

LESSON 5 Comparing 2-dimensional and 3-dimensional objects

Lesson Summary

Students differentiate between three-dimensional and two-dimensional objects.

Objectives

- Identify an object as two-dimensional or three-dimensional.
- Communicate ideas with key math vocabulary: *cone, cube, cylinder, face, solid figure, flat figure*

Materials

- *Cubes, Cones, Cylinders, & Spheres* by Tana Hoban
- Sets of geometric solids
- Cut-outs of triangles, squares, circles, and rectangles.
- Small cubes
- Paper squares
- Clay
- Paper folded in half

T = Teacher Bag

S = Student Bag

Preparation

Worksheet: Prepare paper folded in half and labeled sphere on the left and circle on the right. Do the same for cone and triangle and cube and square.

Bag: Prepare a bag with solid figures and two-dimensional geometric shapes.

Language Development

Key Math Vocabulary

ENGLISH	SPANISH
cone	cono
cube	<i>cu</i> bo
cylinder	<i>ci</i> lindro
faces	<i>ca</i> ras
sphere	esfera
solid	
flat	

Cognates are shown in italics; pointing out the similarity of these words to their English equivalents will help your Spanish-speaking students acquire vocabulary.



WHOLE GROUP

STEP 1

Introduce solid and flat figures.

1 Introduce the lesson.

We've been identifying different shapes this week. Today we will think about shapes in a new way.

2 Demonstrate the attributes of dimension.

Display a cube and a square. Engage students in a discussion about their likes and differences.

What is the same about these two shapes? (Possible answers: they both are kind of square)

Point to the cube and trace one face explaining that the face is a square. Give each pair of students a cube.

How many square faces does the cube have? (6)

It may help to allow the students to put a small sticker on each face as they count the faces on the cube, so they don't count any of the faces twice or forget any.

Then point to the square. Give each student a square piece of paper. Place a square piece of paper on the table next to a cube.

I notice that the paper square is flat and the cube is not flat. It is solid. We call it a solid figure.

Show a rectangular prism (a non-cube box) and point out that to measure the box we would need to measure how long it is, how wide it is and how high it is. You need to make three measurements. That is why we say that solids are three-dimensional.

Display a rectangle.

How many measurements do we have to make to measure the rectangle? (2) Yes, we measure how long and how wide. We need two measurements to measure flat figures. We say that it is two-dimensional.



WHOLE GROUP



WHOLE GROUP

STEP 2 Guide students to sort objects.

1 Take a shape walk.

Review with students the names of solid figures and two-dimensional shapes. From a bag filled with solids and flat figures, take objects one at a time, and have students call out together “flat” or “solid.”

Once you are sure that students can differentiate between solids and flats, take the students on a shape walk around the school. Point to objects such as circles painted on the play ground and cylinder trash bins.

Is this a solid or a flat? (Answers will vary depending on the objects you point to around the school)

2 Make solid shapes.

Now you will have a chance to make some solid shapes and draw some flat shapes. First we'll make spheres. What flat shape is kind of like a sphere? (circle)

Provide a piece of paper that has been folded in half and labeled Sphere and Circle. First have them write their name on the bottom of the page. Explain that students will use a piece of clay to make a sphere and they will use a crayon to draw a circle. Provide each student with a piece of clay.

Sphere

Circle

When students finish have them place their papers along a shelf or some area where they can be displayed.

Follow this same process for cone and triangle and then cube and square. If time you can also have them make a cylinder and a rectangle.

STEP 3 Students use vocabulary related to shapes.

Math Vocabulary

Cone
Cube
Cylinder
Sphere
Solid figure
Flat figure
Square
Triangle
Rectangle
Circle

Choose one student at a time to describe one of their clay figures and their picture using the correct mathematical name for both shapes. Also have them point out which is solid and which is flat.