K

Topic 13: Measurement

Lessons 1-7

Math Intervention Resources

Reteach

MDIS:

D68: 13-1, 13-2, 13-3, 13-4, 13-5
D70: 13-6, 13-7

Guided Practice

Reinforce the concept that objects have more than one attribute. Show children a colored cardboard or plastic circle and discuss the attributes.

Have the children identify the shape. Then ask them to identify the color.

Model how to draw a circle on the board and have the children draw a circle on paper. Ask the children to identify the shape using the word ***circle***. Repeat with square, triangle, and rectangle.

Hold up one of the pictures of the colored shapes and have the children identify the shape and color of each.

Reinforce

Envision Math Games:

Topic Games:

- Quilly's Kitchen

envision Online Games

- Dino zoo data
- Graphing: more likely less likely 1
- Graphing: more likely less likely 2

Symbaloo

Building Blocks (Golden CD)

10 Block Materials:

Assessments

K

Topic 13: Sorting, Classifying, Counting, & Categorizing Data

Lesson 13-1

MDIS: D68

Same and Different

Quick and Easy Lesson Overview

Objective	Essential Understanding	Vocabulary	Materials
Children will identify *same* and *different* by the attributes of color, shape, size, and kind.	Attributes can be used to compare objects.	**same (alike)** **different**	Counters (or Teaching Tool 32) Hexagon pattern blocks Color Tiles (or Teaching Tool 31) Attribute blocks or Shapes (Teaching Tool 2) Crayons (red, blue) Yellow chalk (2 same length, 1 shorter)

PROFESSIONAL DEVELOPMENT

Math Background

When introducing the concepts of *same* and *different*, focus on *same* first and then go on to *different*. Focus on the attribute of color first. Children often see color before other attributes. Introduce other attributes such as shape, size, and use.

Common Core

Domain

Measurement and Data

Cluster

Classify objects and count the number of objects in each category.

Standard

K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Mathematical Practices

- ✔ Make sense of problems and persevere in solving them.
- ○ Reason abstractly and quantitatively.
- ○ Construct viable arguments and critique the reasoning of others.
- ✔ Model with mathematics.
- ✔ Use appropriate tools strategically.
- ✔ Attend to precision.
- ✔ Look for and make use of structure.
- ○ Look for and express regularity in repeated reasoning.

2 Guided Practice

Remind children that they can compare objects by using the words *same* and *different*.

Error Intervention

If children have difficulty identifying objects that are the same or different,

then hold up two sheets of paper in different colors. *Do these sheets of paper have the same shape?* [Yes] *Are they the same color?* [No]

Do you understand? *How do you know whether two objects are the same or different?* [I look to see if the color, size, and shape of one object is the same or different from the other.]

Reteaching Display 2 connecting cubes of one color and 1 cube of another color. Point out that the cubes are the same size and shape, but they are not exactly alike. Ask children which 2 are the same color and which one is different. Ask children to join the 2 cubes that are the same color.

K

Topic 13: Sorting, Classifying, Counting, & Categorizing Data

Lesson 13-2

MDIS: D68

Sorting by One Attribute

Quick and Easy Lesson Overview

Objective	Essential Understanding	Vocabulary	Materials
Children will sort objects by one attribute such as color, shape, size, or kind.	Attributes can be used to sort a group of objects.	**sort** **does not belong**	Blue crayon Yellow pencil Black pen Different buttons Cube Counter Tiles (or Teaching Tool 31)

PROFESSIONAL DEVELOPMENT

Math Background

When introducing the idea of sorting by one attribute, it is important that all other attributes are the same, such as blocks that are different colors but the same size and shape. Kindergartners might get distracted by other attributes that are different.

2 Guided Practice

Remind children that they can sort objects by size, color, shape, or use.

Error Intervention

If children have difficulty recognizing the objects that belong in a group,

then remind them that they are sorting the objects by color, by how they are used, or by shape. For example, explain that buttons help us wear clothing; they help keep our clothes on.

Do you understand? *What are some ways you can sort objects?* [By color, shape, size, or by how they are used]

Reteaching Cut out magazine pictures that can be sorted by various attributes. Hold up a picture of a round object. Ask children to place other pictures that show the same shape into a box. Then empty the box and repeat with other pictures and other attributes.

Common Core

Domain

Measurement and Data

Cluster

Classify objects and count the number of objects in each category.

Standard

K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Mathematical Practices

- ○ Make sense of problems and persevere in solving them.
- ○ Reason abstractly and quantitatively.
- ○ Construct viable arguments and critique the reasoning of others.
- ✔ Model with mathematics.
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Topic 13: Sorting, Classifying, Counting, & Categorizing Data

Lesson 13-3

MDIS: D68

Sorting the Same Set in Different Ways

Quick and Easy **Lesson Overview**

Objective	Essential Understanding	Vocabulary	Materials
Children will sort the same set in different ways.	Attributes such as color, shape, or size can be used to sort the same set of objects in different ways.		Large brown bag Small brown bag Attribute blocks (or Teaching Tool 36) Crayons (blue, yellow) Glue Sort (Teaching Tool 3) Blunt-tipped scissors

PROFESSIONAL DEVELOPMENT

Math Background

When sorting objects in different ways, be sure children know the sorting rule that is being used. Reiterate it several times so they know whether they are sorting by color, size, shape, and so on. Also, in the beginning, keep one attribute the same for all the objects. For example, they can all be red or round. Not too many attributes should be featured at one time, and the differences between the sorted objects should be obvious.

2 Guided Practice

Remind children that they can often sort a group of objects in different ways. The suggestions below apply to Exercises 1–4.

Error Intervention

If children have difficulty finding a way to sort the objects pictured in Boxes 1–4,

then help those children decide how to sort by asking questions such as: *Can you sort by size? Can you sort by color? Can you sort by shape?*

Do you understand? *What did you need to know about the dogs in order to sort them in different ways?* [I needed to know their size and color.]

Reteaching Collect a group of books and model sorting books by size into two groups: big and small. Then guide children to re-sort the books, using an attribute such as color or genre.

Common Core

Domain

Measurement and Data

Cluster

Classify objects and count the number of objects in each category.

Standard

K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Mathematical Practices

- ✔ Make sense of problems and persevere in solving them.
- ○ Reason abstractly and quantitatively.
- ○ Construct viable arguments and critique the reasoning of others.
- ✔ Model with mathematics.
- ✔ Use appropriate tools strategically.
- ○ Attend to precision.
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Topic 13: Sorting, Classifying, Counting, & Categorizing Data

Lesson 13-4

MDIS: D68

Sorting by More Than One Attribute

Quick and Easy Lesson Overview

Objective	Essential Understanding	Vocabulary	Materials
Children will use more than one attribute to sort a set of objects.	A set of objects can be sorted according to a combination of attributes.		Attribute blocks (or Teaching Tool 36) Crayons (yellow, blue) Red construction paper square, red construction paper rectangle Sort More (Teaching Tool 4) Glue Blunt-tipped scissors

PROFESSIONAL DEVELOPMENT

Math Background

In this lesson, children will sort a group of objects by more than one attribute. Discuss how this is different from sorting the same group in two different ways. For example, children can sort a group of blocks by color and by shape.

2 Guided Practice

Remind children that they can sort objects in more than one way.

Error Intervention

If children have difficulty sorting the objects by shape and by color,

then have them first sort by one attribute, then by the second attribute.

Do you understand? *How can you sort objects that are exactly the same in two ways?* [I can look for objects that are the same shape and the same color.]

Reteaching Place assorted attribute blocks on a tray. Call out two attributes at a time, such as "Large circles!" Children find the blocks having both attributes and group the blocks in front of them until the tray is empty.

Common Core

Domain

Measurement and Data

Cluster

Classify objects and count the number of objects in each category.

Standard

K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Mathematical Practices

- ✔ Make sense of problems and persevere in solving them.
- ○ Reason abstractly and quantitatively.
- ✔ Construct viable arguments and critique the reasoning of others.
- ✔ Model with mathematics.
- ✔ Use appropriate tools strategically.
- ○ Attend to precision.
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Topic 13: Sorting, Classifying, Counting, & Categorizing Data

Lesson 13-5

MDIS: D68

Problem Solving: Use Logical Reasoning

Quick and Easy Lesson Overview

Objective	Essential Understanding	Vocabulary	Materials
Children will solve problems by thinking logically.	Some problems can be solved by reasoning about the conditions in the problem.	sorting rule	Attribute Blocks Crayons (blue, yellow, red) 3 books

PROFESSIONAL DEVELOPMENT

Math Background

Ask questions to help children think logically about sorting and classifying. *How are the shapes alike? Which shape is like these two shapes?*

2 Guided Practice

Remind children that the blocks or shapes only have to be the same in one way.

Error Intervention

If children have trouble keeping track of how blocks are the same,

then have them say aloud the color or shape to help them remember.

Do you understand? Hold up several pencils and crayons. *How are these things alike?* [They are things for writing and drawing.] *Could a marker belong in this group? Why or why not?* [Yes, because it's something for writing or drawing] *Can you name something that would not belong in this group?* [Accept reasonable answers.]

Reteaching On chart paper, draw a red triangle and a blue triangle. Display attribute blocks, including triangles. Call on a volunteer to find an attribute block that is the same as the two shapes on the chart paper. Repeat, until children have found all the triangle attribute blocks. Ask children to tell how all the blocks are alike. [Same shape] Repeat with other shapes, colors, or sizes.

Common Core

Domain

Measurement and Data

Cluster

Classify objects and count the number of objects in each category.

Standards

K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. Also **K.G.1**

Mathematical Practices

- ✔ Make sense of problems and persevere in solving them.
- ○ Reason abstractly and quantitatively.
- ○ Construct viable arguments and critique the reasoning of others.
- ✔ Model with mathematics.
- ○ Use appropriate tools strategically.
- ✔ Attend to precision.
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Topic 13: Sorting, Classifying, Counting, & Categorizing Data

Lesson 13-6

MDIS: D70

Real Graphs

Quick and Easy **Lesson Overview**

Objective	Essential Understanding	Vocabulary	Materials
Children will make and read a real graph.	Data can be collected and represented using different types of graphs. Graphs can be used to answer questions.	real graph	Two-Color Counters (or Teaching Tool 32) Red and yellow crayons Two-Column Graph (Teaching Tool 28)

PROFESSIONAL DEVELOPMENT

Math Background

In graphs, the comparison of *more* and *fewer* usually involves the length of the columns or rows being compared. Encourage children to compare the columns in a graph by using one-to-one correspondence of the cells.

Common Core

Domain

Measurement and Data

Cluster

Classify objects and count the number of objects in each category.

Standard

K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Mathematical Practices

- ○ Make sense of problems and persevere in solving them.
- ✔ Reason abstractly and quantitatively.
- ○ Construct viable arguments and critique the reasoning of others.
- ✔ Model with mathematics.
- ✔ Use appropriate tools strategically.
- ✔ Attend to precision.
- ✔ Look for and make use of structure.
- ○ Look for and express regularity in repeated reasoning.

2 Guided Practice

Have children color in the graphs, using red and yellow crayons. Remind children to circle the column that shows fewer objects in Exercise 1 and more objects in Exercise 2. The suggestions below apply to Exercises 1–2.

Error Intervention

If children skip squares, count the number of counters aloud with them,

then model how to move the counters and then color.

Do you understand? *How can you find out by reading a graph which counters there are fewer of?* [Look for the column that has fewer squares filled.] *More of?* [Look for the column that has more squares filled.]

Reteaching Label the columns of a large two-column graph grid with drawings of a red crayon and a yellow crayon. Have children place 4 red crayons and 6 yellow crayons on the graph. Help children identify which column has fewer crayons and which column has more.

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Topic 13: Sorting, Classifying, Counting, & Categorizing Data

Lesson 13-7

MDIS: D70

Picture Graphs

Quick and Easy **Lesson Overview**

Objective	Essential Understanding	Vocabulary	Materials
Children will make and read a picture graph.	Data can be collected and represented using different types of graphs. Graphs can be used to answer questions.	**picture graph**	Counters (or Teaching Tool 32) Pattern Blocks (or Teaching Tool 35) Crayons

PROFESSIONAL DEVELOPMENT

Math Background

Graphs at this early level do not need numeric scales. Rather, children count pictures or cells to interpret data and make comparisons. This makes important number concepts such as counting, one-to-one correspondence, more, and fewer easy to explore with graphs.

2 Guided Practice

Have children color in the pictures on the graphs, one for each object shown on the left of the graph. Then have children circle the object on the left of each row that has more.

Error Intervention

If children cannot tell whether there are more hats or balloons,

then point out that the longer row has more balloons colored.

Do you understand? *What question about paintbrushes and jars of paint can a picture graph help you answer?* [Are there more paintbrushes or jars of paint?] *What can you do to answer the question?* [Look at the rows to see which row has more squares colored.]

Reteaching Draw a two-row graph grid on chart paper. Label the rows with drawings of a happy face with brown hair and a happy face with black hair (or yellow hair). Choose 5 children who have either brown hair or black hair. Have other children draw faces on the graph to show how many children have brown hair and how many have black hair. Ask children to tell which group has more.

Common Core

Domain

Measurement and Data

Cluster

Classify objects and count the number of objects in each category.

Standard

K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Mathematical Practices

- ○ Make sense of problems and persevere in solving them.
- ○ Reason abstractly and quantitatively.
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