

# Elementary Mathematics Learning Segment Overview

<p><b>Central Focus:</b> Students should be able to name, draw and identify defining attributes of 2-Dimensional Shapes.</p>	<p><b>State-adopted Content Standards (or Common Core State Standards, if applicable):</b>  <a href="#">CCSS.Math.Content.K.G.A.2</a> Correctly name shapes regardless of their orientations or overall size.  <a href="#">CCSS.Math.Content.K.G.B.4</a> Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length).  <a href="#">CCSS.Math.Content.K.G.B.5</a> Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.</p>		
	Learning Objectives	Instructional Strategies and Learning Tasks	Formative and Summative Assessments
<p><b>Lesson 1</b></p>	<p>Students will become familiar with 2D shapes.</p>	<p>“Shape Noticings”: Students will draw shapes (pattern blocks or attribute blocks) out of a basket in the middle of their table. Students will then be asked to write and/or draw about what they notice about 6 different shapes that they draw out of the baskets. This learning task will give me insight as to what prior misconceptions might be surrounding the topic of 2D shapes in order to better inform my teaching.</p>	<p>Formative Assessment: I will walk around the classroom while students complete this learning task and discuss their findings with them in order to better gauge understandings and misunderstandings surrounding 2D shapes.</p>
<p><b>Lesson 2</b></p>	<p>Students will become familiar with specific defining attributes of specific 2D shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).</p>	<p>“My 2D Shapes Book”: Students will complete one page of a book per day that corresponds with one of the 6 shapes (circle, triangle, square, rectangle, trapezoid, hexagon). Each page prompts students to determine the number of sides and corners/vertices of each shape as well as draw the shape and find real world examples of the shape around the classroom or from prior knowledge. This learning task will develop a better understanding of defining attributes of each of the 6 shapes in order to reinforce the central focus of this learning segment.</p>	<p>Formative Assessment: I will walk around the classroom while students complete the learning task, monitoring misconceptions and questions by asking probing questions.  Summative Assessment: After each page of this 2D shape book is complete, using a rubric, I will look through each students’ book to formally assess whether or not they are able to identify defining attributes of shapes while correctly matching the shape with the shape name.</p>

	<b>Learning Objectives</b>	<b>Instructional Strategies and Learning Tasks</b>	<b>Formative and Summative Assessments</b>
<b>Lesson 3</b>	Students will use their knowledge of shapes and defining attributes of shapes to complete 2D shape centers.	Students will rotate through centers over the next few days completing learning tasks such as; shape sorts using pattern blocks and prompting cards, making 2D shapes on geoboards, going on a shape hunt around the classroom, solving riddles written based on defining attributes to be matched with the shape picture.	<p>Formative Assessment: I will walk around the classroom while students complete this learning task and discuss their findings with them in order to better gauge understandings and misunderstandings surrounding 2D shapes.</p> <p>Summative Assessment: Students will be asked to complete the “Shapes Ahoy” worksheet shown in the assessment section of Task 4. Based on the rubric, seen in the “Evaluation Criteria” of Task 4, I will assess if students have mastery, proficient, developing or beginning of 2D shapes.</p>

## Mathematics Assessment Commentary

In Task 4: Assessing Students' Mathematics Learning, you will write a commentary, responding to the prompts below. Your commentary should be **no more than 8 single-spaced pages, including the prompts.**

### 1. Analyzing Student Learning—Whole Class

- a. Identify the specific standards/objectives measured by the assessment you chose for analysis.

[\[CCSS.Math.Content.K.G.A.2\]](#) Correctly name shapes regardless of their orientations or overall size.

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

[CCSS.Math.Content.K.G.B.5](#) Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.]

- b. Provide the evaluation criteria you used to analyze student learning.

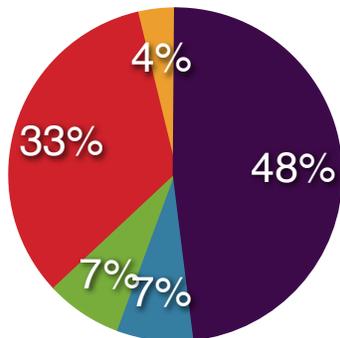
	<b>5 (Mastery)</b>	<b>4 (Proficient)</b>	<b>3 (Developing)</b>	<b>2 (Beginning)</b>	<b>1 (Incomplete)</b>
<b>Write It (Shape Name)</b>	Student can accurately name 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately name 4/5 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately name 2/3 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately name 1 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student did not complete the assessment.

	<b>5 (Mastery)</b>	<b>4 (Proficient)</b>	<b>3 (Developing)</b>	<b>2 (Beginning)</b>	<b>1 (Incomplete)</b>
<b>Write It (Attributes)</b>	Student can accurately describe defining attributes including number of sides and number of corners/ vertices of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately describe defining attributes including number of sides and number of corners/ vertices of 4/5 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately describe defining attributes including number of sides and number of corners/ vertices of 2/3 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately describe defining attributes including number of sides and number of corners/ vertices of 1 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student did not complete the assessment.
<b>Draw It</b>	Student can accurately draw the coordinating shape with the shape name of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately draw the coordinating shape with the shape name of 4/5 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately draw the coordinating shape with the shape name of 2/3 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately draw the coordinating shape with the shape name of 1 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student did not complete the assessment.

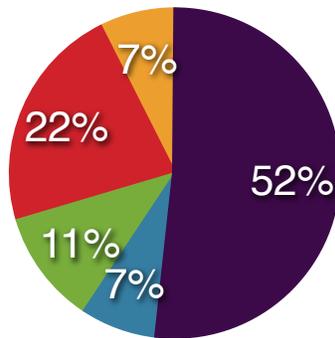
- c. Provide a graphic (table or chart) or narrative that summarizes student learning for your whole class. Be sure to summarize student learning for all evaluation criteria described above.

● Mastery ● Proficient ● Developing ● Beginning ● Incomplete

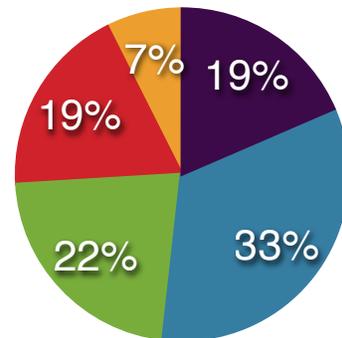
Write It (Shape Name)



Write It (Attributes)



Draw It



- d. Using examples from the summary chart, discuss the patterns of learning across the whole class relative to:
- conceptual understanding
  - procedural fluency
  - mathematical reasoning/problem-solving skills

[For the first two criteria, “write it” shape name and attributes, approximately the same students fell into the same categories as far as mastery of the topic. The third category “draw it” had much fewer students in the mastery category primarily due to the fact, that the motor skills necessary to draw shapes such as a trapezoid and a hexagon are still developing at this age, however some (19%) were still able to master this criteria. At the time of this assessment, over half the class developed the skills necessary to fall into the proficient or mastery categories of naming the shape and the defining attributes, supporting the fact that the majority of the class had a conceptual understanding of 2D shapes after the initial lessons. Students used procedural fluency in order to compare shapes during group discussion which later aided them in drawing their shapes. Students made comments such as “a trapezoid looks like a triangle with the top cut off” and therefore when I went around monitoring student progress as they completed this assessment, they were able to tell me that in order for them to draw a trapezoid they simply drew a triangle, drew a line at the top of the triangle and then erased what was above the triangle. This is seen in numerous of the mastery and proficient student samples. Students also used inductive reasoning by drawing conclusions from the patterns and observations they made in the learning segment. Students show this inductive reasoning in their assessment by distinguishing and differentiating quadrilaterals such as a square and a rectangle. This can be seen in this assessment and in the summary charts if they were to be broken down by shape. When drawing a square and a rectangle many students used their inductive reasoning in order to state a pattern that rectangles were longer than squares because a square’s sides were all equal whereas a rectangle’s opposite sides were equal but not all sides. This was seen during informal assessment as well as in the draw it portion of this assessment.]

## 2. Analyzing Student Learning—3 Focus Students

From your analysis of whole class student learning, identify **one** area where students struggled mathematically. Select **3 student work samples** that represent the

struggles in this area. These students will be your focus students for this task. At least one of the students must have specific learning needs, for example, a student with an IEP (Individualized Education Program), an English language learner, a struggling reader, an underperforming student or a student with gaps in academic knowledge, and/or a gifted student needing greater support or challenge.

- Analyze the three students' work samples and describe the students' struggle(s) as they relate to the underlying mathematical understanding and/or concept. Cite specific evidence from the work samples in relation to **mathematical errors, confusions, and partial understandings**.

What do students' errors tell you about their mathematical understanding? For example, if a student error occurs in a subtraction problem, then the underlying mathematical understanding may include regrouping, meaning of subtraction, and/or subtraction as the inverse of addition. The related mathematical understanding becomes the basis for the targeted learning objective/goal for the students.

[The one area in which students struggled mathematically was identifying numerous shapes and their defining attributes, number of sides and corners/vertices. Student errors in these three samples tell me that much of their mathematical understandings lie in one or two 2D shapes. In Student 1 and Student 3 work samples, students have a firm grasp on the mathematical concepts regarding a triangle however, knowledge of other shapes is either not demonstrated on this assessment or is lacking. The underlying mathematical understanding of knowing the name, shape and defining attributes of the triangle but no other shapes could stem from exposure. Many students, coming into kindergarten, have some base knowledge of shapes, however Student 1 and Student 2 may have not been exposed to the 6 shapes being assessed here and simply need more exposure to the other 5 shapes in order to fully understand them. Throughout the learning segment leading up to this assessment, students had little time using manipulatives in connection with the mathematical concepts being assessed. Knowing these three students, tactile learning has helped solidify prior concepts and could rectify their mathematical errors. Student 2 is an English language learner that often struggles with understanding directions. This student correctly matches the attributes (number of sides and corners) to the shape, however, only once matches the correct name to the shape. The underlying understanding here is language development. This student can correctly identify attributes of shapes and draw the corresponding shapes, however, this student has difficulty identifying the corresponding term in the English language. With this student, repeated verbal directions prove beneficial for mathematical understandings. After assessing and analyzing student samples, it is clear that all three student work samples have a partial understanding of 2D shapes and their corresponding attributes, however, their partial understandings differ. Student 1 and Student 3's understanding is limited to that of one shape while Student 2's understanding is limited to defining attributes.]

### 3. Developing Students' Mathematical Understanding

- a. Based on your analysis of the focus students' work samples, write a targeted learning objective/goal for the students related to the area of struggle.

[Students will be able to sort shapes by defining attributes and correctly match the shape name to a drawn shape.]

- a. Describe the re-engagement lesson you designed to develop each focus student's

mathematical knowledge in relation to the targeted learning objective/goal. Your description should include

- targeted learning objective/goal from prompt 3a
- state-adopted academic content standards and/or **Common Core State Standards**, if applicable, that were the basis of the analysis
- strategies and learning tasks to re-engage students (including what you and the students will be doing)
- representations and other instructional resources/materials used to re-engage students in learning
- assessments for monitoring student learning during the lesson (e.g., pair share, use of individual whiteboards, quick quiz)

[The goal of this re-engagement lesson is that students will be able to sort shapes based on defining attributes and correctly name shapes while matching them to a picture. This re-engagement lesson will correlate with the following standards:

[CCSS.Math.Content.K.G.A.2](#) Correctly name shapes regardless of their orientations or overall size.

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

During this re-engagement lesson students, in a small group, will use attribute blocks and pattern blocks to sort shapes based on a prompt. These three students need tactile learning opportunities and therefore manipulatives used in this lesson are to aid in student understanding. To start this re-engagement lesson, students will be given a variety of shape manipulatives. I will prompt students to sort these shapes individually based on defining attributes. The lists of prompts include, but are not limited to:

"Take out all of your shapes that have 4 sides."

"Take out all of your shapes that have 6 sides. What do we call those shapes?"

"Take out all of your shapes that have 3 corners or vertices. What is the name of the shape you just took out of your pile?"

"Take out all of your shapes that have 4 equal sides. What shape has 4 equal sides?"

"Take out all of your shapes that don't have any sides or corners."

These prompts will continue and change based on student understanding and reaction to each of the prior prompts.

Once students have successfully sorted their shapes based on defining attributes and shape name, students will be asked to complete a matching sheet, used as a post assessment to the re-engagement lesson (see below). Students will be asked to draw a line from the shape name to the corresponding picture of that shape. The matching format was chosen for numerous reasons. To aid Student 2 with language development the words are already typed and I will model by reading the words before beginning the assessment. For students who struggle with the drawing aspect due to developing motor skills, this format also eliminates that possible detour in order to aid students in being successful in displaying their knowledge of 2D shapes.]

Name: \_\_\_\_\_

**Match Me!**

Trapezoid

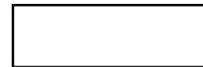
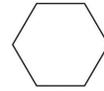
Hexagon

Triangle

Square

Rectangle

Circle



Before responding to prompt 4 you will teach your re-engagement lesson. This lesson may be taught with the three focus students one-on-one, in a small group, or with the whole class.

#### 4. Analyzing Teaching

Cite evidence from the three focus students' work samples from the re-engagement lesson to support your response to the prompt below.

- Analyze the effectiveness of the strategies you used during the re-engagement lesson to develop students' mathematical understanding in the identified area of struggle.

Consider the change in students' mathematical understanding or misconception(s) in relation to the identified area of struggle when describing the effectiveness of the re-engagement lesson.

[This re-engagement lesson proved primarily successful. While completing the shape sort, students were able to handle the manipulatives in order to determine whether or not the shape matched the criteria dictated by the sorting prompt. If students were unsure how many sides a shape had, they simply counted and were then successful in sorting by the number of sides. When sorting moved from sorting by defining attributes to sorting by shape name, some students struggled with determining what that specific shape looked like. By sorting by the number of sides and then naming the shape that had that many sides, students were able to connect what the shape looked like, the name of the shape and the defining attributes of that shape. After analyzing work samples before the re-engagement, it was clear that triangle was one shape that was understood and that informed my

prompts for the re-engagement lesson, as I focused more on other shapes and only asked to sort by triangles once. After the shape sort, these students were able to identify more than one shape, the defining attributes of these shapes and the name of the shapes. It is evident, after analyzing the student re-engagement work samples, that students have a better understanding of 2D shapes after the re-engagement lesson. This is clear as all three students were able to successfully match 5 out of the 6, if not all 6, of the selected 2D shapes.]

# Shapes Ahoy!

By: \_\_\_\_\_

Find your shape partners and write down your shape facts.



Draw It:

A large empty rectangular box with a solid black border, intended for drawing a shape.

Write It:

\_\_\_\_\_

-----

\_\_\_\_\_

\_\_\_ sides \_\_\_ corners

Draw It:

A large empty rectangular box with a solid black border, intended for drawing a shape.

Write It:

\_\_\_\_\_

-----

\_\_\_\_\_

\_\_\_ sides \_\_\_ corners

Draw It:

A large empty rectangular box with a solid black border, intended for drawing a shape.

Write It:

\_\_\_\_\_

-----

\_\_\_\_\_

\_\_\_ sides \_\_\_ corners

Draw It:

Write It:

\_\_\_\_\_

-----

\_\_\_\_\_

\_\_\_\_ sides \_\_\_\_ corners

Draw It:

Write It:

\_\_\_\_\_

-----

\_\_\_\_\_

\_\_\_\_ sides \_\_\_\_ corners

Draw It:

Write It:

\_\_\_\_\_

-----

\_\_\_\_\_

\_\_\_\_ sides \_\_\_\_ corners

**Mathematics Evaluation Criteria**

	<b>5 (Mastery)</b>	<b>4 (Proficient)</b>	<b>3 (Developing)</b>	<b>2 (Beginning)</b>	<b>1 (Incomplete)</b>
<b>Write It (Shape Name)</b>	Student can accurately name 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately name 4/5 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately name 2/3 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately name 1 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student did not complete the assessment.
<b>Write It (Attributes)</b>	Student can accurately describe defining attributes including number of sides and number of corners/vertices of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately describe defining attributes including number of sides and number of corners/vertices of 4/5 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately describe defining attributes including number of sides and number of corners/vertices of 2/3 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately describe defining attributes including number of sides and number of corners/vertices of 1 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student did not complete the assessment.
<b>Draw It</b>	Student can accurately draw the coordinating shape with the shape name of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately draw the coordinating shape with the shape name of 4/5 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately draw the coordinating shape with the shape name of 2/3 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student can accurately draw the coordinating shape with the shape name of 1 out of 6 shapes (circle, triangle, square, rectangle, trapezoid, and hexagon).	Student did not complete the assessment.

