

Exploring 2D and 3D Shapes

Grades: Kindergarten and 1st

By:

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Executive Summary

The lessons, projects and activities we have collected are meant to supplement any curriculum. This is a collection of some of our favorites that also incorporate the different learning styles of students. It is a very hands-on unit and will be very effective in meeting the Kindergarten and 1st grade standards for shapes. We incorporated Venn Diagrams, Systematic Listing, KWL charts, Literacy, Manipulatives, Technology, and assessments to complete this unit.

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

BENCHMARK: 1.3.1.2 Compose & Decompose Shapes

Compose (combine) and decompose (take apart) two- and three-dimensional figures such as triangles, squares, rectangles, circles, rectangular prisms and cylinders.

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DAY 1 - Pre-Assessment/Exploration

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

OBJECTIVE - Students will take a pre-test to show us their basic knowledge of shapes that they are starting with. They will explore with the pattern blocks while teachers are doing the one to one pre-assessment.

LAUNCH - Lay out the pattern blocks and start calling students one by one up to an area to do the pre-assessment. When students are done with the pre-assessment, they will explore with the pattern blocks until everyone has been assessed.

EXPLORE - Children will explore freely with the pattern blocks.

SHARE - Students will share what they have done or found out individually through exploration.

SUMMARIZE - We now have a starting point on what the students know about shapes. They have also had time to play and explore with the pattern blocks, so they will be more willing to focus on directions for the following activities.

DAY 2 - KWL Chart & Mouse Shape Book

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

OBJECTIVE - Students will display prior knowledge and share what they would like to learn in this unit on shapes.

LAUNCH - Display a KWL chart and point out the what the letters stand for: K=what we KNOW, W=what we WANT to know, L=what we have LEARNED (filled in at the end of the unit)

EXPLORE - Students will share aloud what they already know about 2D (for Kindergarten) and 3D (for 1st grade) while the teacher writes them on the KWL chart. Then the teacher will read aloud the storybook Mouse Shape by Ellen Stoll Walsh. Class can discuss the story and how the shapes were used and why that is important in the real world, even though the pictures and story are fictional.

SHARE - Class can discuss the story and how the shapes were used in the story.

SUMMARIZE - Even though the story is fictional, shapes are found all around us in the real world.

KWL Chart

Topic _____



K	W	L
What I Think I Know	What I <u>W</u> ant to Know	What I <u>L</u> earned



DAY 3 - Intro 2D Shapes With Systematic Listing

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

OBJECTIVE - Students will learn the names of basic shapes, circle, rectangle, square, triangle, oval, diamond, hexagon and trapezoid.

LAUNCH - Hand out the pattern blocks to the students, making sure they have one of each shape.

EXPLORE - Children will explore freely with the pattern blocks and discuss with each other what each shape is called. Encourage groups to discuss differences in shapes.

SHARE - Students will come together in a large group. Teacher will hold up shapes and students will be able to name the shape. Fill out a systematic chart as you are discussing the similarities and differences of each shape.

SUMMARIZE - Shapes can be identified and the similarities and differences can be seen clearly on the chart.

DAY 4 - 2D Venn Diagrams

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

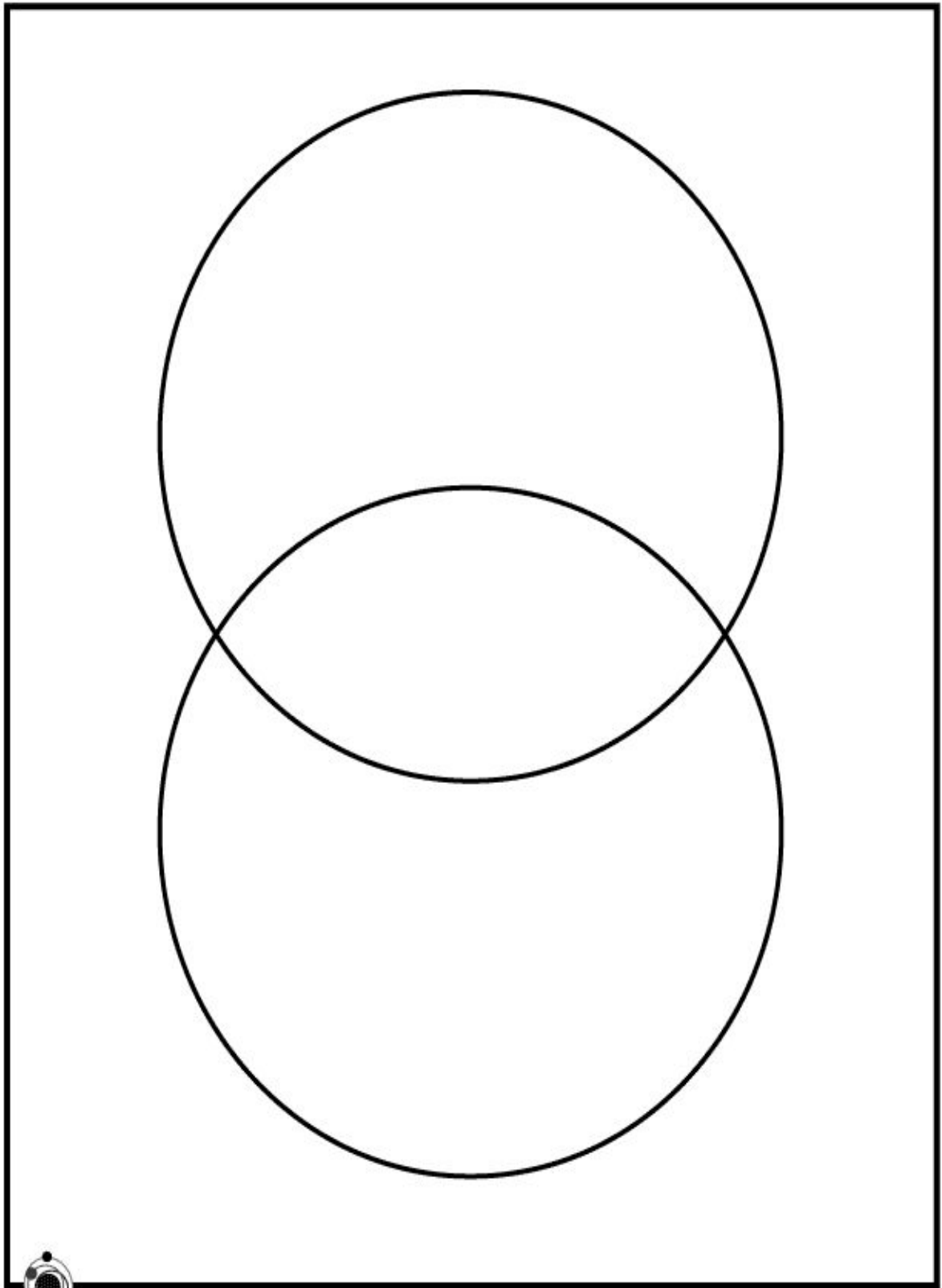
OBJECTIVE - Students will be able to sort 2d shapes by curves and no curves, and also 2d shapes by the number of sides 0, 3, and more than 4.

LAUNCH - Pass out a Venn diagram, and pattern blocks. Working in small groups, ask the kids to group the shapes somehow.

EXPLORE - Children will explore freely with the pattern blocks.

SHARE - Students will share what they have done and/or found out individually through exploration.

SUMMARIZE - By using the Venn diagram and exploring the pattern blocks, the students will have found circles have curved lines, triangles have 3 sides, squares, rectangles, rhombuses, trapezoids, and hexagons have 4 or more sides.



DAY 5 - Pattern Blocks with cards

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

OBJECTIVE - Students will use pattern blocks along with pattern block cards to discover different ways the blocks will cover the given areas in the pictures.

LAUNCH - Teacher will hand out the blocks and cards and assign small groups. Students will then be instructed to cover the picture card with any shapes and then cover the pictures differently.

EXPLORE - In small groups, students will explore using the provided cards and pattern blocks to discover different ways pictures can be covered using different shaped blocks.

SHARE - Small groups will share their findings with the rest of the class.

SUMMARIZE - There is usually more than one way to cover area when using shapes.

DAY 6 - Pattern Templates

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

OBJECTIVE -Using pattern templates to draw shapes on a worksheet and be able to match the shape to its name.

LAUNCH - Hand out pattern templates and worksheet, break students into groups. Explain that students should work together to draw shapes using the template. They should help each other to match the shapes to the name.

EXPLORE - Children will draw shapes using templates and worksheet. Encourage children to help others in their group to match shapes by name.

SHARE - Students will share their shape drawings with each other.

SUMMARIZE -Students are able to draw shapes using templates and name the shapes.

DAY 7 - Shapes using paper folding

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

OBJECTIVE - Students will figure out that you can make different shapes by folding a sheet of paper. For example by taking a square (sticky note) and folding it in half, you could get a triangle or a rectangle. What happens when you fold again, again?

LAUNCH - Hand out the square sheet and ask kids to fold it. Important to wait for them to tell you that different shapes were formed.

EXPLORE - Let students explore with folding their shape. If students do not fold again, after a wait time, you may have to ask if they could fold it again. What happens then?

SHARE - Students will share their shapes they made, and explain how they got them.

SUMMARIZE - Students will find out that different shapes can be used to make a new shape. (6 triangles can make a hexagon) Students will increase their shape vocabulary through this activity. Make a reference to Day 5 on how different shapes were covered differently.

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

OBJECTIVE - Students will use their bodies to form shapes on the floor. Teacher observations will also be used as an informal assessment.

LAUNCH - Clear the tables or desks to create ample floor space. Using any random method of choosing students, call a certain number up to the front and assign them a shape to make. Don't answer too many questions until they've explored on their own.

EXPLORE - Students can use straight bodies, bend at the waist, arms, or legs, etc. Each group will be asked to form different shapes. Some may be able to while standing, but others will lay on the floor.

SHARE - Each group will have a chance to show their shape and explain how they worked together to solve their task.

SUMMARIZE - With very little teacher direction, students will be encouraged to use cooperative skills and vocabulary learned thus far to display their knowledge of shapes.

Day 9 - Intro 3D objects & KWL Chart

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

BENCHMARK: 1.3.1.2 Compose & Decompose Shapes

Compose (combine) and decompose (take apart) two- and three-dimensional figures such as triangles, squares, rectangles, circles, rectangular prisms and cylinders.

OBJECTIVE - Students will display prior knowledge and share what they would like to learn in this unit on 3D shapes.

LAUNCH - Listen to 3D Rap <https://youtu.be/2cg-Uc556-Q>

Display a KWL chart and point out the what the letters stand for: K=what we KNOW, W=what we WANT to know, L=what we have LEARNED (filled in at the end of the unit.)

EXPLORE - Students will share aloud what they already know about 3D while the teacher writes them on the KWL chart. Then the teacher will read The Little Red Hen Makes a Pizza by Philemon Sturges. Class can discuss the

story and how the shapes were used and why that is important in the real world, even though the pictures and story are fictional.

SHARE - Class can discuss the story and how the shapes were used in the story.

SUMMARIZE - Even though the story is fictional, shapes are found all around us in the real world.

KWL Chart

Topic _____



K	W	L
What I Think I Know	What I <u>Want</u> to Know	What I <u>Learned</u>

Day 10 - Faces, Edges, Corners with Systematic Listing

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

BENCHMARK: 1.3.1.2 Compose & Decompose Shapes

Compose (combine) and decompose (take apart) two- and three-dimensional figures such as triangles, squares, rectangles, circles, rectangular prisms and cylinders.

OBJECTIVE - Students will name faces, corners (vertices), and edges of 3D shapes.

LAUNCH - Watch the attached video to introduce faces, corners and edges.

https://youtu.be/BPrVAT_x1f4

Discuss that corners are also called vertices. Explain that shapes will be explored using a table chart and demonstrate how to fill out by doing the first one together.

EXPLORE - Students will break into small groups. A table chart will be provided to each group. They will count the faces, corners and edges of each shape and write it on their table.

SHARE - Class will discuss, as a whole group, the answers they found on their chart and compare.

SUMMARIZE - Students will understand that some 3D shapes have different faces, corners and edges. For homework, tomorrow bring in an object in the shape of each 3D shape from home.

Day 11 - Shape Museum with bar graph

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

OBJECTIVE - Students will sort their 3D items they brought from the homework assignment of Day 10 and compare the amounts using, observation, and bar graphs of each shape brought in.

LAUNCH - Tell students that today we are setting up our SHAPES MUSEUM. Ask students to get out their 3D objects from their backpacks.

EXPLORE - Randomly choose a few students at a time to bring their objects to the assigned area for each object - "All the cylinders will go on the end of this table", etc. After all the objects are sorted, continue on by counting each and adding them to a class bar graph to compare.

SHARE -Students will share aloud what they observe about the bar graph. Are some objects easier to find in real life than others?

SUMMARIZE - Students will sort their real life 3D items, increase their shape vocabulary, and collect data to produce a class bar graph.

Day 12 - 2D/3D Marshmallow shape models

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

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BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

BENCHMARK: 1.3.1.2 Compose & Decompose Shapes

Compose (combine) and decompose (take apart) two- and three-dimensional figures such as triangles, squares, rectangles, circles, rectangular prisms and cylinders.

OBJECTIVE - Students will display their knowledge of 2D and 3D shapes by constructing shapes with toothpicks and mini-marshmallows.

LAUNCH - In small groups, each child will construct their own shape by using the marshmallow as a vertex and a toothpick as an edge. Pass out mini-marshmallows and toothpicks to each group. (Discuss safety rules on handling the toothpicks)

EXPLORE - Students will use the toothpicks and marshmallows to make the shape of their choice. Some may be 2D instead of 3D. Have the children find another student that has a shape that has something similar to their own shape.

SHARE - Students will share and discuss the shapes they made. They will also share how their shapes are the same or different.

SUMMARIZE - Students will gain experience and use learned vocabulary making 2D and 3D shapes

Day 13 - Attribute Blocks with Venn Diagram

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

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BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

BENCHMARK: 1.3.1.2 Compose & Decompose Shapes

Compose (combine) and decompose (take apart) two- and three-dimensional figures such as triangles, squares, rectangles, circles, rectangular prisms and cylinders.

OBJECTIVE - Students will extend their knowledge of shapes by exploring with attribute blocks.

LAUNCH - Show students the attribute blocks and discuss one way they are different and the same.

EXPLORE - Students will explore freely with the attribute blocks in small groups. Have them tell each other ways they are the same and different.

SHARE - Class will come together as a large group and discuss different ways that the shapes are the same and different. Class will make a Venn Diagram together using same and different attributes.

SUMMARIZE - Attribute blocks offer different ways of sorting shapes and these can easily be seen in the Venn Diagram.

Day 14 - Computer Games

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

STANDARD 1.3.1

Describe the characteristics of basic shapes. Use basic shapes to compose and decompose other objects in various contexts.

BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

BENCHMARK: 1.3.1.2 Compose & Decompose Shapes

Compose (combine) and decompose (take apart) two- and three-dimensional figures such as triangles, squares, rectangles, circles, rectangular prisms and cylinders.

OBJECTIVE - Students will reinforce what they have learned in previous lessons and apply them using technology.

LAUNCH - Bring kids to the computer lab or check out technology if needed. Display the different shapes game sites for the kids to choose from. Help where needed.

EXPLORE - Allow kids time to explore as many sites as class time allows and send list for home for more time or give them another class period later.

SHARE - Students can share aloud, or even vote, on some of their favorite sites found.

SUMMARIZE - Students can use their knowledge of shapes to complete games using technology.

http://www.abcya.com/shapes_geometry_game.htm

<http://pbskids.org/games/shapes/>

<http://www.starfall.com/>

<https://www.ixl.com/math/kindergarten>

<http://www.thekidzpage.com/learninggames/shapes.html>

Day 15 - Post Test with Exploration of Shape Manipulatives

Minnesota Standard:

STANDARD K.3.1

Recognize and sort basic two- and three-dimensional shapes; use them to model real-world objects.

BENCHMARK: K.3.1.1 Shapes

Recognize basic two- and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres.

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BENCHMARK: 1.3.1.1 Characteristics of Shapes

Describe characteristics of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.

BENCHMARK: 1.3.1.2 Compose & Decompose Shapes

Compose (combine) and decompose (take apart) two- and three-dimensional figures such as triangles, squares, rectangles, circles, rectangular prisms and cylinders.

OBJECTIVE - Students will take a post-test to show us their knowledge of shapes that they are ending the unit with. They will create with the manipulatives while teachers are doing the one-to-one post assessment.

LAUNCH - Lay out the pattern blocks and cards, attribute blocks, pattern templates, paper for the students to create. Set up the computers in the classroom for kids to have as a choice. Start calling students one by one up to an area to do the post assessment. When students are done with the post assessment, they will continue to create with the manipulatives or computer shape games, until everyone has been assessed.

EXPLORE - Children will create freely with the manipulatives or use computers with shape games.

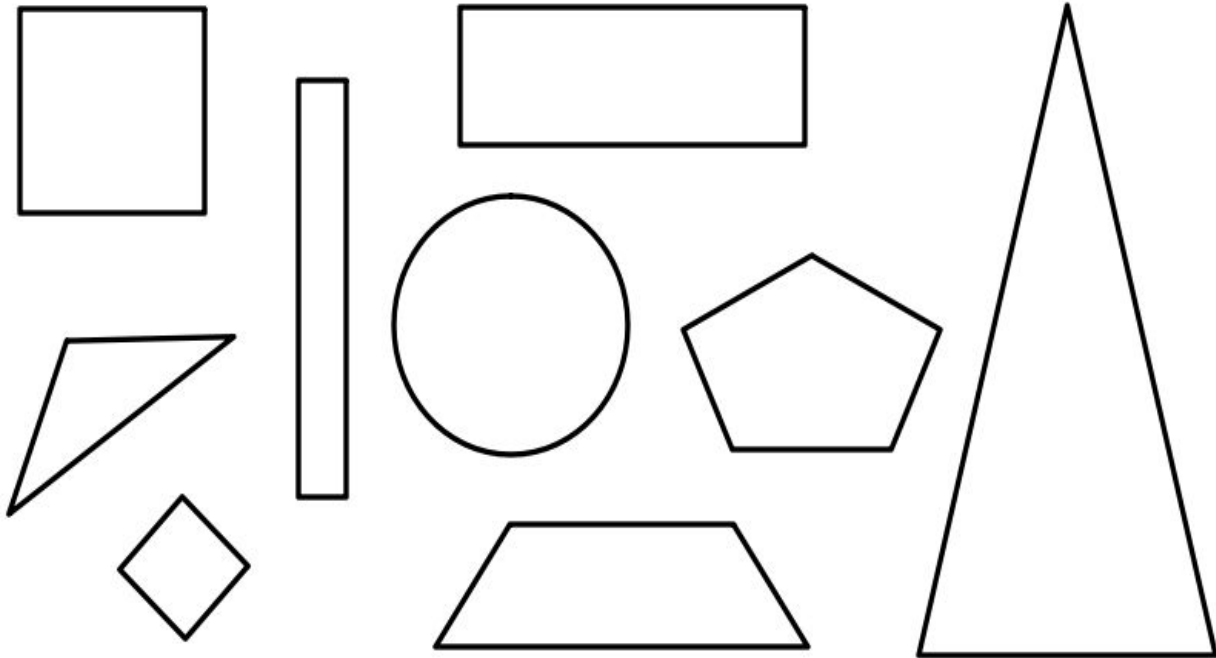
SHARE - Students will share their favorite activity from the unit.

SUMMARIZE - We now reached the end of our unit, and need to do an assessment to see how much the students learned through our lessons. We will be able to measure their growth by comparing the pretest to the post-test.

Name _____

Kindergarten and 1st Grade 2D Assessment:

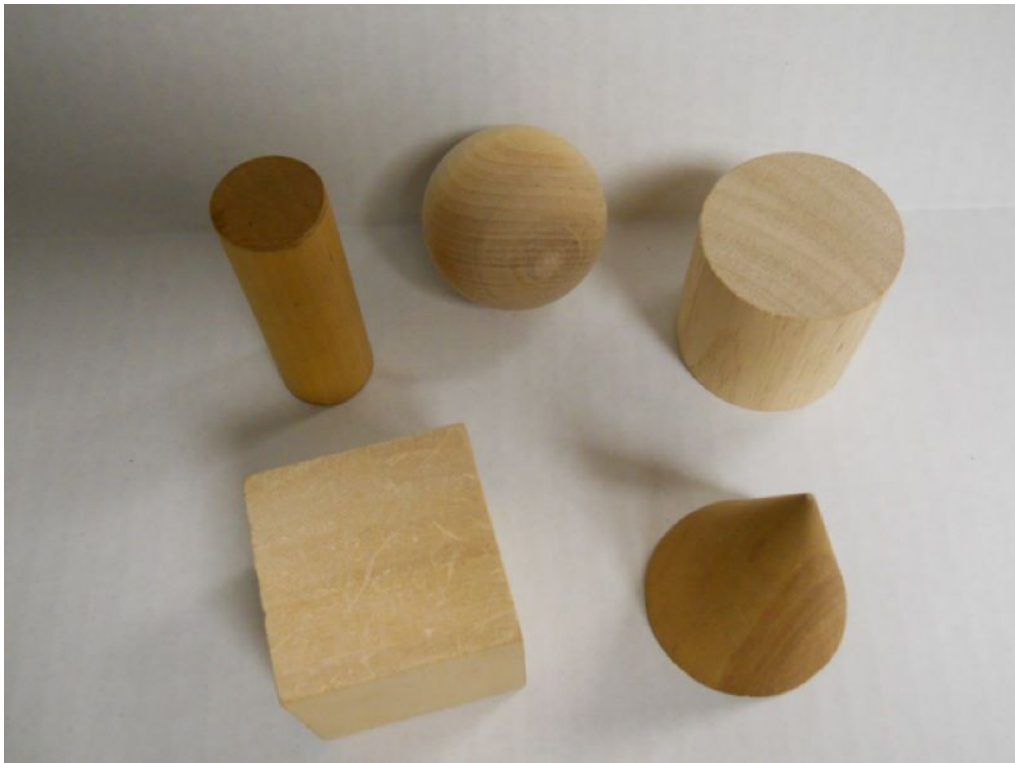
- Point to each shape and ask the student, *"What is the name of this shape?"* Note the shapes students are able to identify. If students are unable to identify shapes, say *"Point to a circle..."* Continue with other shapes.



Name _____

Kindergarten and 1st grade 3D Pre-Assessment

- Point to each shape and ask the student, "*What is the name of this shape?*" Note the shapes students are able to identify. If students are unable to identify shapes, say "*Point to a circle...*" Continue with other shapes.



Name _____

- Show the student a rectangular prism, and ask the following questions.

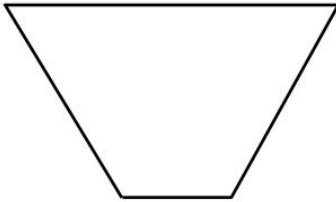
1. Count the faces. How many faces are there?
2. Count the vertices. How many vertices are there?
3. Count the edges. How many edges are there?

Solution:

1. Six
2. Eight
3. Twelve

Name _____

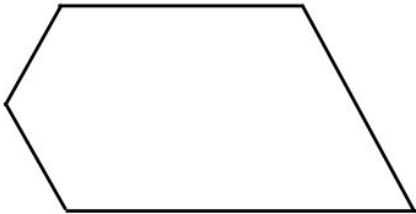
- Use pattern blocks to fill this shape. Raise your hand to show your teacher when you are done.



Solution: Student correctly fills the space with blocks.

Benchmark: 1.3.1.2

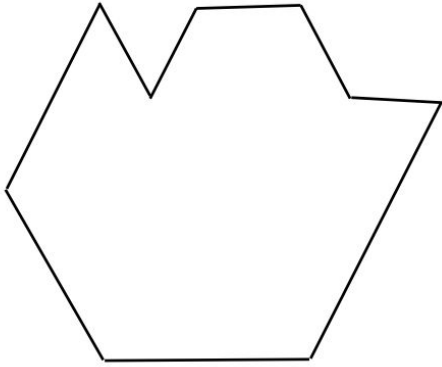
- Use pattern blocks to fill this shape. Raise your hand to show your teacher when you are done.



Solution: Student correctly fills the space with blocks.

Benchmark: 1.3.1.2

- Use pattern blocks to fill this shape. Raise your hand to show your teacher when you are done.



Solution: Student correctly fills the space with blocks.

Benchmark: 1.3.1.2

- Use a yellow crayon to circle the cones.

Use a red crayon to circle the cylinders. Use a blue crayon to circle the rectangular prism.



Solution: Student uses the correct color to circle the correct shape.

Benchmark: 1.3.1.1

- Given a rectangular prism,

1. Count the faces. How many faces are there?
2. Count the vertices. How many vertices are there?
3. Count the edges. How many edges are there?

Solution:

1. Six
2. Eight
3. Twelve

Benchmark: 1.3.1.1