Unit 4: Domain: Measurement and Data

Content Area: **Mathematics**
Course(s): **Mathematics**
Time Period: **Marking Period 3**
Length: **4 Weeks**
Status: **Published**

Unit Overview

In this unit, students will learn that objects have measurable attributes such as length, capacity, and weight that can be compared and described. Some attributes used to compare objects are color, size and shape as well. Students will be able to describe attributes and answer questions.

Standards

MA.K.MD.A	Describe and compare measurable attributes.
MA.K.MD.A.1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
MA.K.MD.A.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.
MA.K.MD.B	Classify objects and count the number of objects in each category.
MA.K.MD.B.3	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Essential Questions

What types of problems are solved with measurement?

What are some of the tools of measurement and how are they used?

How do I decide what unit of measurement to use?

How do attributes help to sort, classify and catagorize objects?

Application of Knowledge and Skills...

Students will know that...

- Data can be displayed and represented in different ways.

- Mathematics content and practices can be applied to solve problems.
- Numbers, expressions, measures and objects can be compared and related in different ways.
- Some questions can be answered by collecting and analyzing data.
- Tables, graphs and charts can give information.
- Two- and Three-dimensional objects with or without curved surfaces can be described, classified and analyzed by their attributes.

Students will be skilled at...

- comparing objects by length,height,capacity,weight.
- defining the following terms from each topic: Topic 12: longer (than), length, as long as, shorter (than), shortest, longest, taller (than), height, tallest, as tall as, balance scale, weight, weighs less, weighs more, heavier (than), about the same, holds more, empty, most, holds less, least, full Topic 13: different, same, does not belong, sort, sorting rule, picture graph, real graph
- identifying and sorting using same and different by the attributes of color, shape, size and kind.
- recognizing and describing the measurable attributes of an object.

Assessments

- benchmark test
- end of the year test- administered after completing the program
- Placement Test- administered prior to delivering the program
- topic math projects
- topic quick checks
- topic tests

Activities

Problem of the Day-Present a daily problem that serves as a review from the previous day's lesson.

Vocabulary - Create a chart for each new vocabulary word that includes the word's meaning and an example or use vocabulary cards as flash card game

Station activities- Each section has center activities to reinforce skill (leveled)

- Clip and Cover: Students answer questions and try to cover four spaces in a row on a gameboard to win.
- Display the Digits: Students answer the problem and display the tile that rpresents the answer.
- Quick Questions: Toss number cubes and answers questions.
- Teamwork: Students in turn explain the steps in a multi-step process.
- Think Together: Students choose and discuss answers to problems.

- Tic Tac Toe: Students use algebraic rules to compute solutions to problems
- Toss and Talk: Students toss number cubes and explain how to solve resulting problems.

STEM - Certain sections have Going Digital integrating technology

Interactive Learning - Problem-Based Interactive learning activities at the beginning of each topic such as using tools, structure,reasoning, generalizing, assessing reasonableness and modeling.

Topic Opener Projects - There is a math project for each topic (Topic 12-13). See Cross Disciplinary instruction for project and page numbers.

Let's Make a Graph!

Display pictures of a hotdog, a pizza slice, and a hamburger at the front of the room. Have children line up next to their favorite food. Add a representation of each child beside his/her favorite food then place it above the food picture. Ask: Which food is the favorite of the class? Which food is the least favorite? How many more children like ___ than ___?

Half of a Whole

Provide pairs of children with connecting cubes. Have them snap two cubes together to make a box that is 1x2 cubes in dimension. Ask: How can you show this box in haves? How can you prove that each part is one half? Expand the concept by having children make the following boxes and break them apart to show halves: 1x4 cubes, 2x2 cubes, and 2x4 cubes.

Heads or Tails?

Give each child a penny and a piece of paper with two columns marked "heads" and "tails." Have the children flip their coin a total of ten times, marking a tally mark in the appropriate column each time the coin lands. After ten tosses, have the children count the tallies in both columns to obtain totals. Have the children tell which side had more tallies, heads or tails.

Heavier and Lighter

Have children find various objects around the classroom. Ask them to use a balance to compare two items at a time to determine which object is heavier and which object is lighter. Have them divide a sheet of paper in half and draw a picture of the lighter object on one side and the heavier object on the other side. Questions

for discussion include:

- Which objects did you compare?
- Which object is heavier?
- Which object is lighter?
- How do you know?
- Are the bigger objects always heavier? Why not?

What Time is It?

Provide children with clocks. Model 9:00. Have children do the same with their clocks. Discuss the difference between 9:00 in the morning and 9:00 at night. Ask the children:

- What do we do at 9:00 in the morning?
- What do we do at 9:00 at night?

Write different times (to the hour) on the board. In pairs, have children model these times on their clocks. Have the children tell each other what might happen at that time. Ask questions that build understanding:

- Where is the hour hand?
- Where is the minute hand?
- What kinds of things might you do at that time?

Encourage the children to share stories about time. Have them explain the difference between morning times and evening times.

Activities to Differentiate Instruction

General strategies for modification of this curriculum for students with special needs, ELL, and gifted learners:

- **General strategies:**
  - preferential seating
  - manipulatives
  - modified workbook pages
  - practice or enrich homework pages
- **Center activities** - There are leveled center activities for each section. There is a separate activity for "Intervention", and then "On-Level" and "Advanced" are in spiral book.
- **Leveled practice pages** - There are three leveled (Reteaching, Practice, and Enrichment) sheets that can be used for practice or homework.
- **Math Concept Readers:** These readers allow the student to read the story at different levels- above level, on level, and below level. (also available on line with audio) Complete the Think and Respond and Write Math questions at the conclusion of each book.
- **Assessment**- Using Quick Check Review can determine differentiated instruction levels using sample answers and using the rubric at the Close/ Assess and Differentiate section in the teacher edition.

Content specific modification for students with special needs, ELL, and gifted learners:

- **Topic 12**
  - **Below level students:**
    - 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 apiece 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 comparisons about their pieces of yarn using the words shorter than, longer than, and as long as.
  - **Students with special needs:**
    - Review with children the words longer and as long as.
    - Direct 8 children to form 2 equal lines as if they were lining up to leave the room. Create a space that can accommodate wheelchairs and students using other assistive devices.
    - Ask other children to describe the lies. Ask if one line is as long as the other.
    - Move 2 children from line1 to line 2 sot hat line 1 has 2 children and line 2 has 6 children.
    - Ask children which line is longer.
    - Point out longer/short/same length lines of children during everyday classroom activities to continue to reinforce the concept.
  - **ELL**
    - The practice of comparative words used in context of math will help English learners remember and understand their comparative meaning.
    - **Beginning:** Show the vocabulary cards for the words shorter and longer. Have children repeat the words with you. Display in size order 3 different-colored pieces of yarn. Hold up the card for shorter and have children repeat the word with you.
    - **Intermediate:** Draw a picture of a monkey on the board. Have children use the words longer, shorter, longest, shortest to describe the tails.
    - **Advanced:** Show children a 3-cube train. Have children make cube trains that are shorter than the 3-cube train. Have them say aloud the words shorter and longer.
  - **Advanced/Gifted:**
    - Children who seem confident ordering objects by length might be ready to notice the connection to ordering numbers. Ask children to order three cube trains by length. Then have them count the number of cubes in each train and order those numbers.
    - Gather a set of classroom objects that are clearly elongated such as rulers, pencils, and cube trains. Hold up one object and ask children to find the other objects that are longer than the one you held up. The have children find the other objects that are shorter. Discuss how the remaining objects compare in length to the one you held up.

- **Topic 13**
  - **Below level students:**
    - 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.

- **Students with special needs:**
  - Review with special needs children the words large and small.
  - Demonstrate examples of large and small objects whose other attributes are the same (for example, large and small paper clips tha tare all the same color).
  - Make sure the children understand that the word size means how big, and that large and small describe the paper clips.
  - Ask the children to find other examples of objects that re the same color but a different size. Make sure the children understand how same and different apply in each case. Discuss the examples they find and focus on the attribute size for sorting them.

- **ELL**
  - Repeat oral language practice of the attribute words commonly used for sorting: color, size, shape. Make sure that children understand that these words are categories and that they are used to describe how objects are alike and how they are different.
  - Show the vocabulary cards for the words same and different. Have children say the words with you. Show an example of 2 objects that are the same and 2 that are different. Place a card ear each set of objects. Then hold up 2 red cubes and ask if they are the same or different. Have children place the cues on the table with the same card while they say the word same. Repeat.

- **Advanced/Gifted:**
  - Children with a strong developing sense of how to classify objects will be able to extend what they learned about physical attributes.
  - Provide advanced children with additional opportunities to use broad attributes for classifying things such as wild animals, tools, or vehicles. Help children to articulate the commonalities of the items in these groups.
  - As the children work with shapes to sort them, have children describe the physical properties of the shapes; for example, the square has 4 sides that are the same.

Integrated/Cross-Disciplinary Instruction

Reading and Writing: The Worldscapes Readers present math problems to be solved within the context of nonfiction text. Think and Respond and Write Math questions can be found at the conclusion of the books.

Topic 12: A Pig is Big: Social Studies: Have students draw or cut out pictures of objects and determine if they can lift them. Sort into "light" or "heavy" objects.

Topic 13: The Button Box: Social Studies: Have students draw 2 flags from 2 states or countries. Then discuss and compare those flags with the American flag.

ART

Ribbon Pictures

Objective - order lengths of ribbons

Procedure - Invite children to cut pieces of ribbon into a variety of lengths. Have each child choose four different lengths of ribbon and glue them in order from shortest to longest or longest to shortest on paper.

BLOCKS

A Long Race

Objective - Use a nonstandard measure to compare length

Procedure - Construct a ramp out of stacked books and cardboard pieces. Two children each choose a car and place it at the top of the ramp. The children release their cars and mark where their cars stopped by placing a piece of masking tape on the floor. Students measure the length traveled by the cars with yarn and cut the yarn pieces accordingly. Children compare the yarn measurements to see which car went farther. The winner competes against a new challenger.

SOCIAL STUDIES

How Tall Am I?

Objective - Recognize differences in people by comparing heights.

Procedure - Have children pair up with a partner. Have one child in each pair lie on a carpeted area. The partner connects cubes to measure (match) the child's length. Partners compare the lengths of the cube to determine which "train" is longer and which is shorter. Challenge students to tell how many cubes taller one child is than the other.

SCIENCE

Water Play

Objective - Make observations about capacity

Procedure - Fill a large plastic tub half full of water. Discuss how much water students' cupped hands will hold. have children dip their cupped hands in the water to see how much they can hold. Invite partners to investigate which containers hold more than and less than their cupped hands.

MUSIC

Days of the Week

Objective - Identify the days of the week

Procedure - Write the days of the week on sentence strips and post them in order vertically. Teach children

how to sing the days of the week to the tune of "My Darling Clementine." Have children choose a percussion instrument to use. Sing the song again, using the sentence strips as a visual guide, having the children use their instruments to accompany the song.

Resources

Topics Categories in book form:

Topic 12: Measurement

Topic 13: Sorting,Classifying Counting and Categorizing Data

Master Enrichment pages

Master Reteaching pages

Master Practice pages

Student Edition workbook

On line Resources available at www.pearsonrealize.com

- Teacher Edition (TE) Textbook
- Student Edition (SE) Textbook
- Tests on line
- Concepts videos
- Math Tools

21st Century Skills

CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready

	individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.
CRP.K-12.CRP8.1	Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.