



KINDERGARTEN SUPPLEMENT

Set C1 Geometry: 3-D Shapes

Includes

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Skills & Concepts

- ★ identify, name, describe, and sort basic three-dimensional shapes
- ★ recognize three-dimensional shapes in the environment

Bridges in Mathematics Kindergarten Supplement

Set C1 Geometry: 3-D Shapes

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Bridges in Mathematics is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates the Number Corner, a collection of daily skill-building activities for students.

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Set C1 ★ Activity 1



ACTIVITY

Mystery Bag Sorting

Overview

The teacher pulls a collection of 3-dimensional objects out of a grocery sack, placing all the objects with flat faces (cubes and rectangular prisms) in one group and all the objects with curved surfaces (cylinders, spheres, and cones) in another. After several objects have been sorted, students predict the group in which each new object belongs as it comes out of the bag, trying to guess the teacher's sorting rule.

Skills & Concepts

- ★ identify, name, describe, and sort basic three-dimensional shapes
- ★ recognize three-dimensional shapes in the environment

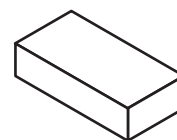
You'll need

- ★ grocery sack or gift bag containing 15–20 different 3-D objects (see Advance Preparation)
- ★ 2 pieces of 12" × 18" construction paper, one yellow and one blue

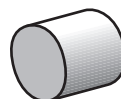
Advance Preparation Place 3 or 4 examples of each of these shapes in the sack or gift bag. Look in your block corner, among your table toys and school supplies, and perhaps in the gym to find the objects you need.



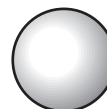
Cube



Rectangular Prism



Cylinder



Sphere



Cone

Instructions for Mystery Bag Sorting

1. Gather children to your discussion circle. Place the pieces of yellow and blue paper in the circle where you can reach them and all the students can see them. Let the children know that these are your sorting mats. Then hold up the grocery or gift sack and explain that you are going to pull out some things for them to see, one at a time. Each time you pull out a new object, you're going to place it on either the yellow or the blue mat. Their job is to figure out how you're sorting the objects by watching very closely. Let them know that you're going to work in silence, and they'll need to be very quiet as well.
2. Pull 4 or 5 objects out of the sack one at a time, placing those with flat faces on one mat and those with curved surfaces on the other.
3. Pull the next object out of the sack, hold it up, and shrug your shoulders. Then motion for children to point to the mat where they think it belongs. After a few moments, place it on the correct mat. Repeat this with another object.

Activity 1 Mystery Bag Sorting (cont.)

4. Pull another object out of the sack, hold it up, and motion for the children to indicate the mat of their choice by pointing. Before placing the object where it belongs, ask several children to explain their thinking.

Teacher *Jessica, I see you're pointing to the yellow mat. Can you explain why you think my alphabet block belongs there?*

Jessica *Because it's yellow, so it goes on the yellow mat.*

Teacher *Zachary, you're pointing to the blue mat. Can you explain why?*

Zachary *Because all the stuff on the yellow mat is kind of round, and that one's not.*

Teacher *Alex, you seem to think my cube belongs on the blue mat. Why is that?*

Alex *Because it has squares on it, and there are lots of squares on the blue mat.*

5. Without commenting on any of the explanations, place the object on the correct mat. Some students may feel confirmed in their thinking, while others may still be puzzled as to how you're sorting the objects. Give them a few more clues by pulling another 2 or 3 objects out of the sack and placing them correctly, asking students to silently point to the mat they believe is correct each time.

6. Pull another object out, have students to point to the mat they believe is correct, and ask a few to explain their reasoning this time. After the object has been placed correctly, continue to sort silently, as students point to one of the mats each time. If many still seem puzzled by the time you're down to the last few objects, ask for more explanations. You might also give them a few hints in the form of questions: "Am I sorting these objects by their color?" or "Am I sorting these objects by the size—small and large?" or "Am I sorting objects by their shape?"

7. When all the objects have been sorted onto the two mats, ask children to pair-share their observations, and then call on volunteers to share their thinking with the class. Toward the end of the discussion, confirm that you were sorting the objects by flat and curved surfaces, and then identify each of the shapes by name. Kindergartners often refer to a cube as a "square" or a sphere as a "circle". While we don't expect them to use the formal names for these 3-dimensional figures right away, the more often we model the correct terms ourselves, the more quickly students will learn them.

Activity 1 Mystery Bag Sorting (cont.)

Extensions

- Leave the collection of objects out for children to sort on their own. Other attributes by which they might sort include: shapes that roll and shapes that slide; shapes that have square faces, rectangular faces, or circular faces; shapes you can stack and shapes you can't; and so on.
- Repeat this activity with a collection of shapes that includes cubes, rectangular prisms, triangular prisms, and pyramids. (You can build pyramids and triangular prisms with your polydrons, and there are usually several different types of triangular prisms in a set of building blocks.) Sort by those that have triangular faces and those that have rectangular faces, bearing in mind that a square is a special type of rectangle.
- Bring 3-dimensional shapes from home to put in your mystery sack. You'll find that students are even more engaged when the objects you're pulling out of the sack come from the teacher's house.

Set C1 ★ Activity 2



ACTIVITY

Shape Detectives

Overview

The teacher shows pictures and examples of 6 different 3-D shapes. Student pairs then hunt around the room to find more examples of each.

Skills & Concepts

- ★ identify, name, describe, and sort basic three-dimensional shapes
- ★ recognize three-dimensional shapes in the environment

Recommended Timing

Anytime after Set C1 Activity 1

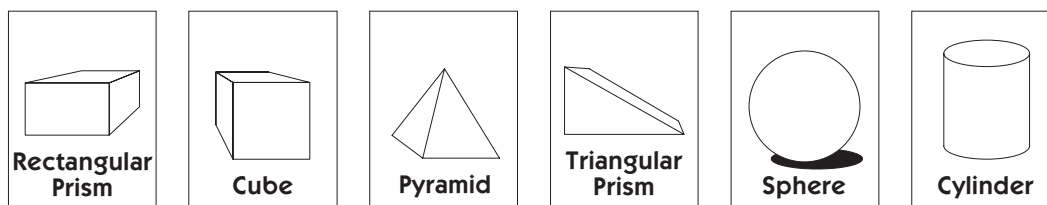
You'll need

- ★ 3-D Shape Cards (pages C1.7–C1.9, one copy of each card)
- ★ one object to match each of the cards (see Advance Preparation)
- ★ polydrons (see Advance Preparation)
- ★ six 12" × 18" pieces of construction paper, each a different color

Advance Preparation Find a cube, a small box, a can, and a ball in your classroom. You'll probably be able to find a triangular prism in your block corner, and you can build a pyramid with polydrons if you can't find anything else. You'll also want to divide your polydrons into smaller baskets and set them out on several tables in preparation for this lesson.

Instructions for Shape Detectives

1. Gather children to your discussion circle and tell them you are going to explore some new shapes today. Hold up the 3-D Shape Cards one by one along with the matching 3-D objects, as you name each shape and invite observations from the children.



Note In sharing observations, kindergartners are likely to talk about the faces of the objects and will most likely refer to the sphere and cylinder as circles, the pyramid as a triangle, and so on. You'll want to be careful to use the correct terms consistently, drawing the distinction between a cube and a square, for instance, both to model the language of geometry accurately and to avoid future misconceptions.

2. Once you've shared the cards and the objects, set 6 different colored sheets of construction paper in the middle of the circle and place a shape card on each. Hand out the objects to 6 different children

Activity 2 Shape Detectives (cont.)

around the circle. Then call on them one by one to place their object on one of the colored sheets, next to the card that names its shape, and explain why they're putting it there.



Andrew *I put this block here because it's a square.*

Teacher *Where do you see a square on that block, Andrew?*

Andrew *There's one on top, and another here, and another here. It's got lots of squares.*

Teacher *You're right. A cube has 6 square faces.*

3. After all 6 objects have been placed where they belong, explain that the children are going to be shape detectives today. You're going to send them out in pairs to look around the room for one or more of these 6 different shapes. Each time they find one, they'll bring it to the circle and set it on the piece of paper near the shape card that tells its name. Let them know that they have to stay with their partners, walk at all times, and move quietly, like good detectives. They can only bring one object to the circle at a time, and anything they bring has to fit on the paper. If they want, they can build one of the shapes with polydrons and bring their construction to the circle. (It's possible to build cubes, triangular prisms, rectangular prisms, and pyramids with polydrons, though you may have a few students who are convinced that they will be able to build a sphere.)

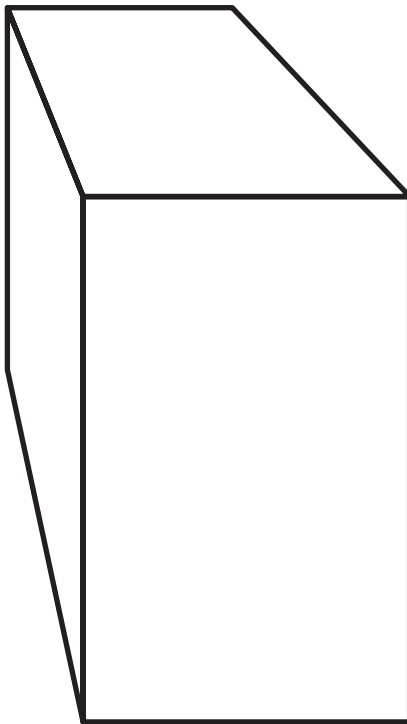
4. Send the children away from the circle, one pair at a time, complimenting the first few pairs to leave on how quietly and carefully they're walking. (Detectives can't rush around, or they'll never find what they're looking for!)

5. After a short work period, call children back to the circle to view the group's discoveries and constructions briefly.

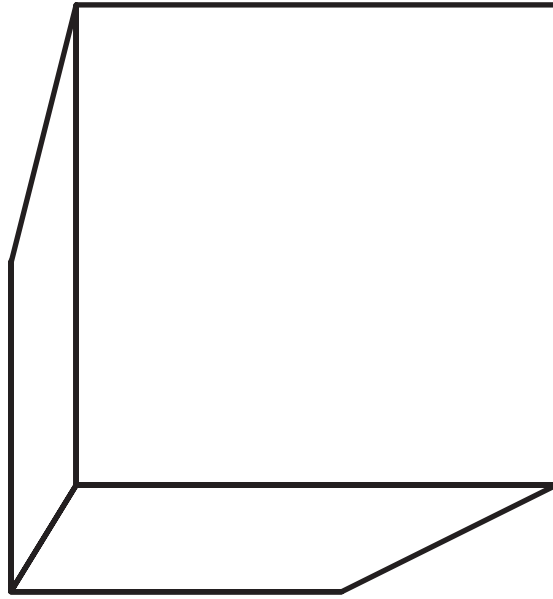
Extensions

- If you're able to leave the mats with the cards and objects still on them for a few days, you may find that some children are interested in adding things or changing things around. Use the opportunity to continue modeling the correct names and talking with children about the attributes of each shape.
- Leave the shape cards on the mats, but remove all the objects from the mats and put them in a basket. Invite children to sort the objects back onto the correct mats.
- Ask students to bring things from home to place on the shape mats.

3-D Shape Cards, page 1 of 3

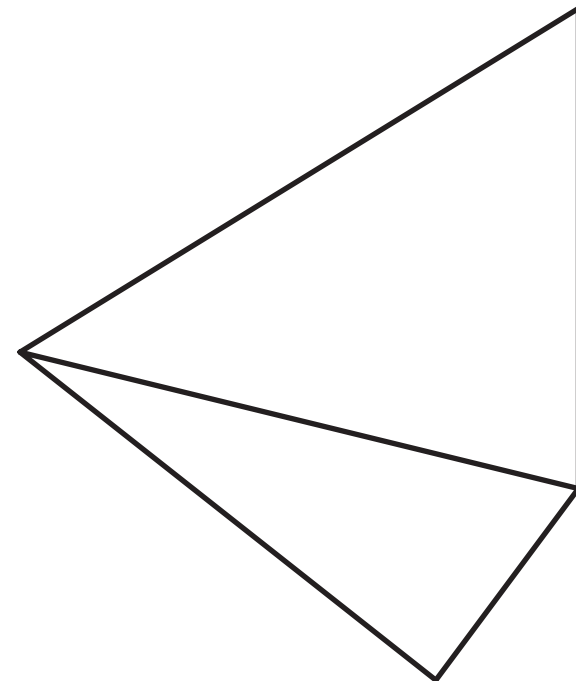


**Rectangular
Prism**

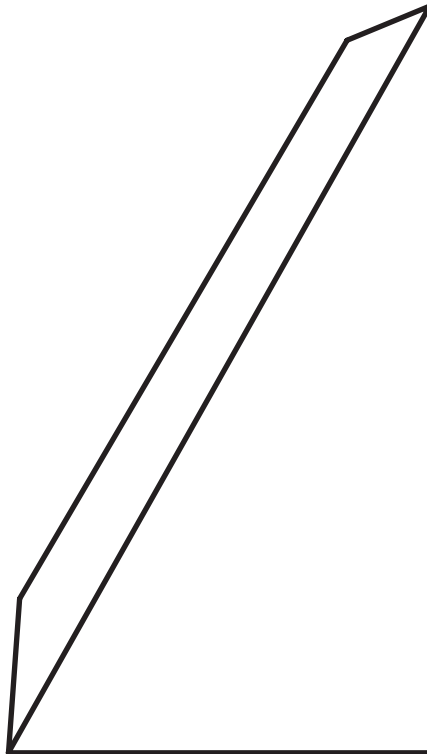


Cube

3-D Shape Cards, page 2 of 3

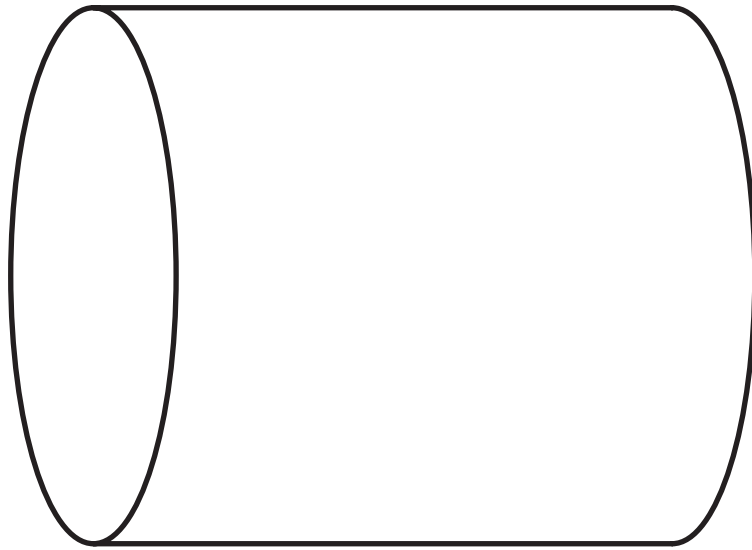


Pyramid

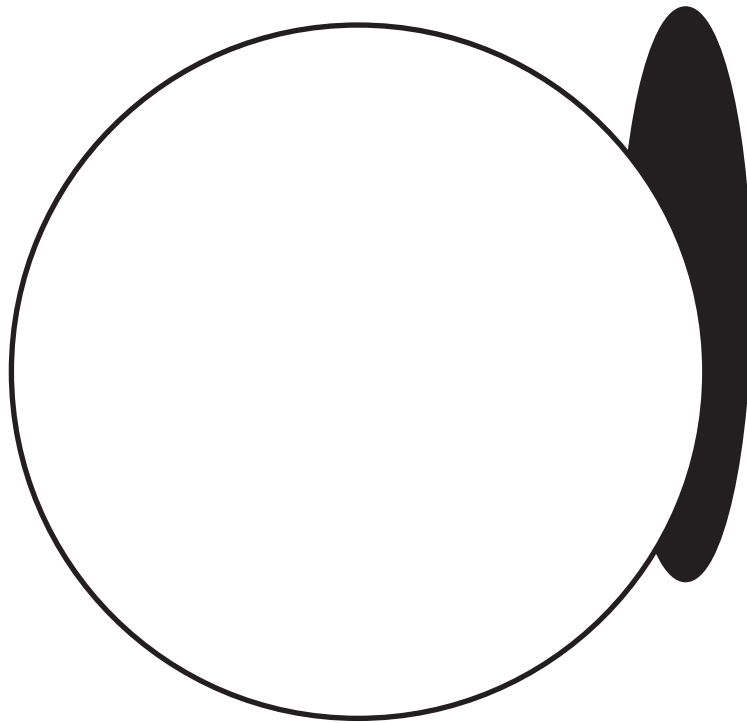


**Triangular
Prism**

3-D Shape Cards, page 3 of 3



Cylinder



Sphere

Set C1 ★ Activity 3



ACTIVITY

3-D Shape Walk

Overview

Students hunt for 3-dimensional shapes in the gym, library, or on a walk around the school, keeping a record of their discoveries as they go.

Skills & Concepts

- ★ identify, name, describe, and sort basic three-dimensional shapes
- ★ recognize three-dimensional shapes in the environment

Recommended Timing

Anytime after Set C1 Activity 2

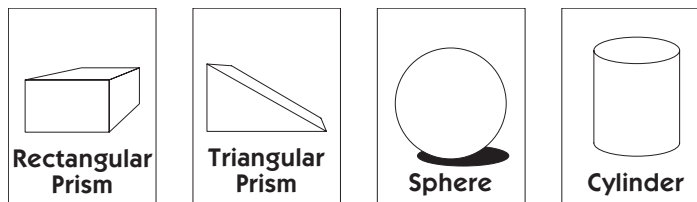
You'll need

- ★ 3-D Shape Walk Record Sheet (page C1.14, class set)
- ★ 3-D Shape Cards (pages C1.7–C1.9)
- ★ clipboards (optional, class set)
- ★ camera (optional)
- ★ *Cubes, Cones, Cylinders, & Spheres* by Tana Hoban (optional)

Advance Preparation Walk around your school before you conduct this activity to find a good variety of 3-dimensional shapes. One of the best locations we've found is the gym, set up for obstacle course day, but this varies from one school to another. Children will get more out of the experience if they are able to talk with an adult, so you'll want to invite several parent volunteers or other adults along with you, and you may even want to divide your students into small groups before you leave the classroom.

Instructions for 3-D Shape Walk

1. Gather children to your discussion circle and show the shape cards that illustrate the rectangular prism, the triangular prism, the sphere, and the cylinder.



2. Review the names of these shapes and explain to children that you're going to take a walk around the school (or whatever location you've decided is best) to look for these shapes. Do they think they can find examples of each of these shapes on your walk?

Alana It's good that we're going to the gym. There are lots of balls in there that are round like that one shape on your card.

Activity 3 3-D Shape Walk (cont.)

Teacher *The sphere? Yes, you're right that we should find plenty of those in the gym. Does anyone see another shape we might find on our walk?*

Maria *Maybe that little slide will be out—you know, the one that the little kids use? It looks like that triangle shape on your card.*

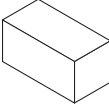
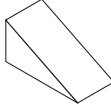


Teacher *Oh, the triangular prism. Yes, we may have to look really hard to find those.*

DeShawn *I think we can find lots of those box shapes.*

Teacher *Rectangular prisms do look like boxes. Where do you think we'll find them?*

Jenna *Everywhere! Even our whole school is shaped like a big box.*

3. Give each student a copy of the Shape Walk Record Sheet, along with a pencil and a clipboard (if you have clipboards). Ask children to write their name on their sheet, and explain that they'll get to use pictures, numbers, and/or words to record some of their discoveries along the way. Some of them, for instance, might want to keep a tally of how many times they see a cylinder on the walk. Others might prefer to draw pictures of some of the things they see under the matching shapes and use their best-guess spelling to label their sketches.

Set C1 Geometry: 3-D Shapes Blackline: Run a class set.	
Name _____	Date _____
Shape Walk Record Sheet	
Rectangular Prism 	Triangular Prism 
Cylinder 	Sphere 

4. Depending on the number of adult helpers you've been able to recruit, organize the students into small groups and set out on your walk. If you have a digital camera, you might want to serve as a roaming photographer, or ask one of the other adults to do so instead of supervising a group.

Activity 3 3-D Shape Walk (cont.)

5. When you return to the classroom, spend a few minutes talking about the things you saw. Which shapes were easiest to find? Which were most challenging? Did students see any 3-dimensional shapes that weren't on their record sheets, like cubes or pyramids? Let students take their record sheets home to share with their families.

Extensions

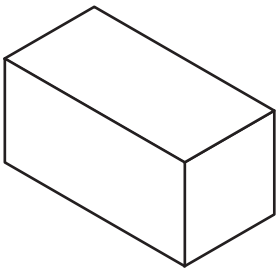
- Make a class chart or book showing some of the things students saw on the walk. Either could be illustrated with photos if you had a camera along with you. You might even post some to your class web site for families to view, along with text composed by the class.
- Share *Cubes, Cones, Cylinders, & Spheres* with your class either before or after you take your shape walk. In this wordless book, photographer Tana Hoban identifies four 3-D shapes before showing each in contexts that may be familiar to most children (alphabet blocks, ice cream cones) as well as ones a child might encounter on a trip to the city, country or even Fantasy Land (traffic cones, bales of hay, a castle).

NAME _____

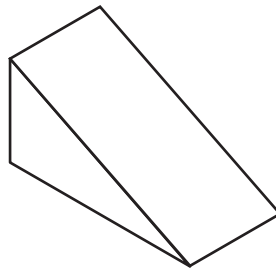
DATE _____

3-D Shape Walk Record Sheet

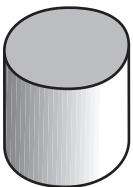
Rectangular Prism



Triangular Prism



Cylinder



Sphere

