

General Information

Lesson Parts & Duration

Total Duration: 2 to 2 ½ hours

- Segment 1: Defining Attributes of Two-Dimensional Shapes (45-60 Minutes)
- Segment 2: Defining Attributes of Three-Dimensional Shapes (45-60 Minutes)
- Segment 3: Segment 3: Creating Composite Shapes (30-60 Minutes)

Subject(s)

- Geometry: Attributes of Two-Dimensional & Three-Dimensional Shapes (2.G.A.1)
- Geometry: Composite Shapes

Objective

- Students will identify defining attributes of two-dimensional shapes (e.g., triangles are closed and three-sided).
- Students will identify defining attributes of three-dimensional solid shapes (e.g., cubes are three-dimensional solids, with 6 faces, 12 edges, and 8 vertices).
- Students will distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size) of both 2-dimensional and 3-dimensional shapes.
- Students will build and draw shapes with defining attributes to create composite shapes.

Materials

- **Required:** copy of Mouse Shapes by Ellen Stol Walsh
- white construction paper
- paper (2 per student)
- pencils & crayons
- document camera/ chart paper/ or whiteboard
- **Optional:** models of geometric solids: cube, cylinder, pyramid, rectangular prism, and cone
- **Optional:** printable Exit Slips (page 19)
- **Optional:** printable “2D & 3D Shapes” handouts (pages 20-21)
- **Optional:** Printable “Break Up Your Day” brain/movement break ideas (page 22)

Instructional Setting

- Seated on the floor in front of chart paper or a projected display & seated at desks/tables to complete student work.

Throughout these lessons, you will find:

- ☀ **Scripted Text** indicates things that need to be said directly. Bullets starting with a “T” followed by *italicized type* indicate scripted text
- ☀ **Clarifiers** within scripted text are in orange
- ☀ **Teacher Directions** indicate things you should be doing
- ☀ **Side notes** provide helpful hints, ELL strategies, differentiation and information
- ☀ **Break Up Your Day** (Brain/Movement Breaks) are in green boxes (at the end)

Remember!

Quality over quantity. All components do not have to be accomplished; lessons may be ended at any time and resumed later.

Instructional Plan: Segment 1: 45-60 minutes

Subject

- Defining Attributes of Two-Dimensional Shapes

Objective

- Students will identify defining attributes of two-dimensional shapes (e.g., triangles are closed and three-sided).

Materials

- blank paper (1 per student) or printable “2D Shapes” handout (page 20)
- pencils & crayons
- document camera/ chart paper/ or whiteboard
- Optional:** printable Exit Slip (page 19)

Introduction

T Do you know what I see every day when I walk around? **Pause for students to think.**

T I see shapes!

T There are shapes all around us and each of these shapes has a name.

T Just like you and me; something that we call them.

T For example, one shape I know is called a circle.

T I want you to take a second and think.

T Remember to think with your mind and not with your mouth.

T Don't tell anyone what shapes you are thinking of.

T Let's all close our eyes and think of some shapes we know. **Pause for students to think.**

T Ok, let's open our eyes, but still DON'T tell anyone what shapes you thought of.

T We are going to share them in a few minutes!

Shapes Around the Room!

T Without telling anyone the shapes you know can you look around the room and see any of these shapes?

T Just like you and me shapes have things that make them who they are.

T They have different characteristics that we can use to describe them.

T There is a big word we use when talking about these things that make the shapes who they are, that word is “attributes”. **Write “attributes” on the board or chart paper.**

T Today we will be looking closely at the shapes we know and decide what attributes they have.

T There are 2 kinds of attributes, defining, which means they tell us what makes the shape what it is and non-defining which means any shape can have them.

T Some examples of a non-defining attributes are what color it is, what size it is, or where it is.

2-Dimensional Shapes We Know

T Remember that I told you I see shapes every day?

T Well, there are 2 kinds of shapes, two-dimensional or 2D shapes and three-dimensional or 3D shapes.

T During this lesson, we are going to just talk about two-dimensional shapes.

T Those are the shapes that are flat, like paper.

T Now, I would like for you to whisper to a buddy sitting near you all of the shapes you thought of earlier when we closed our eyes.

Give time for students to share with one another. Walk around and monitor the conversations.

While you are monitoring conversations, use this time to pass out 1 piece of paper per student. Make sure they also have a pencil.

- T* Eyes on me in: 5, 4, 3, 2, 1!
- T* Thank you for giving me your attention.
- T* Wow, boys and girls it sounds like you all remember your shapes!
- T* I have just given you each a piece of paper.
- T* On this paper, we are going to make ourselves a chart.
- T* On our chart, we will be drawing our shapes and deciding what “attributes” they each have.

Setting Up the Chart If you printed the handout on page x you can skip this portion of “Setting Up Your Paper”.

- T* First I want you to put your paper in front of you! Demonstrate having your paper horizontally in front of you.
- T* We are going to fold our paper in half like a hot dog bun, so it has two long sides. Model this and provide assistance as needed.
- T* Next, we are going to fold the left side and the right side in towards the middle so that we end up with 6 equal boxes. Model this and provide assistance as needed.
- T* In the top, center box write “2D SHAPES”.
- T* “S” “H” “A” “P” “E” “S”. Spell it out and model writing it where they can see.

	2D SHAPES	

Give time for students to share with one another. Walk around and provide assistance as needed. If anyone struggles with writing you can write it lightly for them to trace your letters on their paper.

- T* Before we get started filling in our chart let’s take a quick break!



Now is a great time to take a break and get students re-energized. See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see pages 22)

- T* Okay, now that we got our wiggles out, let’s get back to our chart.
- T* I am going to make my chart first, but I will need you to help me.

You may want to have students join you up by the board/ piece of chart paper and sit on the floor. Or you can have them put their papers face down so that they aren’t distracted.

- T* I am going to draw a picture of a shape that I know.
- T* Then I am going to look at the shape’s “attributes”.
- T* Remember, “attributes” are the characteristics or things we use to describe a shape.
- T* I can describe most shapes by looking at a shape’s sides and a shape’s corners.
- T* There is a big fancy math word we use for corners and that is “vertices”.
- T* Every one say that big fancy word with me... “vertices”.
- T* Lastly, we can talk about a shape’s angles.
- T* Angles are made when two sides of a shape are joined at a vertex or corner.
- T* These angles can be big obtuse angles, meaning it looks like a mouth open nice and wide.
- T* Or they can be small acute angles, meaning it looks like a mouth that is not open very wide.
- T* The last kind of angle that I know you talked about in first grade is a right angle or 90-degree angle.

- T* This is the angle that is shaped like the letter L.
- T* I can fit a box in the corners of a right angle because they are square corners.
- T* Today we will only be counting our angles and checking to see if they are right angles.
- T* If you feel ready, when I say, "All set" I want you to say "You Bet!" but only if you are ready.
- T* "All set?" **Wait for a majority response of "You bet!"**
- T* So, I am thinking of all those two-dimensional shapes that I thought of before.
- T* I am sure in first grade you talked about squares, rectangles, triangles
- T* I am going to first draw a picture of a shape.
- T* Then I want to see if you can tell me the shape's name, help me count the sides, and last help me count the vertices, remember that was the big fancy word for corners.
- T* And finally we will count the angles.

This is the chart you will be making as a demonstration with the class. After you have completed a sample students will either create their own on blank paper or you can print off the handout for them to just fill in. There is also an exit slip containing this exact information that can be used as an assessment.

2D SHAPES		
<p>Quadrilaterals</p> <ul style="list-style-type: none"> • A polygon with 4 sides • 4 angles <p>Square Rectangle</p>  <p>Rhombus Trapezoid</p> 	<p>4 Right Angles</p> <p>Squares Rectangles</p> <ul style="list-style-type: none"> • 4 sides • 4 right angles • 4 vertices 	<p>Triangle</p> <ul style="list-style-type: none"> • 3 sides • 3 angles • 3 vertices 
<p>Pentagon</p> <ul style="list-style-type: none"> • 5 sides • 5 angles • 5 vertices 	<p>Hexagon</p> <ul style="list-style-type: none"> • 6 sides • 6 angles • 6 vertices 	<p>Octagon</p> <ul style="list-style-type: none"> • 8 sides • 8 angles • 8 vertices 

Quadrilateral

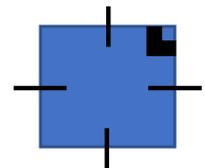
- T* I am going to label my first box, "Quadrilateral". **Write it on your paper.**
- T* A quadrilateral is a polygon that has 4 sides.
- T* The prefix of quadrilateral is "quad" and "quad" actually means 4.
- T* I can think of at least 4 shapes I can put in this category.
- T* Who can help me think of a 4-sided shape? **Call on students. Answers: square, rectangle, rhombus, & trapezoid**
- T* Great thinking boys and girls.
- T* I am going to draw a square, a rectangle, a rhombus, who looks like a square that got pushed over, and a trapezoid.
- T* Let's count the angles on all 4 of these shapes. **Go one shape at a time to count the angles. Point to each angle as you count.**
- T* Do any of the angles on my shapes look like they have right angles?

- T* Remember those are the angles I can fit a box or letter L inside. **Call on students.** Answer: square and rectangle.
- T* My square and my rectangle both have 4 right angles.
- T* The rhombus and trapezoid have both big obtuse angles and small acute angles.
- T* These are also closed shapes because there are no openings.

4 Right Angles

- T* Our second box is for shapes that we know that have all right angles. **Write "Right Angles" as your heading of the second box.**
- T* Who can tell me the names of shapes that would go in this box? **Call on students.** Answer: square and rectangle
- T* That's right, a square and a rectangle.
- T* We just talked about these two shapes when we were identifying quadrilaterals.
- T* I am going to draw these shapes in my right-angle box.
- T* Let's see how many sides each of our shapes have.
- T* Count with me. **Count the sides and put a line through the side showing how we indicate a side.**
- T* I am going to write that they each have 4 sides on my chart.
- T* We already know there are 4 right angles in our two shapes.
- T* To show this, I am going to draw a little L or box inside each of the 4 corners.

Note:
To be more interactive for the students, have them come up and help to count or put the numbers for sides, angles, and vertices.



- Example shown on right.**
- T* I am going to write that there are 4 angles on my chart.
- T* Last I need to count the vertices.
- T* Remember that vertices are the corners of a shape.
- T* Let's see how many vertices each of our shapes have.
- T* Count with me. **Count the vertices and put a dot on them to indicate a vertex.**
- T* Both shapes are closed shapes because there are no openings.

2D SHAPES		
<p>Quadrilaterals</p> <ul style="list-style-type: none"> A polygon with 4 sides 4 angles <p>Square Rectangle</p> <p>Rhombus Trapezoid</p>	<p>4 Right Angles</p> <p>Squares</p> <ul style="list-style-type: none"> 4 sides 4 right angles 4 vertices <p>Rectangles</p>	<p>Triangle</p> <ul style="list-style-type: none"> 3 sides 3 angles 3 vertices
<p>Pentagon</p> <ul style="list-style-type: none"> 5 sides 5 angles 5 vertices 	<p>Hexagon</p> <ul style="list-style-type: none"> 6 sides 6 angles 6 vertices 	<p>Octagon</p> <ul style="list-style-type: none"> 8 sides 8 angles 8 vertices

Draw a Triangle

- T* This is my third box. **Draw a triangle and point to it.**
- T* Who can tell me the name of this shape? **Call on students.** Answer: triangle
- T* Let's look at the attributes or characteristics of a triangle.
- T* How many straight sides does a triangle have?
- T* Let's count them. **Count the sides and put a line through the side showing how we indicate a side.**
- T* A triangle has 3 straight sides.
- T* I am going to write that it has 3 sides on my chart.
- T* Let's see how many angles a triangle has.
- T* Do you see any right angles? **Answer: no**
- T* Let's count all out the angles. **Draw an arch in the angles to indicate an angle.**
- T* A triangle has 3 angles.
- T* I am going to write that it has 3 angles on my chart.
- T* Last, let's count the vertices.
- T* Remember, vertices are the corners.
- T* Let's count them together.

- T There are 3 vertices on a triangle, or 3 corners.
- T I am going to write that it has 3 vertices on my chart.
- T A triangle is also a closed shape, there are no openings.

Draw a Pentagon

- T This is my fourth box. **Draw a pentagon and point to it.**
- T Who can tell me the name of this shape? **Call on students. Answer: pentagon**
- T Let's look at the attributes or characteristics of a pentagon.
- T How many straight sides does a pentagon have?
- T Let's count them. **Count the sides and put a line through the side showing how we indicate a side.**
- T A pentagon has 5 straight sides.
- T I am going to write that it has 5 sides on my chart.
- T Let's see how many angles a pentagon has.
- T Do you see any right angles? **Answer: no**
- T Let's count all out the angles. **Draw an arch in the angles to indicate an angle.**
- T A pentagon has 5 angles.
- T I am going to write that it has 5 angles on my chart.
- T Last, let's count the vertices.
- T Remember, vertices are the corners.
- T Let's count them together.
- T There are 5 vertices on a pentagon, or 5 corners.
- T I am going to write that it has 5 vertices on my chart.
- T A pentagon is also a closed shape, there are no openings.

2D SHAPES		
<p>Quadrilaterals</p> <ul style="list-style-type: none"> • A polygon with 4 sides • 4 angles <p>Square Rectangle</p> <p>Rhombus Trapezoid</p>	<p>4 Right Angles</p> <p>Squares Rectangles</p> <ul style="list-style-type: none"> • 4 sides • 4 right angles • 4 vertices 	<p>Triangle</p> <ul style="list-style-type: none"> • 3 sides • 3 angles • 3 vertices
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Draw a Hexagon

- T This is my fifth box. **Draw a hexagon and point to it.**
- T Who can tell me the name of this shape? **Call on students. Answer: hexagon**
- T Let's look at the attributes or characteristics of a hexagon.
- T How many straight sides does a hexagon have?
- T Let's count them. **Count the sides and put a line through the side showing how we indicate a side.**
- T A hexagon has 6 straight sides.
- T I am going to write that it has 6 sides on my chart.
- T Let's see how many angles a hexagon has.
- T Do you see any right angles? **Answer: no**
- T Let's count the angles. **Draw an arch in the angles to indicate an angle.**
- T A hexagon has 6 angles.
- T I am going to write that it has 6 angles on my chart.
- T Last, let's count the vertices.
- T Remember, vertices are the corners.
- T Let's count them together.
- T There are 6 vertices on a hexagon, or 6 corners.
- T I am going to write that it has 6 vertices on my chart.
- T A hexagon is also a closed shape, there are no openings.

Draw an Octagon

- T* This is my sixth and final box. **Draw an octagon and point to it.**
- T* Who can tell me the name of this shape? **Call on students. Answer: octagon**
- T* Let's look at the attributes or characteristics of an octagon.
- T* How many straight sides does an octagon have?
- T* Let's count them. **Count the sides and put a line through the side showing how we indicate a side.**
- T* A octagon has 8 straight sides.
- T* I am going to write that it has 8 sides on my chart.
- T* Let's see how many angles an octagon has.
- T* Do you see any right angles? **Answer: no**
- T* Let's count all out the angles. **Draw an arch in the angles to indicate an angle.**
- T* An octagon has 8 angles.
- T* I am going to write that it has 8 angles on my chart.
- T* Last, let's count the vertices.
- T* Remember, vertices are the corners.
- T* Let's count them together.
- T* There are 8 vertices on an octagon, or 8 corners.
- T* I am going to write that it has 8 vertices on my chart.
- T* An octagon is also a closed shape, there are no openings.

2D SHAPES		
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If you had students seated in the front to watch you model the activity, send them back to their seats for the next part.

- T* Now that you have helped me with my chart it is time for you to fill in your own chart!
- T* Just like I did, you will first draw a picture of the shape. **If you are having them draw the shapes you can have them trace pattern blocks or use a shape template if available, or they can use the printable handout at this point.**
- T* Let's think of the things we wrote about our shape.
- T* Does anyone remember that big math word I used to tell about its characteristics?
- T* It starts with the letter *a*. **Call on students. Answer: Attributes**
- T* We told about our shapes' "attributes".
- T* We counted 3 things on every shape.
- T* Who can tell me what those three things we counted were? **Call on students. Answer: sides, angles, vertices/corners**
- T* We counted how many straight sides it had, how many angles it had, and how many vertices or corners.
- T* If you remember we also noticed if a shape was open or closed.
- T* And 2 of our shapes had something special in the corners.
- T* Does anyone remember what was special about the corners of 2 of our shapes? **Call on students. Answer: right angles**
- T* My square and my rectangle had right angles and I was able to draw a little square in the corner.

T Before we get started filling in our charts let's take a quick break!

Make sure to "Break Up Your Day!"

Now is a great time to take a break and get students re-energized. See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see pages 22)

Depending on their readiness you can either leave the chart up as a reference for them to copy from or if you feel they are ready you can take it down to make this more challenging.

Note:

If you take down your example be sure to write the words: Sides and vertices on the board for them to copy.

Differentiation:

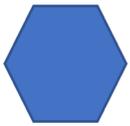
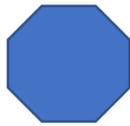
CHALLENGE: see if there are more shapes that they can add to this list and define the attributes for (septagon (7), decagon (10) ... etc)

SUPPORT: Pull a small group to work with if they are having trouble remember the process. You can also write the words lightly on their page for them to trace.

*You may use the exit slip as a quick assessment of student understanding. Either print them out (page 19), or simply have students copy the problems on a half sheet of paper

Name: ANSWER KEY Date: _____

Exit Slip: Segment 1

2D SHAPES		
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Instructional Plan: Segment 2: 45-60 minutes

Subject

- Geometry: Defining Attributes of Three-Dimensional Shapes

Objective

- Students will identify defining attributes of three-dimensional solid shapes (e.g., cubes are three-dimensional solids, with 6 faces, 12 edges, and 8 vertices).

Materials

- blank paper (1 per student) or printable “3D Shapes” handout (page 21)
- pencil & crayons/colored pencils
- document camera or whiteboard
- **Optional:** models of geometric solids: cube, cylinder, pyramid, rectangular prism, and cone
- **Optional:** printable Exit Slip (page 19)

Introduction

- T* Most of the time when someone talks about shapes I think about two-dimensional shapes.
- T* Those flat shapes like squares, rectangles triangles, pentagons, hexagons, and octagons.
- T* But there are other solid objects around that are known as three-dimensional shapes.
- T* These are the ones that I can pick up and put things inside.
- T* They are known as geometric solids.
- T* Today we are going to explore 5 geometric solids.
- T* I think the most well-known geometric solid is a cube.
- T* What things can you think of in the world that are in the shape of a cube. **Either draw a cube on the board or project the image from the student handout so that students have a visual image.**
- T* Let’s all close our eyes and think of some objects that are shaped like a cube.
- T* Remember to think with your mind and not with your mouth! **Pause for students to think.**
- T* Ok, let’s open our eyes, but still DON’T tell anyone what objects you thought of.
- T* We are going to share them in a few minutes!

Shapes Around the Room!

- T* Without telling anyone the objects you thought of, can you look around the room and see any of these objects in our classroom?
- T* Just like you and me three-dimensional shapes have things that make them who they are.
- T* They have different characteristics that we can use to describe them.
- T* There is a big word we use when talking about these things that make the shapes who they are, that word is “attributes”. **Write “attributes” on the board or chart paper.**
- T* Today we will be looking closely at the three-dimensional shapes we know and decide what attributes they have.
- T* There are 3 main attributes that we use to describe our geometric solids or three-dimensional shapes.
- T* These three-dimensional shapes have faces.
- T* I know that sounds silly, not faces like you and me.
- T* The face on our three-dimensional shapes looks like a basic two-dimensional shape.
- T* Like a square, a triangle, or a rectangle.
- T* And unlike us most three-dimensional shapes have several or many faces.
- T* The next attribute we look at are the edges of a shape.
- T* Point to the edge of your desk/table.
- T* An edge is like a straight line or like a side on a two-dimensional shape.

- T* An edge is the line where 2 faces meet on a solid object.
- T* Last we look at how many vertices a three-dimensional shape has.
- T* Vertices are like the corners of the shape.
- T* On a three-dimensional shape, it is a point where 2 or more edges meet at a corner.
- T* When I am talking about just one, I actual call it a vertex.

3-Dimensional Shapes We Know

- T* Now, I would like for you to whisper to a buddy sitting near you all the solid objects that are shaped like a cube you thought of early when we closed our eyes.

Give time for students to share with one another. Walk around and monitor the conversations. While you are monitoring conversations, use this time to pass out 1 piece of paper per student. Make sure they also have a pencil.

- T* Eyes on me in: 5, 4, 3, 2, 1!
- T* Thank you for giving me your attention.
- T* Wow, boys and girls it sounds like you all thought of a lot of things shaped like a cube!
- T* I have just given you each a piece of paper.
- T* On this paper, we are going to make ourselves a chart.
- T* On our chart, we will be drawing our shapes and deciding what “attributes” they each have.

Setting Up the Chart If you printed the handout on page X you can skip this portion of “Setting Up Your Paper”.

- T* First I want you to put your paper in front of you! **Demonstrate having your paper horizontally in front of you.**
- T* We are going to fold our paper in half like a hot dog bun, so it has two long sides. **Model this and provide assistance as needed.**
- T* Next, we are going to fold the left side and the right side in towards the middle so that we end up with 6 equal boxes. **Model this and provide assistance as needed.**
- T* In the top, center box write “3D SHAPES”.
- T* “S” “H” “A” “P” “E” “S”. **Spell it out and model writing it where they can see. If anyone struggles with writing you can write it lightly for them to trace your letters on their paper.**

	3D SHAPES	

Give time for students to share with one another. Walk around and provide assistance as needed. If anyone struggles with writing you can write it lightly for them to trace your letters on their paper.

- T* Before we get started filling in our chart let’s take a quick break!



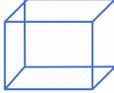
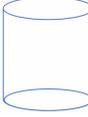
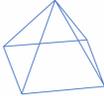
Now is a great time to take a break and get students re-energized.
See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see pages 22)

- T* Okay, now that we got our wiggles out, let’s get back to our chart.
- T* I am going to make my chart first, but I will need you to help me.

You may want to have students join you up by the board/ piece of chart paper and sit on the floor. Or you can have them put their papers face down so that they aren’t distracted.

- T* I am going to draw a picture of a three-dimensional shape that I know.
- T* Then I am going to look at the shape's "attributes".
- T* Remember, "attributes" are the characteristics or things we use to describe a shape.
- T* I can describe most three-dimensional shapes by looking at 3-main attributes.
- T* Remember I told you about the faces, edges, and vertices.
- T* The faces are a basic 2-dimensional shape.
- T* The edges are the straight sides of a shape.
- T* And last the vertices or corners of my shape, where two edges meet!

This is the chart you will be making as a demonstration with the class. You can also use a student handout to fill in if it is too difficult for you to draw the 3D shapes. Just cover the names so that students have the chance to guess the name of the 3D Shape After you have completed a sample students will either create their own on blank paper or you can print off the handout for them to just fill in. There is also an exit slip containing this exact information that can be used as an assessment.

3D SHAPES		
<p>Cube</p> <ul style="list-style-type: none"> • 6 faces • 12 edges • 8 vertices  <p>This shape has (6) <u>SQUARE</u> faces.</p>	<p>Cylinder</p> <ul style="list-style-type: none"> • 2 faces • 0 edges • 0 vertices  <p>This shape has (2) <u>CIRCLE</u> faces.</p>	<p>Pyramid</p> <ul style="list-style-type: none"> • 5 faces • 8 edges • 5 vertices  <p>This shape has (1) <u>SQUARE</u> & (4) <u>TRIANGLE</u> faces.</p>
<p>Rectangular Prism</p> <ul style="list-style-type: none"> • 6 faces • 12 edges • 8 vertices  <p>This shape has (2) <u>SQUARE</u> & (4) <u>RECTANGLE</u> faces.</p>	<p>Cone</p> <ul style="list-style-type: none"> • 1 faces • 0 edges • 1 vertices  <p>This shape has (1) <u>CIRCLE</u> faces.</p>	<p>3D SHAPE ATTRIBUTES</p> <p>Face: 2-dimensional flat surfaces of a solid object</p> <p>Edge: The line where 2 faces meet on a solid object</p> <p>Vertices: A point where 2 or more edges meet at a corner</p>

Cube

- T* I am going to draw/show you our first shape. Draw or project it for students to see. If projecting, make sure that the name is covered for guessing purposes.
- T* Who can tell me the name of this shape? Call on students. Answer: cube; write cube above the image once it was guessed correctly.
- T* Let's look at the attributes or characteristics of a cube.
- T* The first attribute that we will look at is the faces.
- T* Does anyone see a two-dimensional shape on this geometric solid?
- T* What shape do you see? Call on students. Answer: a square
- T* A face on a cube is shaped like a square.
- T* I am going to write that on my chart.
- T* Let's count how many faces there are on our cube. Count the faces together. You may want to use a box or dice to help visually show this.
- T* A cube has 6 faces.
- T* I am going to write that it has 6 faces on my chart.
- T* Let's see how many edges a cube has.

- T Remember edges are the straight lines.
- T Count with me. Point to and count 12 edges. You can highlight or color the lines on the shape to help to illustrate this.
- T A cube has 12 edges.
- T I am going to write that a cube has 12 edges on my chart.
- T Last, let's count the vertices or the corners of a cube. Point to and count 8 vertices. You can put dots in all 8 corners to illustrate this.
- T A cube has 8 vertices.
- T I am going to write that on my chart.

Cylinder

- T I am going to draw/show you our second shape. Draw or project it for students to see. If projecting, make sure that the name is covered for guessing purposes.
- T Who can tell me the name of this shape? Call on students. Answer: cylinder; write cylinder above the image once it was guessed correctly.
- T Let's look at the attributes or characteristics of a cylinder.
- T The first attribute that we will look at is the faces.
- T Does anyone see a two-dimensional shape on this geometric solid?
- T What shape do you see? Call on students. Answer: a circle
- T A face on a cylinder is shaped like a circle.
- T I am going to write that on my chart.
- T Let's count how many faces there are on our cylinder. Count the faces together. You may a roll of paper towels, or a can to help visually show this.
- T A cylinder has 2 faces.
- T The center part of a cylinder if unwrapped is the shape of a rectangle, but it is not a face.
- T I am going to write that it has 2 faces on my chart.
- T Let's see how many edges a cylinder has.
- T Remember edges are the straight lines.
- T Count with me. Look puzzled because you see no straight lines.
- T A cylinder has 0 straight edges.
- T All the sides of this shape are curved.
- T I am going to write that a cylinder has 0 edges on my chart.
- T Last, let's count the vertices or the corners of a cylinder. Look puzzled because you see no vertices or corners.
- T Just like it has no edges, it also has no vertices or no corners.
- T A cylinder has 0 vertices.
- T I am going to write that on my chart.

Note:
To be more interactive for the students, have them come up and help to count or put the numbers for sides, angles, and vertices.

3D SHAPES		
<p>Cube</p> <ul style="list-style-type: none"> • 6 faces • 12 edges • 8 vertices  <p>This shape has (6) SQUARE faces.</p>	<p>Cylinder</p> <ul style="list-style-type: none"> • 2 faces • 0 edges • 0 vertices  <p>This shape has (2) CIRCLE faces.</p>	<p>Pyramid</p> <ul style="list-style-type: none"> • 5 faces • 8 edges • 5 vertices  <p>This shape has (1) SQUARE & (4) TRIANGLE faces.</p>
<p>Rectangular Prism</p> <ul style="list-style-type: none"> • 6 faces • 12 edges • 8 vertices  <p>This shape has (2) SQUARE & (4) RECTANGLE faces.</p>	<p>Cone</p> <ul style="list-style-type: none"> • 1 faces • 0 edges • 1 vertices  <p>This shape has (1) CIRCLE faces.</p>	<p>3D SHAPE ATTRIBUTES</p> <p>Face: 2-dimensional flat surfaces of a solid object</p> <p>Edge: The line where 2 faces meet on a solid object</p> <p>Vertices: A point where 2 or more edges meet at a corner</p>

Pyramid

- T I am going to draw/show you our third shape. Draw or project it for students to see. If projecting, make sure that the name is covered for guessing purposes.
- T Who can tell me the name of this shape? Call on students. Answer: pyramid; write pyramid above the image once it was guessed correctly.

- T** Let's look at the attributes or characteristics of a pyramid.
- T** The first attribute that we will look at is the faces.
- T** Does anyone see a two-dimensional shape on this geometric solid?
- T** What shape do you see? **Call on students.** Answer: a square or triangle
- T** I actually see two shapes.
- T** I see a square at the bottom or the base of this shape and I see a triangle on the sides.
- T** A face on a pyramid is shaped like a square and a triangle.
- T** I am going to write that on my chart.
- T** Let's count how many faces there are on our pyramid. **Count the faces together.** You may want to use square pyramid if you have anything in the room in that shape.
- T** I am going to write that it has 5 faces on my chart.
- T** Let's see how many edges a pyramid has.
- T** Remember edges are the straight lines.
- T** Count with me. **Point to and count 8 edges.** You can highlight or color the lines on the shape to help to illustrate this.
- T** A pyramid has 8 edges.
- T** I am going to write that a pyramid has 8 edges on my chart.
- T** Last, let's count the vertices or the corners of a pyramid. **Point to and count 5 vertices.** You can put dots in all 5 corners to illustrate this.
- T** A pyramid has 5 vertices.
- T** I am going to write that on my chart.

3D SHAPES		
<p>Cube</p> <ul style="list-style-type: none"> • 6 faces • 12 edges • 8 vertices  <p>This shape has (6) SQUARE faces.</p>	<p>Cylinder</p> <ul style="list-style-type: none"> • 2 faces • 0 edges • 0 vertices  <p>This shape has (2) CIRCLE faces.</p>	<p>Pyramid</p> <ul style="list-style-type: none"> • 5 faces • 8 edges • 5 vertices  <p>This shape has (1) SQUARE & (4) TRIANGLE faces.</p>
<p>Rectangular Prism</p> <ul style="list-style-type: none"> • 6 faces • 12 edges • 8 vertices  <p>This shape has (2) SQUARE & (4) RECTANGLE faces.</p>	<p>Cone</p> <ul style="list-style-type: none"> • 1 faces • 0 edges • 1 vertices  <p>This shape has (1) CIRCLE faces.</p>	<p>3D SHAPE ATTRIBUTES</p> <p>Face: 2-dimensional flat surfaces of a solid object</p> <p>Edge: The line where 2 faces meet on a solid object</p> <p>Vertices: A point where 2 or more edges meet at a corner</p>

Rectangular Prism

- T** I am going to draw/show you our fourth shape. **Draw or project it for students to see.** If projecting, make sure that the name is covered for guessing purposes.
- T** Who can tell me the name of this shape? **Call on students.** Answer: rectangular prism; write rectangular prism above the image once it was guessed correctly.
- T** Let's look at the attributes or characteristics of a rectangular prism.
- T** The first attribute that we will look at is the faces.
- T** Does anyone see a two-dimensional shape on this geometric solid?
- T** What shape do you see? **Call on students.** Answer: a square or rectangle
- T** I actually see two shapes.
- T** I see a square one each side of this shape and I see 4 rectangles in the front, back, top, and bottom of this shape.
- T** The faces on a rectangular prism are shaped like a square and a rectangle.
- T** I am going to write that on my chart.
- T** Let's count how many faces there are on our rectangular prism. **Count the faces together.** You may want to use long Kleenex box or something of a similar shape in the room to help illustrate this.
- T** I am going to write that it has 6 faces on my chart.
- T** Let's see how many edges a rectangular prism has.
- T** Remember edges are the straight lines.
- T** Count with me. **Point to and count 12 edges.** You can highlight or color the lines on the shape to help to illustrate this.
- T** A rectangular prism has 12 edges.
- T** I am going to write that a rectangular prism has 12 edges on my chart.
- T** Last, let's count the vertices or the corners of a rectangular prism. **Point to and count 8 vertices.** You can put dots in all 8 corners to illustrate this.

- T* A rectangular prism has 8 vertices.
T I am going to write that on my chart.

Cone

T I am going to draw/show you our fifth and last shape. **Draw or project it for students to see. If projecting, make sure that the name is covered for guessing purposes.**

T Who can tell me the name of this shape? **Call on students. Answer: cone; write cone above the image once it was guessed correctly.**

T Let's look at the attributes or characteristics of a cone.

T The first attribute that we will look at is the faces.

T Does anyone see a two-dimensional shape on this geometric solid?

T What shape do you see? **Call on students. Answer: a circle**

T A face on a cone is shaped like a circle.

T I am going to write that on my chart.

T Let's count how many faces there are on our cone.

T Let's count them. **Count the faces together. You may use anything in the classroom that you find that is the shape of a cone to help visually show this.**

T A cone has 1 face.

T I am going to write that it has 1 face on my chart.

T Let's see how many edges a cylinder has.

T Remember edges are the straight lines.

T Count with me. **Look puzzled because you see no straight lines.**

T A cone has 0 straight edges.

T All the sides of this shape are curved.

T I am going to write that a cone has 0 edges on my chart.

T Last, let's count the vertices or the corners of a cone. **Count just the top point**

T A cone has only 1 vertex at the very top.

T I am going to write that on my chart.

T We have one box left to fill in.

T In our last box let's label it "3D Shape Attributes".

T Now that we have practiced with 5 three-dimensional shapes, let's see if you can define face, edge, and vertices.

T Who would like to try? **Call on students to share their definitions, once a student is close to the definition on the example you can rephrase it to be the correct definition and write it on your chart.**

Answers: Face: 2-dimensional flat surface of a solid object. Edge: The line where 2 faces meet on a solid object.

Vertices: A point where 2 or more edges meet at a corner.

3D SHAPES		
<p>Cube</p> <ul style="list-style-type: none"> • 6 faces • 12 edges • 8 vertices  <p>This shape has <u>(6) SQUARE</u> faces.</p>	<p>Cylinder</p> <ul style="list-style-type: none"> • 2 faces • 0 edges • 0 vertices  <p>This shape has <u>(2) CIRCLE</u> faces.</p>	<p>Pyramid</p> <ul style="list-style-type: none"> • 5 faces • 8 edges • 5 vertices  <p>This shape has <u>(1) SQUARE & (4) TRIANGLE</u> faces.</p>
<p>Rectangular Prism</p> <ul style="list-style-type: none"> • 6 faces • 12 edges • 8 vertices  <p>This shape has <u>(2) SQUARE & (4) RECTANGLE</u> faces.</p>	<p>Cone</p> <ul style="list-style-type: none"> • 1 faces • 0 edges • 1 vertices  <p>This shape has <u>(1) CIRCLE</u> faces.</p>	<p>3D SHAPE ATTRIBUTES</p> <p>Face: 2-dimensional flat surfaces of a solid object</p> <p>Edge: The line where 2 faces meet on a solid object</p> <p>Vertices: A point where 2 or more edges meet at a corner</p>

If you had students seated in the front to watch you model the activity, send them back to their seats for the next part.

For this next part, it would be very helpful to print out the student hand out since 3D shapes are very hard to draw. If you are not able to do so, I would suggest having them draw a picture of something that is that shape or just do their best to draw the 3D figure.

- T* Now that you have helped me with my chart it is time for you to fill in your own chart!
- T* Just like I did, you will first draw a picture of the shape or an object that you can think of that is that shape.
- T* For example, for my cube, I can draw dice.
- T* Let's think of the things we wrote about our shape.
- T* Does anyone remember that big math word I used to tell about its characteristics?
- T* It starts with the letter a. **Call on students. Answer: Attributes**
- T* We told about our shapes' "attributes".
- T* We counted 3 things on every shape.
- T* Who can tell me what those three things we counted were? **Call on students. Answer: faces, edges, and vertices.**
- T* We counted how many faces or two-dimensional shapes there are on our three-dimensional shape.
- T* We counted how many straight edges our shape had and last how many vertices or corners it had.
- T* Before we get started filling in our charts let's take a quick break!

 **Make sure to "Break Up Your Day!"** 

Now is a great time to take a break and get students re-energized.
See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see pages 22)

Depending on their readiness you can either leave the chart up as a reference for them to copy from or if you feel they are ready you can take it down to make this more challenging.

Note:

If you take down your example be sure to write the words: Sides and vertices on the board for them to

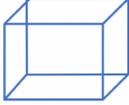
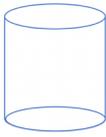
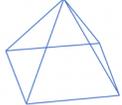
Differentiation:

CHALLENGE: see if there are more shapes that they can add to this list and define the attributes for (trapezoid, hexagon, octagon... etc)
SUPPORT: Pull a small group to work with if they are having trouble remember the process. You can also write the words lightly on their page for them to trace.

If you are crunched for time you can always have students use the exit slip to show understanding rather than making their own chart like yours. There is a printable exit slip on page 19. The answer key is found on the next page.

Name: ANSWER KEY Date: _____

Exit Slip: Segment 2

3D SHAPES		
<p>Cube</p> <ul style="list-style-type: none"> • 6 faces • 12 edges • 8 vertices  <p>This shape has <u>(6) SQUARE</u> faces.</p>	<p>Cylinder</p> <ul style="list-style-type: none"> • 2 faces • 0 edges • 0 vertices  <p>This shape has <u>(2) CIRCLE</u> faces.</p>	<p>Pyramid</p> <ul style="list-style-type: none"> • 5 faces • 8 edges • 5 vertices  <p>This shape has <u>(1) SQUARE & (4) TRIANGLE</u> faces.</p>
<p>Rectangular Prism</p> <ul style="list-style-type: none"> • 6 faces • 12 edges • 8 vertices  <p>This shape has <u>(2) SQUARE & (4) RECTANGLE</u> faces.</p>	<p>Cone</p> <ul style="list-style-type: none"> • 1 faces • 0 edges • 1 vertices  <p>This shape has <u>(1) CIRCLE</u> faces.</p>	<p>3D SHAPE ATTRIBUTES</p> <p>Face: 2-dimensional flat surfaces of a solid object</p> <p>Edge: The line where 2 faces meet on a solid object</p> <p>Vertices: A point where 2 or more edges meet at a corner</p>

Instructional Plan: Segment 3: 30-60 minutes

Subject

- Creating Composite Shapes

Objective

- Students will distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size) of both 2-dimensional and 3-dimensional shapes.
- Students will build and draw shapes with defining attributes to create composite shapes.

Materials

- **Required:** copy of Mouse Shapes by Ellen Stol Walsh
- white construction paper
- crayons
- pencils

If you do not have a copy of Mouse Shapes you can find “read alouds” online by searching the title of the book.

Introduction

T Today I have a really great book for us to read about mice and shapes!

Read story

Make sure students are seated in a way that they can see the pictures as you read.

On each page, after reading the text, pause and let students look at the illustrations for a few moments. After reading 2 pages stop for a quick discussion.

T There are so many colorful pictures in this book!

T Can you see what the pictures are made of?

T Turn and talk with a buddy nearby what the pictures in this story are made up of.

T Remember only one buddy talks at a time. Give students about 15 seconds each, then ask them to switch.

Using equity sticks, if available, choose students to answer in complete sentence,

“The pictures are made of _____.”

T Who would like to share their answer with the class in a complete sentence, for example: “The pictures are made of _____.” Call on students to share their answers. Answer: shapes

Continue to read the text, allowing students to pause and look at the illustrations and the shapes that are used.

T Okay, we are going to make our own “Mouse Shape”.

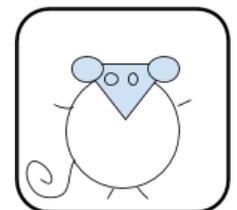
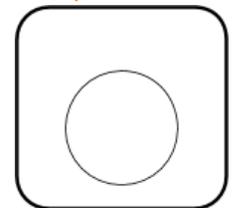
Demonstrate on a whiteboard or chart paper

T I need you to help me.

T If I were going to draw a mouse shape like the ones in the book, what shape could I use for the body?

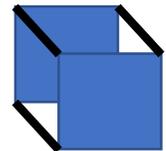
T Talk with your buddy and raise your hand when you both have an answer. Call on students to share answers. Most likely answer: circle

Depending on answer, draw the body, then the head, ears, arms, legs, and tail.



Independent or Partner Practice

- T* Now that you have seen the illustrator of our book, Mouse Shapes create pictures using basic shapes and you have seen me create a picture using shapes... it's your turn!
- T* You will first draw your own picture of a mouse using basic shapes.
- T* Although our story Mouse Shapes did not include 3-dimensional shapes you may still include them in your drawing.
- T* Remember, your drawing can only be made of shapes!
- T* Then you can get another piece of paper to make another picture using only 2-dimensional and 3-dimensional shapes.
- T* What are some things you could draw? **Call on students to share their ideas. List the ideas they mention on the board. Ideas: a house, a car, an animal, a person....**
- T* I will come around and give you a piece of paper.
- T* Once you have your paper, write your name at the top.
- T* Then you may begin drawing your mouse.
- T* After you finish you will need to show me your mouse before you can make a new drawing.
- T* Before you get started I would like to quickly teach you how to easily draw a cube.
- T* First draw a square on your paper.
- T* Move half way down your square and over to the right until you reach the center of your square and draw a new square.
- T* Then connect the corners that you can see.
- T* Connect the top left corner to the top left corner and the top right corner to the top right corner.
- T* Last connect the bottom left corners and the bottom right corners.
- T* That's it! You just made a cube.
- T* I can help you if you need more help.



Pass out 1 piece of blank paper per student. Remind them to put their name on it. Walk around and monitor the drawings, reminding them to only use shapes. Make sure they check in with you before they begin a new drawing.

If there is time you can allow them to color their drawings if you have first checked to make sure it is made up of shapes.

Differentiation:

CHALLENGE: Encourage students who are ready to use more complicated shapes (pentagon, hexagon, octagon, decagon ect.). You can also challenge them to define the attributes of the shapes they have used

SUPPORT: You may want to provide students with pattern blocks or tangram pieces that they can trace to make their drawing if you notice they are struggling with freehand drawing the shapes.



Now is a great time to take a break and get students re-energized. See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 22)

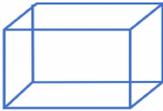
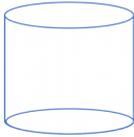
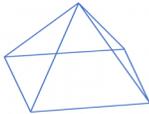
Name: _____ Date: _____

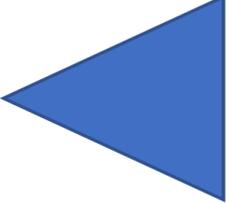
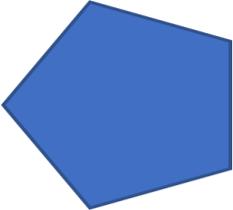
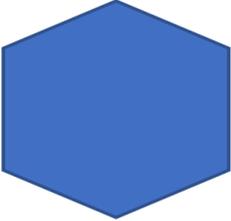
Exit Slip: Segment 1

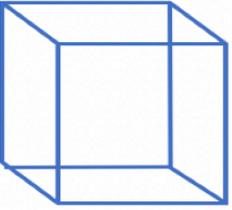
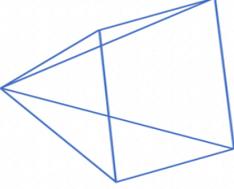
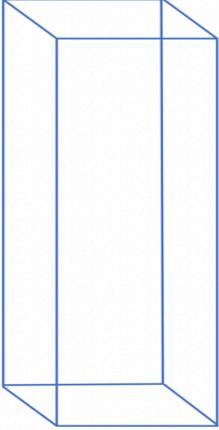
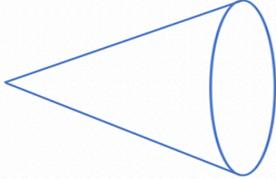
2D SHAPES		
<p>Quadrilaterals</p> <ul style="list-style-type: none"> • A polygon with ___ sides • ___ angles <p>Square Rectangle</p> <p>Rhombus Trapezoid</p>	<p>4 Right Angles</p> <p>Squares Rectangles</p> <ul style="list-style-type: none"> • ___ sides • ___ right angles • ___ vertices 	<p>Triangle</p> <ul style="list-style-type: none"> • ___ sides • ___ angles • ___ vertices
<p>Pentagon</p> <ul style="list-style-type: none"> • ___ sides • ___ angles • ___ vertices 	<p>Hexagon</p> <ul style="list-style-type: none"> • ___ sides • ___ angles • ___ vertices 	<p>Octagon</p> <ul style="list-style-type: none"> • ___ sides • ___ angles • ___ vertices

Name: _____ Date: _____

Exit Slip: Segment 2

3D SHAPES		
<p>Cube</p> <ul style="list-style-type: none"> • ___ faces • ___ edges • ___ vertices  <p>This shape has _____ faces.</p>	<p>Cylinder</p> <ul style="list-style-type: none"> • ___ faces • ___ edges • ___ vertices  <p>This shape has _____ faces.</p>	<p>Pyramid</p> <ul style="list-style-type: none"> • ___ faces • ___ edges • ___ vertices  <p>The face of this shape is a _____</p>
<p>Rectangular Prism</p> <ul style="list-style-type: none"> • ___ faces • ___ edges • ___ vertices  <p>This shape has _____ faces.</p>	<p>Cone</p> <ul style="list-style-type: none"> • ___ faces • ___ edges • ___ vertices  <p>This shape has _____ faces.</p>	<p>3D SHAPE ATTRIBUTES</p> <p>Face:</p> <p>Edge:</p> <p>Vertices:</p>

2D SHAPES		
<p>Quadrilaterals</p> <ul style="list-style-type: none"> • A polygon with ___ sides • ___ angles <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Square</p>  </div> <div style="text-align: center;"> <p>Rectangle</p>  </div> <div style="text-align: center;"> <p>Rhombus</p>  </div> <div style="text-align: center;"> <p>Trapezoid</p>  </div> </div>	<p>4 Right Angles Squares Rectangles</p> <ul style="list-style-type: none"> • ___ sides • ___ right angles • ___ vertices <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	<p>Triangle</p> <ul style="list-style-type: none"> • ___ sides • ___ angles • ___ vertices 
<p>Pentagon</p> <ul style="list-style-type: none"> • ___ sides • ___ angles • ___ vertices 	<p>Hexagon</p> <ul style="list-style-type: none"> • ___ sides • ___ angles • ___ vertices 	<p>Octagon</p> <ul style="list-style-type: none"> • ___ sides • ___ angles • ___ vertices 

3D SHAPES		
<p>Cube</p> <ul style="list-style-type: none"> • ___ faces • ___ edges • ___ vertices 	<p>Cylinder</p> <ul style="list-style-type: none"> • ___ faces • ___ edges • ___ vertices 	<p>Pyramid</p> <ul style="list-style-type: none"> • ___ faces • ___ edges • ___ vertices 
<p>This shape has _____ faces.</p>	<p>This shape has _____ faces.</p>	<p>The face of this shape is a _____</p>
<p>Rectangular Prism</p> <ul style="list-style-type: none"> • ___ faces • ___ edges • ___ vertices 	<p>Cone</p> <ul style="list-style-type: none"> • ___ faces • ___ edges • ___ vertices 	<p>3D SHAPE ATTRIBUTES</p> <p>Face:</p> <p>Edge:</p> <p>Vertices:</p>
<p>This shape has _____ faces.</p>	<p>This shape has _____ faces.</p>	<p>This shape has _____ faces.</p>

Make sure to “Break Up Your Day!”

These can be used in the middle of a lesson or at the end of your lesson.

Here are a few engaging movement and brain break ideas to get your students moving and ready to refocus!

Break Up Your Day: The Wiggles!

- Let’s get our wiggles out before we continue!
- Stand up and shake out your arms (4-5 seconds to shake) Remember! No one should get hurt! ...now FREEZE!
- Now shake the wiggles out of your right leg...FREEZE!
- Now shake the wiggles out of your left leg...FREEZE!
- Now shake all the wiggles out of your whole body...FREEZE!
- And sit back down quietly please...Thank you!

Break Up Your Day: Body Spell!

- We are going to use our bodies to practice making some letters of the alphabet. Please stand up quietly.
- When I say a letter, you use your arms, legs, head, and body to see if you can make that letter!”
- Choose 5-6 letters to have students make with their body. You could even try some simple words or letters that their names start with to change it up! Have them sit down quietly when they are finished.

Break Up Your Day: I Spy Shapes!

- Teacher begins by modeling an example:
- I spy with my eye an object in this room in the shape of a triangle.
- Look around and see if you can spy the same object.
- “Raise your hand if you have a guess.”
- When they take a guess, let them know if they are cold (not even close, a different shape) or hot (close, that is the same shape, but not what I spy)
- Play again, each time letting the student who “spied” the object correctly and justifies their guess by stating the correct attributes of the shape, be the next “SPY”.