

Name That (3D) Shape

3D Shapes

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Grade Level	1st Grade	**Time Frame**	90 minutes
Subject	Mathematics	**Duration**	3 periods
Course	Elementary Mathematics, Geometry		

Essential Question

How do the attributes of a 3D shape help to identify the name of a shape?

Summary

Learning about three-dimensional (3D) shapes opens up a new world to students. In this lesson, students will become aware that not all shapes are created equal, gain a better understanding of the attributes of basic 3D shapes, and practice identifying and naming shapes. Students will watch an introduction video, discuss shapes and their distinguishing attributes, and sort shapes to check for understanding.

Snapshot

Engage

Students are introduced to 3D shapes while viewing and discussing the wordless picture book *Cubes, Cones, Cylinders & Spheres* by Tana Hoban.

Explore

Using 3D solid shapes that have been placed on each table, students hold, touch, and talk about how the solid figures are like the shapes that were shown in the book

Explain

Students manipulate 3D shapes that are available in the classroom. They hold, turn, look at, build with, and feel the block models that are available. The attributes of the shapes are discussed and vocabulary is introduced. During this discussion time, shape posters are used to help the class construct an anchor chart showing the different attributes of each shape.

Extend

Students play a show and tell game by showing their picture card to their classmates and saying out loud, *"My picture is a/an _____. It is most like the shape of a _____ because _____."* Classmates agree or disagree with justification for their thinking.

Evaluate

Students show their learning by completing a cut-and-paste activity matching real-world objects to 3D shapes.

Standards

Oklahoma Academic Standards for Mathematics (Grade 1)

1.GM.1: Recognize, compose, and decompose two- and three-dimensional shapes.
1.GM.1.4: Recognize three-dimensional shapes such as cubes, cones, cylinders, and spheres.

Attachments

- 3D Shape Picture Cards—Name That (3D) Shape - Spanish.docx
- 3D Shape Picture Cards—Name That (3D) Shape - Spanish.pdf
- 3D Shape Picture Cards—Name That (3D) Shape.docx
- 3D Shape Picture Cards—Name That (3D) Shape.pdf
- 3D Shape Posters—Name That (3D) Shape -Spanish.docx
- 3D Shape Posters—Name That (3D) Shape -Spanish.pdf
- 3D Shape Posters—Name That (3D) Shape.docx
- 3D Shape Posters—Name That (3D) Shape.pdf
- Sorting Activity—Name That (3D) Shape - Spanish.docx
- Sorting Activity—Name That (3D) Shape - Spanish.pdf
- Sorting Activity—Name That (3D) Shape.docx
- Sorting Activity—Name That (3D) Shape.pdf
- Vocabulary Word Wall Cards—Name That (3D) Shape - Spanish.docx
- Vocabulary Word Wall Cards—Name That (3D) Shape - Spanish.pdf
- Vocabulary Word Wall Cards—Name That (3D) Shape.docx
- Vocabulary Word Wall Cards—Name That (3D) Shape.pdf

Materials

- *Cubes, Cones, Cylinders and Spheres* by Tana Hoban (picture book or video)
- 3D Shape Posters (attached)
- 3D Shape Picture Cards (attached)
- Vocabulary Word Wall Words (attached)
- Sorting Activity (attached)
- Anchor Chart paper

20 minutes

Engage

Teacher's Note: Lesson Preparation

Before beginning this lesson, print the attached **3D Shape Posters**, the **Vocabulary Word Wall Cards**, and the **3D Shape Picture Cards**. Cut out each word and picture card and use card stock if available so that cards can be kept and reused. Hang up the posters around the room where students can see them.

Teacher's Note: *Cubes, Cones, Cylinders, and Spheres*

Depending on what is best for students, you may choose to use a physical copy of *Cubes, Cones, Cylinders, and Spheres* by Tana Hoban or a video flip-through.During your whole-group math time, let students know they're going to watch a video of a book called *Cubes, Cones, Cylinders, and Spheres.* Ask students to be "shape detectives" and see if they can find different shapes in the pictures as they watch.

Embedded video

https://youtube.com/watch?v=6JyLNXKMFTM

Possible Student Responses

Students may notice things in the book such as:

- I see a cone shape at the top of the castle. I can tell it's a cone because I see a pointy top on it. It looks like an ice cream cone if you turn it upside down.
- Look at the bubbles! They are big and round.

Transition through each page, encouraging conversation and listening for describing words.

15 minutes

Explore

After finishing the book, have students describe pictures they remember seeing in the story. Once everyone has had a chance to share, send students back to their desks or cooperative learning tables.

Using 3D solid shapes that have been placed on each table, let the students hold, touch, and talk about how the solid figures are like the shapes that were shown in the book. Guide the conversation by using Depth of Knowledge (DOK) Question Stems and allowing students to discuss with their table partners what they see with each shape.Encourage students to look for similarities and differences when comparing shapes. Walk around each table and listen to what students share with one another.

Possible Student Responses

Students may notice things about the shapes such as:

- The sphere is a big circle like the bubble the boy was blowing.
- The cube is a giant square like the picture of the gift.
- A cylinder has two flat surfaces, but a cone only has one.
- A cone has a point, but a sphere doesn't have any points.

20 minutes

Explain

After the students have had ample time to explore the 3D solids, have students come back together as a group (such as on their carpet spots).

Introduce the individual posters of each 3D shape. Using the pictures on each poster, discuss the attributes of a cube, cone, cylinder, and sphere using proper vocabulary (a cube has six equal square-shaped sides called faces, eight vertices, and 12 edges, etc.). Students can refer to the posters of the solid shapes while you hold up each solid shape being discussed and point out the attributes. Ask students to point to each shape's face, vertices, edge, etc. Students can help classmates identify attributes of shapes during this time using proper vocabulary. During this discussion time, place the vocabulary word cards on the board and use the posters to help you construct an Anchor Chart showing the different attributes of each shape.

Students will begin to discuss the shapes (if they don't do this naturally, you can encourage and shift the conversation easily by asking simple questions about their understanding of the connections between real-world objects and the 3D solid shapes you are discussing). Observing verbal usage of vocabulary and descriptions during this time will help assess students' comprehension of the attributes of shapes.

Possible Student Responses

Students may comment things such as:

- A party hat is like a cone because it has a pointy top that is the vertex, and its sides are curved.
- A basketball is like a sphere because it is round and has no vertices.
- A soda can is like a cylinder because it is round with two flat faces.

25 minutes

Extend

Teacher's Note: Lesson Pacing

This part of the lesson will most likely occur on a different day, so you may want to begin by reviewing what students have learned and know about 3D shapes.

After they have had time to review and revisit the attributes of each shape, have students sit in a large circle on the floor. In the center of the circle, place a large label for each of the 3D shapes introduced: cube, cylinder, sphere, and cone.

Depending on the number of students and classroom discussions, the next activity may take a while for each student to get a chance to participate. If that is the case, the evaluation of this lesson may be done the next day, making this a 3-day lesson. However, since this lesson was planned for 1st graders, you may need to take three separate days to introduce, explore/teach, and evaluate. If you teach this lesson in smaller sessions, start each math lesson with a quick recap/review of what students did the day before and review the posters of each of the shapes.

After each student has had time to review and revisit the attributes of each shape, have them sit in a large circle on the floor. In the center of the circle, place a large label for each of the 3D shapes introduced: cube, cylinder, sphere, and cone.

Give one student at a time their picture card. The student will go to the middle of the circle, show their picture card to their classmates and say out loud, "My picture is a/an _____. It is most like the shape of a _____ because _____." For example, "My picture is a can of soup. It is most like the shape of a cylinder because it has two flat surfaces, and the edges are curved."

The student will then ask their classmates if they agree or disagree. Check to see if all agree by asking for a thumbs up or thumbs down. If there are any students in disagreement (thumbs down), the student who is sharing their shape will ask them to justify and help them find the proper identification.

Continue this activity until each student has had an opportunity to share and identify their shape.

15 minutes

Evaluate

Preferably in a whole group, begin with a quick review of what students have learned about 3D shapes. Then, discuss as much or as little as you feel your group needs. Encourage proper vocabulary (vertices, vertex, face(s), edge(s), etc.) when students are speaking about what they have learned.

After reflecting on what the students have learned about 3D shapes, introduce the 3D sort assessment. Each student will complete the assessment by themselves using the attached 3D Shape Sorting Activity handout. Model the activity for students by showing them that they will cut out the pictures of the real-world items and identify the attributes of 3D shapes that the pictures have. Then, they should glue the pictures under the heading of a cone, sphere, cylinder, or cube. Students will do this with all the pictures until they have glued each picture onto a place on the sorting mat under the heading that they have determined best fits their pictures.

Opportunities for Advanced Learners

Option #1: Encourage students to draw pictures instead of using the pre-made pictures to complete the sorting activity.

Option #2: Squiggles could be used to start a drawing of a shape that they could turn into a real-life object that is a 3D shape. Students can label and write about their real-life thing and explain where it could be found and how it is used. They can present this to the class if they choose to.

Option #3: Students can take their iPad and take pictures at school, outside, or at their homes of real-life objects that are 3D shapes. Then they report their findings to the teacher or class. Finally, challenge them to find one or more of each shape taught.

Option #4: Students can search through magazines, cut out pictures of objects that match attributes of 3D shapes, and make a 3D shape collage of the items.

Resources

- Deepa Srikantaiah. (2013). "Geometric shapes in a math park in Sri Lanka [Photograph]. Global Partnership for Education. https://www.flickr.com/photos/gpforeducation/8578145380/in/photostream/
- Hoban, T. (Sept. 19, 2000). *Cubes, Cones, Cylinders, & Spheres.* Greenwillow Books.
- K20 Center. (n.d.). DOK Question Stems. Strategies. https://learn.k20center.ou.edu/strategy/170
- K20 Center. (n.d.). Anchor Charts. Strategies. https://learn.k20center.ou.edu/strategy/58
- K20 Center. (n.d.). Squiggles. Strategies. https://learn.k20center.ou.edu/strategy/936