



This is a one-week excerpt from the Starfall Kindergarten Mathematics Teacher's Guide.

If you have questions or comments, please contact us.

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2-D and 3-D Shapes

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2-D and 3-D Shapes

Week 15

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Week 15 Summary

The children will review 2-D and 3-D shapes and their properties, and use their knowledge to distinguish the difference and to complete many of the activities in **Week 15**. The children will also:

- Estimate length with cubes
- Predict whether 3-D shapes will roll, stack, or slide
- Graph shapes and interpret the results
- Sort 2-D and 3-D shapes

Preparation

Collect several small boxes (shoe boxes) for each group of three or four children.

DAY 1







You will read *Backpack Bear's Treasure Hunt* to the children.

The children will use drawing paper, pencils, and crayons to draw a "shape picture" for Backpack Bear.

DAY 2

Prepare a Shape Prediction Chart similar to the one pictured.

You will need enough bags of 3-D wooden or plastic objects for each small group of three or four children to have its own. You will also need an individual whiteboard and a small box (shoe box) for each group, and one for demonstration.

We Predict that a ____ will...	Roll	Stack	Slide
Cone 			
Cube 			
Cylinder 			
Rectangular Prism 			
Sphere 			
Square Pyramid 			

DAY 3

You will use 4 sets of 3-D Shape Cards. If you have more than 24 children, you may also use real 3-D shapes to make up the difference, so that each child has either a 3-D Shape Card or a shape.

DAY 4

Gather several classroom objects, such as a book, ruler, yardstick, and school bag, and several connect cubes for the children to practice their measuring skills.

Prepare a label that reads “2-D Shapes” and one that reads “3-D Shapes” for use in today’s sorting activity.

DAY 5

Activity Center 1 — Navigate classroom computers to *Starfall.com*.

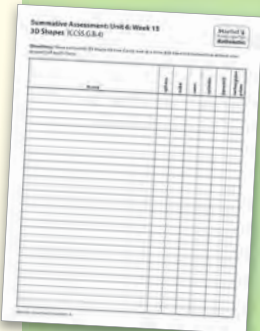
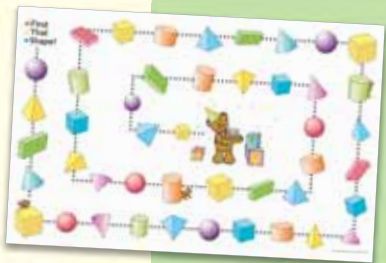
Activity Center 2 — The children will need a set of 3-D Picture Cards, play dough, and their math mats.

Activity Center 3 — The children will need play dough or several miniature marshmallows, toothpicks, math mats, and a set of 3-D Picture Cards. If you are using miniature marshmallows and toothpicks, be sure to place them in a plastic bag for each child.

Activity Center 4 — Prepare materials for this week’s Teacher’s Choice Activity.

Summative Assessment — The children will play “Find That Shape!” as you perform individual Summative Assessments. They will need a “Find That Shape!” game board, playing pieces, and a Starfall spinner labeled with 3-D shapes.

Prepare a copy of the Summative Assessment Checklist for Unit 6, Week 15.



Summative Assessment Unit 6 - Week 15		3D Shapes: K.CC.6.B.1			Student ID
Student Name	1	2	3		

Summative Assessment
Unit 6 - Week 15



DAY 1

DAY 2

Daily Routines

- Calendar
- Weather
- Number Line
- Place Value
- Hundreds Chart

Magic Math Moment

Subtraction story problems

Counting on

Math Concepts

Act out subtraction story problems

Count on from various numbers (instead of starting at 1)

Review 2-D/3-D Shapes

Review 3-D Shapes

Backpack Bear's Treasure Hunt (rebus book)

"Roll, Stack, Slide" – make predictions about 3-D shapes

Identify shapes

Test shapes to determine if each 3-D shape rolls, stacks, or slides

Formative / Summative Assessment

Draw presents for Backpack Bear incorporating shapes

Record results of "Roll, Stack, Slide" and interpret results

Workbooks & Media

DAY 3

DAY 4

DAY 5

- Calendar
- Weather
- Number Line
- Place Value
- Hundreds Chart

Learning Centers

"Looby Loo"

Estimate length

Starfall.com:

- Monthly Calendar
- Geometry and Measurement: "2-D/3-D Sort"
- "2-D/3-D Shapes"
- "3-D Space"

Sing "Looby Loo" and perform actions

Sing "Looby Loo" inserting names of 3-D shapes

Graph 3-D shapes

Estimate length of objects/use cubes to measure

Classify 2-D/3-D shapes by properties

Play dough 3-D shapes


Interpret 3-D Shape Graph

Distinguish 2-D/3-D shapes


Construct 3-D shapes

Math Melodies CD Track 14, "Looby Loo"

Workbook page 46



Workbook page 47



Teacher's Choice

"Find That Shape!"

Summative Assessment — Properties of 3-D Shapes

Act It Out: Subtraction**Materials**

- Individual whiteboards, markers

Distribute an individual whiteboard and marker to each child.

Say: **Today let's act out subtraction story problems. Listen carefully.** Choose seven volunteers to act out the following story problem.

- **Seven birds were in a tree.** Instruct the volunteers to stand together and flap their wings to act like birds.
- **Three flew away.** If necessary, help the children decide which three will "fly away."
- **How many birds were left in the tree?** Volunteers respond.
- **Let's count the remaining birds to be sure.** Count the four remaining children.
- **Write the equation for this subtraction story problem on your whiteboard horizontally. How many birds were in the tree to start?** (Write 7.) **How many flew away?** (Write -3.) **How many birds were left?** (Write = 4.)

The seven volunteers return to their seats. Choose eight different volunteers for the next subtraction story problem.

- **Eight children were riding bikes.** The eight volunteers pretend to ride bikes.
- **Two of the children needed to go home.** If necessary, help the children decide which two will "go home."
- **How many children were still riding their bikes?** Volunteers respond.
- **Let's count them to be sure.** Count the six remaining children.

Review the story problem. Children write the equation on their whiteboards horizontally ($8 - 2 = 6$).

Backpack Bear's Treasure Hunt**Materials**

- Pocket chart
- 2-D Shape Cards: circle, ellipse, octagon, rectangle, rhombus, square, triangle
- 3-D Shape Cards: cone, cube, cylinder, pyramid, rectangular prism, sphere
- Backpack Bear's Treasure Hunt
- Drawing paper, crayon, pencils

1 Review 2- and 3-Dimensional Shapes

Place the 2-D and 3-D Shape Cards face down in a pocket chart.

A volunteer reveals a Shape Card, identifies the shape, then chooses the next volunteer to do the same. Continue until all of the Shape Cards have been revealed and identified.

Operations & Algebraic Thinking

A.2 - Solve word problems with addition and subtraction within 10.

Geometry

A.1 - Describe objects using shapes and relative positions.

A.2 - Correctly name shapes.

B.4 - Analyze and compare two- and three-dimensional shapes.



2 Introduce *Backpack Bear's Treasure Hunt*

Indicate *Backpack Bear's Treasure Hunt*. Say: **Today we will read a book titled *Backpack Bear's Treasure Hunt!* This book was written and illustrated by Faith Gowan.**

Ask: **What do you think this book is about? Raise your hand if you know what a treasure hunt is. What do you think the treasure might be?**

(Volunteers respond.) **Let's read to find out!**

Explain that this is a rebus-style book, which means there are pictures in place of some of the words throughout the story. As you read, the children may participate in the reading by saying the names of the shapes indicated in the text.



3 Identifying Shapes

Say: **Now, let's see if you remember the names of the shapes.**

Indicate the shapes on pages 16 and 17. The children take turns identifying them.



Formative Assessment

Draw Shapes

Distribute drawing paper. Say: **Let's draw a present for Backpack Bear. Since he helped teach you about shapes, include as many shapes in your drawing as possible.**

If time allows, children share their drawings with the class.

Counting On

Materials

 None

Say: **Raise your hand if you can say the name of a number that is on the Number Line.** A volunteer does this.

Choose a number on the Number Line. Ask: **Who can say the name of a number that is larger than** (chosen number)? A volunteer does this.

Choose a second number. Say: **Let's begin at** (first number) **and count on to** (second number). **Ready?** Use a pointer to indicate the starting number and touch each successive number as the children count on.

Repeat several times with new volunteers.

Counting & Cardinality

A.2 - Count forward from a given number.

Geometry

A.2 - Correctly name shapes.

Estimation

E.2 - Make predictions to determine reasonable answers.

"Roll, Stack, Slide"

1 Review 3-D Shapes

Indicate each three-dimensional wooden shape individually several times (*cone, cube, rectangular prism, pyramid, sphere, and cylinder*) and choose volunteers to identify them.

2 Make Predictions

Say: **Today we will make predictions.**
Remember, predictions are smart guesses.

Indicate the 3-D Shape Prediction Chart. Say: **Let's examine, or look at, each shape and make a prediction about whether that shape will roll, slide, stack, or a combination of these.**

Demonstrate the meaning of "roll," "stack," and "slide" using a whiteboard and box.

Materials

- Prepared 3-D Shape Prediction Chart
- 1 wooden or plastic cone, cube, rectangular prism, pyramid, sphere, cylinder (for demonstration)
- Whiteboard and box (for prediction)
- Whiteboard and box for each group
- Bag with 3-D wooden or plastic shapes for each group
- Crayons or sticky notes

3 The Class Predicts

As a prediction is made about each shape, a volunteer comes to the chart and writes “Y” for yes or an “N” for no.

Say: **Here is a cone.**

- **Do you think this cone can roll?**
A volunteer writes “Y” or “N” next to the cone under “roll.”
- **Do you think this cone can stack?**
A volunteer writes “Y” or “N” next to the cone under “stack.”
- **Do you think this cone can slide?**
A volunteer writes “Y” or “N” next to the cone under “slide.”

Repeat for the cube, cylinder, rectangular prism, sphere, and square pyramid.

4 Testing the Predictions

Say: **Now let’s test our predictions.**

Divide the class into groups of three or four. Each group tests a shape using a ramp (a whiteboard or other item propped up on a box). If you have enough shapes to give each group a set, groups may test their shapes simultaneously. If you do not have enough shapes for each group to have a set, assign a 3-D shape to each group.

Discuss the results as a group.



Formative Assessment

Recording the Results

Gather the children back near the Prediction Chart.

Say: **Let’s look at the Prediction Chart. We predicted that a cone would (stack, roll, or slide).** Color the boxes that show the results, or use sticky notes to cover the boxes.

Continue: **Here is a cone. Did the cone slide?** (Volunteers respond.) **Yes, it did, so let’s color in the slide box.** Do this.

- **Did it stack?** (Volunteers respond.) **No, it did not, so we won’t color the stack box.**
- **Did it roll?** (Volunteers respond.) **Yes, so let’s color in the roll box.**
- **How well did we predict if a cone would roll, stack, or slide?**

Continue for each shape.

"Looby Loo"

Project *Starfall.com*, Motion Songs: "Looby Loo," or play the *Math Melodies* CD, Track 14. Encourage the children to sing along and perform the actions in the song.

Materials

- Starfall.com*: Motion Songs, "Looby Loo" or *Math Melodies* CD, Track 14

Operations & Algebraic Thinking

A.1 - Represent addition and subtraction in a variety of ways.

Measurement & Data

MD.2 - Use and interpret graphs.

Geometry

A.2 - Correctly name shapes.

B.4 - Analyze and compare two- and three-dimensional shapes.

Graphing Shapes

1 "Looby Loo" with Shapes

Gather the children in a circle and distribute a 3-D shape to each child.

Explain: **We will sing "Looby Loo" but I will name a shape rather than part of your body, like arm or leg. When you hear the name of the shape you are holding, jump in and out of the circle with your shape.** Repeat the song for each shape.

2 3-D Shapes Poem

Display *Backpack Bear's Math Big Book*, page 9. Read the 3-D Shapes poem. Read it a second time and encourage the children to join you.

Briefly review the properties of each 3-D shape using pages 10, 11, and 12.

3 Graphing 3-D Shapes

Distribute *Backpack Bear's Math Workbook #1* and instruct the children to turn to page 46. Assist them to locate the page as needed.

Note: Project the workbook page for demonstration if possible, as it is suggested that the children complete the page together. Volunteers may take turns coloring in the projected graph, as the other children complete their workbook pages. Decide whether to have the children place an X on the items they have graphed.

Say: **Look at all the shapes in the top box. Can you tell quickly how many rectangular prisms there are?** (Volunteers respond.) **We will use a graph to help us learn how many of each shape there are.**

Materials

- 4 sets of 3-D Shape Cards (**Note:** If you have more than 24 children, use real 3-D shapes to make up the difference)
- Backpack Bear's Math Workbook #1*, page 46
- Pencils, crayons
- Backpack Bear's Math Big Book*, pages 9-12





Formative Assessment

Interpret Results

Lead the children to interpret the results of the graph by asking:

- Which shape has the least number?
- Which shape has the most?
- Did more than one shape have the same number?
- How did graphing the shapes help us learn how many of each shape there are in the larger box?

Estimating Length with Cubes

Prior to today's Magic Math Moment, lay Backpack Bear on a table in the front of the classroom.

Say: **Today let's see how well we can estimate the length of objects, or how long they are. We will start with Backpack Bear!**

Indicate the cubes. Continue: **Look at this cube and estimate how many cubes long Backpack Bear might be.** (Volunteers respond.) **I think Backpack Bear might be about 6 cubes long. What could we do to test our estimates? Right, we could measure Backpack Bear using the cubes.** Discuss the results.

Ask: **Was your estimate too high or too low?** Volunteers respond. Repeat the measuring procedure using other classroom objects. First, ask the class to estimate how many cubes long the object is. Then a volunteer uses cubes to test their estimation.

Materials

- Classroom objects (Examples: book, ruler, yardstick, schoolbag)
- Backpack Bear
- Scissors
- Wooden or plastic cubes

Measurement & Data

A.1 - Describe measurable attributes of objects.

Geometry

A.2 - Correctly name shapes.

B.4 - Analyze and compare two- and three-dimensional shapes.

Estimation

E.1 - Understand the meaning of estimation.

Classifying 2-D and 3-D Shapes

1 Sorting 2-D and 3-D Shapes

Place the labels "2-D Shapes" and "3-D Shapes" in the top row of a pocket chart and read them to the children.

Ask: **What is the difference between a 2-D shape and a 3-D shape?** (Volunteers respond.) **Today we will classify, or sort, Picture Cards into two groups: 2-D pictures and 3-D pictures.**

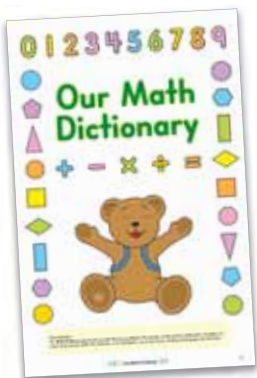
Distribute a 2-D or 3-D Picture Card to each child. (Some children may have more than one.)

- Choose 4 volunteers to move to the pocket chart.
- Each volunteer shows his or her Picture Card to the class and tells if it pictures a 2-D or a 3-D shape.
- The volunteers place their Picture Cards under the appropriate labels.
- The class confirms the answers or offers suggestions for other placement.

Repeat until all of the Picture Cards have been sorted.

Materials

- Pocket chart
- 2-D and 3-D Picture Cards (All)
- Backpack Bear's Math Workbook #1, page 47
- Pencils, crayons
- Backpack Bear's Math Big Book, Pages 47-56
- Labels:
 - 2-D Shapes
 - 3-D Shapes



2 Shape Hunt

Indicate *Backpack Bear's Math Big Book*, pages 47-56. Say: **This is Backpack Bear's Math Dictionary. Who can tell us what a dictionary is?** Volunteers respond.

Lead children to understand that a dictionary is where we look to find what words mean and how to spell them.

Continue: **This is a special dictionary because it has only math words in it. Let's use it to go on a Shape Hunt!**

Volunteers take turns to look through the dictionary and find two- and three-dimensional shapes. They name them and explain how they identified each shape.



Formative Assessment

Distinguishing 2-D and 3-D Shapes

Distribute *Backpack Bear's Math Workbook #1* and instruct the children to turn to page 47. Explain: **Cut out the shapes at the bottom of the page and decide if each shape is a 2-D shape or a 3-D shape. Then you will glue the shapes in the correct boxes.**

If time allows, instruct the children to turn to the last page of the workbook and write their names on the Mastering Math Award. They then color Backpack Bear.

As children are working, sign your name or use Backpack Bear's "paw" stamp as your signature. Write the date on the board and the children copy it.



Learning Centers

1 Computer

The children explore:

- Monthly calendar
- Geometry and Measurement: “2-D/3-D Sort”
- Geometry and Measurement: “2-D/3-D Shapes”
- Geometry and Measurement: “3-D Space”

Materials

- Computers navigated to *Starfall.com*

2 Play Dough 3-D Shapes

The children shuffle the 3-D Picture Cards and place them face down in a stack. One child turns a card. The children look closely at the card and use play dough to construct the shape on their math mats.

Repeat with the children taking turns to reveal cards and constructing the corresponding three-dimensional shapes.

Materials

- 3-D Picture Cards
- Play dough
- Math mats

3 Constructing 3-D Shapes

The children take turns choosing 3-D Picture Cards and constructing each shape using toothpicks and miniature marshmallows or small balls of play dough on their Math Mats.

Materials

- Miniature marshmallows or balls of play dough
- 3-D Picture Cards
- Toothpicks
- Math mats

4 Teacher's Choice

Prepare an activity that will provide the children with an opportunity to practice a skill from this unit.

5 Summative Assessment: “Find That Shape”

Players draw from the deck of 3-D Shape Cards and move their playing pieces to the next corresponding shape on the game board.

Play ends when the first player reaches Backpack Bear at the end, or play may continue until all players reach Backpack Bear.

As the children play the game, individually ask each of them to indicate the vertex, edge, and face of each shape. Record responses on a Summative Assessment Checklist for Unit 6 – Week 15.

Materials

- “Find that Shape!” Game board
- Game spinner labeled with 3-D shapes
- Playing pieces
- Summative Assessment Checklist Unit 6, Week 15

Counting & Cardinality

B.4 - Understand the relationship between numbers and quantities.

Geometry

A.1 - Describe objects using shapes and relative positions.

A.2 - Correctly name shapes.

B.4 - Analyze and compare two- and three-dimensional shapes.

B.5 - Build and/or draw shapes.

