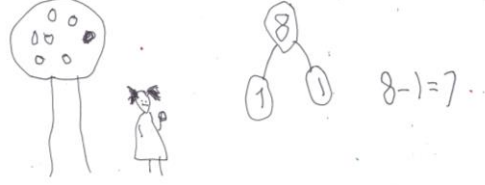
objects.

- T: (Station E, Awesome Authors.) At the last station, you are a math author! You roll the die to get a number. You use this number as part of an addition or subtraction sentence. Think of a story that includes your number. Draw your picture and your number bond, and then write the number sentence. Make sure that you will be able to share your story with a friend or someone at home!
- T: You have seven minutes at each of the stations, and then, when you hear this sound (flute, bell, whistle, clap, or other signal) you will switch. When you have finished all of the stations, make sure your initials are on all of your recording sheets and give them to me. I will make them into a math book of your very own! We will gather together at the end for a special celebration.

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 8 Recording Sheet K•6

Name Cecilia Date 6-3-14

E. **Awesome Authors:** Roll the die. Use the number to create an addition or take-away sentence. Draw a picture, number bond and number sentence. Share your story with a friend.



Student Popcorn Celebration Debrief (5 minutes)

Lesson Objective: Culminating task—review selected topics to create a cumulative year-end project.

- Which station did you find to be the most challenging? Why?
- Which station did you like best today? Why?
- What was the best thing about math this year?
- What are you looking forward to learning about next year?
- Let's have some popcorn!

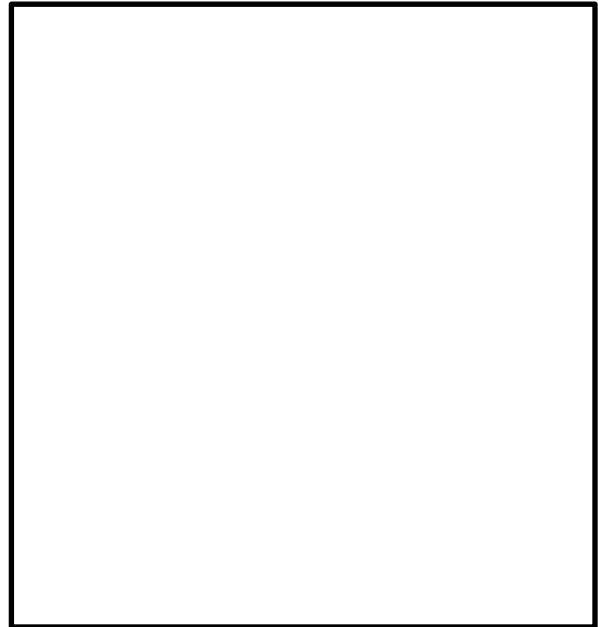
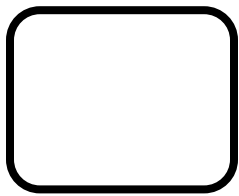
Name _____

Date _____

A. Make 10 Mania: Show how you made 10!

Name _____

Date _____

B. Five-Group Frenzy: Write the number, draw the number in the 5-group way, and draw the number in any other configuration.

Name _____ Date _____

C. Shape Shifters: Choose 5 pattern blocks and create a shape. Trace your shape, then trade with a partner.

Name _____ Date _____

D. The Weigh Station: Choose an object. Guess how many pennies are the same weight as the object. Then, see if you guessed correctly! Draw a picture of the object, and write how many pennies it weighs.

Name _____ Date _____

E. **Awesome Authors:** Roll the die. Use the number to create an addition or take-away sentence. Draw a picture, number bond, and number sentence. Share your story with a friend.

Student Name _____

Topic A: Building and Drawing Flat and Solid Shapes

Rubric Score: _____ Time Elapsed: _____

	Date 1	Date 2	Date 3
Topic A			
Topic B			

Materials: (S) 1 set of four 3" straws, 1 set of four 5" straws (separated by length for the students), small clay balls for connectors, 5 real world items with familiar shapes (e.g., book, clock, etc., including a square and rectangle), pattern block template

1. (Place all straws and formed clay connecting balls in front of the student.) Build a square.
2. (Place solid shapes in front of the student.) Choose one object that has the shape you just built.
3. (Place pattern block template in front of the student horizontally.) The star is the beginning. Point to the third shape. Point to the seventh shape.
4. (Turn the template vertically.) The star is the beginning. Point to the first shape. Point to the ninth shape.

What did the student do?	What did the student say?
1.	
2.	
3.	
4.	

Topic B: Composing and Decomposing Shapes

Rubric Score: _____ Time Elapsed: _____

Materials: (S) Pattern block shapes, 2 right triangles, paper square cut into 3 pieces (template), puzzle template

1. (Give the student two right triangles.) Use these triangles to make a rectangle.
2. (Give the student the three-piece paper square puzzle disassembled.) This was a square. Then I cut it into three pieces. Can you put it together so it makes a square again?
3. (Place the pattern blocks and puzzle template in front of the student.) Use your pattern blocks to complete the puzzle.

What did the student do?	What did the student say?
1.	
2.	
3.	

End-of-Module Assessment Task Standards Addressed

Topics A–B

Count to tell the number of objects.

- K.CC.4d** Understand the relationship between numbers and quantities; connect counting to cardinality.
- d. Develop understanding of ordinal numbers (first through tenth) to describe the relative position and magnitude of whole numbers.

Analyze, compare, create, and compose shapes.

- K.G.5** Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
- K.G.6** Compose simple shapes to form larger shapes. *For example, “Can you join these two triangles with full sides touching to make a rectangle?”*

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

Assessment Task Item and Standards Assessed	STEP 1 Little evidence of reasoning without a correct answer. (1 point)	STEP 2 Evidence of some reasoning without a correct answer. (2 points)	STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 points)	STEP 4 Evidence of solid reasoning with a correct answer. (4 points)
Topic A K.CC.4d K.G.5	<p>The student:</p> <ul style="list-style-type: none"> Does not build a closed figure. Struggles to select a real world object that matches the shape they built or does not choose any object. Is unable to identify the position of the third, seventh, first, and ninth shape in any orientation of the pattern block template. 	<p>The student:</p> <ul style="list-style-type: none"> Builds a rectangle or some other shape. Struggles to select a real world object that matches the square they built or chooses an object with no matching shape. Correctly identifies the position of some of the shapes but is clearly confused when the template is turned or requires teacher support on where to start. 	<p>The student:</p> <ul style="list-style-type: none"> Builds a square but considers the two different length straws before building with four equal length straws. Selects a real world object that matches the square with some hesitation. Correctly identifies the position of at least two shapes: third, seventh, first, and ninth shapes. 	<p>The student correctly:</p> <ul style="list-style-type: none"> Builds a square using four equal straws. Selects a real world object that matches the square built. Identifies the third and seventh shape from the beginning of the horizontal line. Identifies the first and ninth shape from the beginning of the vertical line.
Topic B K.G.6	<p>The student:</p> <ul style="list-style-type: none"> Does not join the triangles, and does not make a rectangle. No attempt at putting the pieces together, may not know what a square is, and may just line up the pieces. Places random pattern blocks on the puzzle with no understanding of spatial relationships between the pattern 	<p>The student:</p> <ul style="list-style-type: none"> Puts the triangles together so that two sides are touching but does not make a rectangle. Keeps moving the pieces around but is unable to make the square. Places some correct pattern block pieces on the puzzle, but several pieces are incorrect and sticking out of the puzzle border. 	<p>The student:</p> <ul style="list-style-type: none"> Makes a rectangle after several trial-and-error attempts. Makes the square with more time elapsed and more trial and error. Completes the puzzle after trying several different pieces with more time elapsed due to the trial and error of choosing different shapes to fit in the puzzle. 	<p>The student correctly:</p> <ul style="list-style-type: none"> Makes a rectangle without much hesitation. Makes the square with very little trial and error. Completes the puzzle using the correct pattern blocks so that nothing extends past the puzzle border.



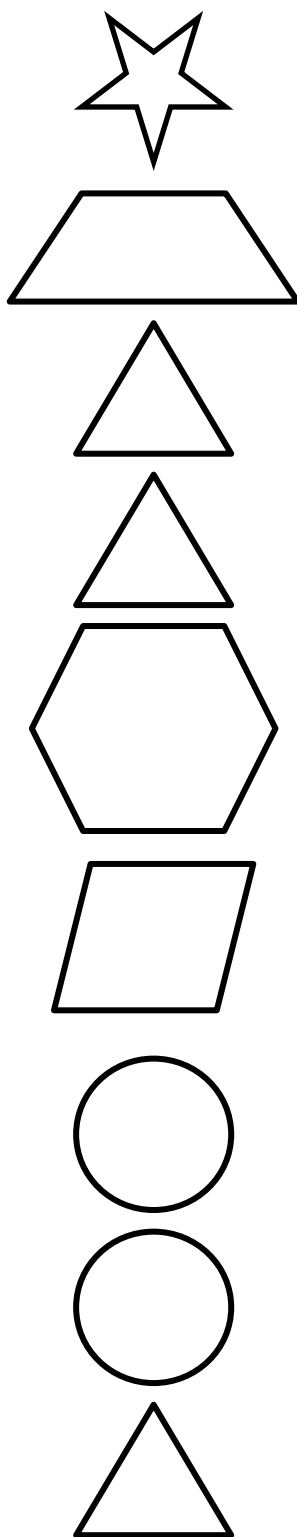
A Progression Toward Mastery

	blocks and the puzzle.			
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Class Record Sheet of Rubric Scores: Module 6

Student Names:	Topic A: Building and Drawing Flat and Solid Shapes	Topic B: Composing and Decomposing Shapes	Next Steps:

Pattern Block Template



Puzzle Templates

