

Grade 2 Math Unit 3-Measurement and Data

UNIT OVERVIEW

Grade 2 Math instructions centers around 4 Critical Focus Areas. This unit addresses Focus Area #2, Building fluency with addition and subtraction, and beyond the critical area of focus in addressing, telling time, writing time, and using data representations.

This unit address 2 clusters:

- Represent and interpret data * (See Connections for explanation)
- Work with time and money **

STANDARDS

CC_Common Core State Standards - Mathematics (2010) - Grade 2

Domain 2.MD Measurement and Data

Cluster Statemen: Work with time and money.

Standard 2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Standard 2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.

Cluster Statement: Represent and interpret data.

Standard 2.MD.9 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

Standard 2.MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

CONTENT ELABORATIONS

2.MD.7

2.MD.7 calls for students to tell (orally and in writing) and write time after reading analog and digital clocks. Time should be to 5 min. intervals, and students should also use the terms a.m. and p.m. In Grade 1, students learned to tell time to the nearest hour and half-hour. Students build on this understanding in Grade 2 by skip-counting by 5 to recognize 5-minute intervals on the clock. They need exposure to both digital and analog clocks. It is important that they can recognize time in both formats and communicate their understanding of time using both numbers and language. Common time phrases include the following: quarter till, quarter after, ten till, ten after, and half past. Students should understand that there are 2 cycles of 12 hours in a day - a.m. and p.m. Recording their daily actions in a journal would be helpful for making real-world connections and understanding the difference between these two cycles. **MP.5, MP.6** should be emphasized.

2.MD.8

2.MD.8 calls for students to solve word problems involving either dollar or cents. Since students have not been introduced to decimals, problems should either have only dollars or only cents. Since money is not specifically addressed in kindergarten, first grade, or third grade, students should have multiple opportunities to identify, count, recognize, and use coins and bills in and out of context. They should also experience making equivalent amounts using both coins and bills. "Dollar bills" should include denominations up to one hundred. Students should solve word problems using dollar bills, quarters, dimes, nickels, and pennies using dollar sign and cent sign symbols. Compose and decompose amounts of money and equivalencies. Use place value in dealing with money. Add and subtract with regrouping. Students should solve story problems connecting different representations. These representations may include objects, pictures, charts, tales, words, and/or numbers. Students should communicate their mathematical thinking and justify their answers.

2.MD.9

2.MD.9 calls for students to represent the length of several objects by making a line plot. Students should round their lengths to the nearest whole unit. This standard emphasizes representing data using a line plot. Line plots are first introduced in this grade level. A line plot can be thought of as plotting data on a number line. This unit will introduce students to line plots and emphasize the creation of a line plot to represent data. Unit 6 will continue with this knowledge of line plots and connect it with measuring length.

MP.4, MP.5, MP.6, MP.8 should be emphasized.

2.MD.10

2.MD.10 calls for students to work with categorical data by organizing, representing and interpreting data. Students should experiences posing a question with 4 possible responses and then work with the data that they collect. Students display their data using a picture graph or bar graph using a single unit scale. Second graders should draw both horizontal and vertical bar graphs. Graphs include a title, scale, scale label, categories, category label, and data. Students answer simple problems related to addition and subtraction that ask them to put together, take apart, and compare numbers. See Table 1 in CCSS for examples of these.

MP.1, MP.2, MP.4, MP.5, MP.6, MP.8 should be emphasized.

UNIT VOCABULARY

penny
cent
nickel
dime
quarter
dollar
dollar sign (\$)
data

survey
tally marks
picture graph
symbol
bar graph
line plot
analog clock

hour hand
hour
digital clock
minute hand
minute
quarter hour
A.M., P.M.

BIG IDEAS

ENDURING UNDERSTANDINGS

ESSENTIALS QUESTIONS

Choose a few questions based on the needs of your students

- Counting dollars is just like counting by ones and tens in our place value system.
- Counting coins can be connected to how we count by ones, fives, and tens.
- An analog clock can be used to tell time to the nearest five minutes.
- *Money can be counted, added and subtracted.
- *Collections of information can be represented in visual displays called graphs.
- *Problems can be solved using information from graphs.
- How do I count and use money?
- How can I record and analyze data?
- How do I use and tell time?

CONNECTIONS

* This cluster connects to Measure length indirectly and by iterating length units and Represent and interpret data in Grade 1, and to Represent and interpret data in Grade 3.

** This cluster connects to Tell and write time in Grade 1, to Represent and solve problems involving addition and subtraction in Grade 2 and to Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects in Grade 3.

Standards for Mathematical Practice (SMP)

MP.1 Make sense of problems and persevere in solving them

MP.2 Reason abstractly and quantitatively

MP.3 Construct viable arguments and critique the reasoning of others

MP.4 Model with mathematics

MP.5 Use appropriate tools strategically

MP.6 Attend to precision

MP.7 Look for and make use of structure (Deductive reasoning)

MP.8 Look for and express regularity in repeated reasoning (Inductive Reasoning)

WORK WITH TIME AND MONEY

CONTENT		SKILLS
2.MD.7	Tell and write time to the nearest five minutes.	Tell and write time to the nearest five minutes. 1. Tell time using digital clocks to the nearest 5 minutes. 2. Identify the hour and minute hand on an analog clock. 3. Tell time using analog clocks to the nearest 5 minutes. 4. Write time using analog clocks and digital clocks. 5. Identify and label when a.m. and p.m. occur. 6. Communicate understanding of time using phrases such as quarter till, quarter after, ten till, ten after, and half past.
2.MD.8	Solve word problems involving money.	Solve word problems involving money. 1. Identify dollar bills, quarters, dimes, nickels, and pennies. 2. Recognize the value of dollar bills, quarters, dimes, nickels, and pennies. 3. Identify the \$ and ¢ symbol. 4. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies using \$ and ¢ symbols appropriately. 5. Make equivalent amounts of money using coins and bills.

REPRESENT AND INTERPRET DATA

CONTENT		SKILLS
2.MD.9	Represent measurement data.	Represent measurement data. 1. Represent measurement data on a line plot. 2. Create a line plot with a horizontal scale marked in whole numbers using measurements.

2.MD.10	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories.	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. 1. Recognize and identify picture graphs and bar graphs. 2. Identify and label the components of a picture graph and bar graph. 3. Draw a single-unit scale picture graph to represent a given set of data with up to four categories. 4. Draw a single-unit scale bar graph to represent a given set of data with up to four categories.
2.MD.10	Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.	Solve simple put-together, take-apart, and compare problems ⁴ using information presented in a bar graph. 1. Solve problems relating to data in graphs by using addition and subtraction. 2. Make comparisons between categories in the graph using more than, less than, etc.

UNIT RESOURCES

Math Common Core State Standards
 McGraw-Hill, **My Math** Chapters 8-10
 Georgia Math Frameworks, Units 2-4
 Debbie Diller Math Work Stations materials and process

Manipulatives - including, but not exclusively: pattern blocks, snap cubes, counting disks, counting bears, a variety of counters, buttons, base ten blocks, dot dice, numeral dice, spinners, number cards, five and ten frames, dominoes