



Topic 12: Measurement

Lessons 1-8

Math Intervention Resources

Reteach

MDIS:

D68: 12-2

D19: 12-7

D20: 12-8

Guided Practice

Model comparing a short red piece of yarn to a long blue piece of yarn. The red piece is shorter than the blue piece. The blue piece is longer. Add a piece of yellow yarn equal in length to the blue piece. The yellow piece is as long as the blue piece. Have children repeat the sentences.

Give partners similar pieces of yarn. Have them make comparison about their pieces of yarn using the words *shorter than*, *longer than*, and *as long as*.

Reinforce

Envision Math Games:

Topic Games:

- How Long is the Train?

envision Online Games

- Sorting and classifying
- Position and location
- Fearless flying fleas

Symboloo

Building Blocks (Golden CD)

10 Block Materials:

Assessments

K

Topic 12: Measurement

Lesson 12-1

MDIS:

Describing Objects by More Than One Attribute

Quick and Easy Lesson Overview

| Objective | Essential Understanding | Vocabulary | Materials |
|--|--|------------|---|
| Children will recognize and describe the measurable attributes of objects. | Objects have measurable attributes that can be recognized and described. | | Plastic cup Classroom objects Balance Cube train Measuring cup (Per child) crayons |



Math Background

Research says ... at this level, children think of measuring an attribute as “filled,” “covered,” or “matched” with a unit of measure with the same attribute (Van de Walle, 2004). Unit models, used as

nonstandard units, are abundant in the classroom. For length, a connecting cube, a nonstandard unit, may be used. In this lesson, children identify the attributes of an object that can be measured.

2

Guided Practice

Remind children that they can use tools to tell about an object’s attributes.

Error Intervention

If children have difficulty identifying which tool they could use to find how much a container holds,

then model with an actual container, measuring cup, and water. Have children name other objects that hold things. [Sample responses: glass, cookie jar, soup can]

Do you understand? Display a large book and a small book side by side. *Which book is heavier? Which tool could we use to find out which book weighs more?* [Balance]

Reteaching Give partners small classroom objects. Ask one child to choose an object and describe it. The partner identifies what tools they could use to tell about the attributes of that object.



Common Core

Domain

Measurement and Data

Cluster

Describe and compare measurable attributes.

Standard

K.MD.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

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.

K

Topic 12: Measurement

Lesson 12-2

MDIS: D18

Comparing by Length

Quick and Easy

Lesson Overview

| Objective | Essential Understanding | Vocabulary | Materials |
|---|---|--|-------------------------------------|
| Children will directly compare objects by length. | Objects can be compared and ordered by length and weight. | length shorter (than) longer (than) as long as (same length as) | Classroom objects, connecting cubes |



Math Background

Research says ... children directly compare lengths as a readiness for length and other measures. Throughout the K–2 years, length plays a central role in children’s understanding of measurement. The development of length measurement beginning

with comparisons and progressing through use of physical units and eventually rulers and standard units can also assist children in the development of other measurement attributes (Buys and de Moor, 2005).

2

Guided Practice

Remind children that they compare the lengths of the objects pictured in each exercise.

Error Intervention

If children have difficulty deciding which object is shorter or longer than another object,

then show 2 cube trains that are the same length. Then remove some cubes from 1 train and discuss how the length changed.

Do you understand? Hold up 2 pencils of different lengths and align them at one end. *Which pencil is longer? How do you know?* [Answers will vary; the pencil that sticks out is longer.]

Reteaching Have children make a 5-cube train. Then ask them to make a cube train that is shorter and a cube train that is longer. Have children line up the trains at one end to demonstrate that one is shorter and one is longer than the 5-cube train.



Domain

Measurement and Data

Cluster

Describe and compare measurable attributes.

Standard

K.MD.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.* Also **K.MD.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.
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K

Topic 12: Measurement

Lesson 12-3

MDIS:

More Comparing Objects by Length

Quick and Easy Lesson Overview

| Objective | Essential Understanding | Vocabulary | Materials |
|--|---|-----------------------------------|--------------------------------------|
| Children will compare and order objects by length. | Objects can be compared by length and weight. | longest shortest | Crayons or pencils, connecting cubes |



Math Background

This lesson expands on what children learned in Lesson 2 when they compared the length of 2 objects. After children can compare

shorter and longer objects, they will be ready to compare and order 3 objects according to length using comparison words.

2

Guided Practice

Remind children that only 2 pictures will be marked in each exercise.

Error Intervention

If children have difficulty deciding which end of the objects to compare,

then draw a line at the left to show the alignment.

Do you understand? *How can you figure out which object in a group is the longest?* [I line up the objects at one end. Then I look to see which one is the longest. It will stick out more than the others.]

Reteaching Place strips of paper of different lengths in a bag. Ask each child to choose 3 strips. Each child aligns the strips of paper and orders them from shortest to longest.



Common Core

Domain

Measurement and Data

Cluster

Describe and compare measurable attributes.

Standards

K.MD.2 Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.

For example, directly compare the heights of two children and describe one child as taller/shorter. Also K.MD.1

Mathematical Practices

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

Topic 12: Measurement

Lesson 12-4

MDIS:

Problem Solving: Try, Check, and Revise

Quick and Easy Lesson Overview

| Objective | Essential Understanding | Vocabulary | Materials |
|---|---|------------|-------------------------------|
| Children will solve problems by comparing lengths and revising their answers. | Some problems can be solved by making a reasoned first try for what the answer might be and then, through additional reasoning, arrive at the correct answer. | | Yarn, chart paper, tape, glue |



Math Background

Ask questions to help children compare lengths. *Which object looks the shortest? Which object looks the longest? Does this object look shorter than that object?*

2

Guided Practice

Remind children that they can choose a strategy to solve a problem. They can compare lengths and then check the order.

Error Intervention

If children have trouble comparing more than 2 lengths of yarn, **then** have them pick the shortest and longest first and compare the 2 left over.

Do you understand? *How do you know which piece is longest?* [It sticks out more than all the others.] *How do you know which one is shortest?* [All the others stick out more than that one.]

Reteaching Make 4 cube trains of different lengths (e.g., a 3-cube train, a 5-cube train, a 7-cube train, a 10-cube train). Ask volunteers to find the shortest train, and then the longest train. Have children put these 2 trains on one side of the table. Repeat with the last 2 trains. Then have children align the 4 trains at one end and order them from shortest to longest. To check their solution, children should count connecting cubes.



Common Core

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Measurement and Data

Cluster

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Mathematical Practices

- Make sense of problems and persevere in solving them.
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K

Topic 12: Measurement

Lesson 12-5

MDIS:

Comparing by Height

Quick and Easy

Lesson Overview

| Objective | Essential Understanding | Vocabulary | Materials |
|---|--|--|---|
| Children will directly compare objects by height. | Comparing by height is similar to comparing by length. | height taller (than) as tall as | Plastic cup, connecting cube, pencil, crayons |



Math Background

This lesson expands on what children have learned about comparing and ordering by length. Children can think of height the

same way they thought about length when comparing and ordering.

2

Guided Practice

Remind children that they compare the heights of the objects pictured in each exercise.

Error Intervention

If children have difficulty determining which object is taller or shorter than another object,

then show 2 cube towers that are the same height. Then remove some cubes from 1 tower and discuss how the height changed.

Do you understand? Hold up 2 objects that are different heights. *Which object is taller? How do you know?* [Answers will vary; the object that sticks up higher is taller.]

Reteaching Have children make a 6-cube tower. Then ask them to make a cube tower that is shorter and a cube tower that is taller. Have children place the cube towers next to each other to demonstrate that one is shorter and one is longer than the 6-cube tower.



Common Core

Domain

Measurement and Data

Cluster

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Standards

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Mathematical Practices

- ✓ Make sense of problems and persevere in solving them.
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- Construct viable arguments and critique the reasoning of others.
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K

Topic 12: Measurement

Lesson 12-6

MDIS:

More Comparing Objects by Height

Quick and Easy Lesson Overview

| Objective | Essential Understanding | Vocabulary | Materials |
|--|--|----------------|-------------------------------------|
| Children will compare and order objects by height. | Comparing by height is similar to comparing by length. | tallest | Classroom objects, connecting cubes |



Math Background

This lesson expands on what children learned in Lesson 5 when they compared height. After children can compare shorter and taller

objects, they will be ready to compare three objects according to height using comparison words.

2

Guided Practice

Remind children that only 2 pictures will be marked in each exercise.

Error Intervention

If children have difficulty deciding which end of the objects to compare,

then draw a line at the bottom to show the alignment.

Do you understand? *How can you figure out which object in a group is the tallest?* [I stand up the objects next to each other. Then I look to see which one is the tallest. It will stick up more than the others.]

Reteaching Place pieces of ribbon of different lengths in a bag. Ask each child to choose three ribbons. Each child aligns the strips of ribbons at the bottom and arranges them in order from shortest to tallest.



Common Core

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Measurement and Data

Cluster

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Standards

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Mathematical Practices

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Topic 12: Measurement

Lesson 12-7

MDIS: D19

Comparing Capacities

Quick and Easy Lesson Overview

| Objective | Essential Understanding | Vocabulary | Materials |
|---|--|--|---|
| Children will compare containers by their capacity. | Objects can be compared and ordered by length, capacity, and weight. | holds more holds less empty full most least | 2 different-sized cups or mugs, classroom containers, water, blunt-tipped scissors, glue, Comparing Capacities (Teaching Tool 26) |



Math Background

Research suggests that children learn to measure through a sequence that starts with recognizing that there is a measurable property. Then they make direct physical comparisons among objects that have

that property. Finally, they determine an appropriate unit to use to measure the property. This lesson begins this sequence by comparing capacity.

2

Guided Practice

Remind children that they circle the container that holds more, underline the containers if they hold the same, and mark an X on the container if it holds less. The suggestions below apply to Exercises 1–7.

Error Intervention

If children have difficulty using the pictures to compare capacity,

then have them use real containers and sand or rice to compare. Then relate the pictures to the containers.



Do you understand? Hold up two glasses of different sizes. *Which one holds more than the other?* [Answers will vary.] *How can you check to see whether a glass holds more or less?* [You can pour water from one glass to the other to see if water spills over or if the water doesn't fill the glass.]

Reteaching Give children containers of different sizes. Have them choose two containers and decide which one holds more and which one holds less. Use sand or rice to check.



Common Core

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Mathematical Practices

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Topic 12: Measurement

Lesson 12-8

MDIS: D20

Comparing by Weight

Quick and Easy Lesson Overview

| Objective | Essential Understanding | Vocabulary | Materials |
|---|---|--|--|
| Children will directly compare objects by weight. | Objects can be compared and ordered by length and weight. | weight lighter (than) weighs less heavier (than) weighs more about the same balance scale | Balance scale, classroom objects, balls, crayons |



Math Background

Children often think that a larger object always weighs more than a smaller object. To address this misconception, provide many

hands-on experiences so that children can compare the weight of a larger, lightweight object with a smaller, heavier object.

2

Guided Practice

Remind children that when they compare the pictured objects, they should think about how heavy or light the real objects are. The suggestions below apply to Exercises 1–8.

Error Intervention

If children think that a bigger object is always heavier than a smaller object,

then have them hold and compare the weights of a large bag of plastic foam peanuts and a small bag of pennies.

Do you understand? *What animal is heavier than you? What animal is lighter than you?* [Accept reasonable responses.]

Reteaching Pass around a book for children to get a sense of its weight. Then pass around other classroom objects. Children decide if each object is lighter or heavier than the book. Make two groups of objects to show the results.



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Mathematical Practices

- Make sense of problems and persevere in solving them.
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