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| **Prerequisite Skills**  **(Grade 1)** | **Unit Two Standards**  **Grade 2** | **Looking Ahead**  **(Grade 3)** |
| Measure lengths indirectly and by iterating length units. | Measurement and Data 1: Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.   * I can identify measuring tools. * I can select the appropriate tool to measure the length of an object. * I can measure the length of an object using a ruler, yardstick, meter stick and measuring tape. | Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. |
| Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it. | Measurement and Data 2: Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.   * I can measure one object using two different units of measurement. * I can compare two different units of measurement of one object. | Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch.  Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. |
| Measurement and Data 3: Estimate lengths using units of inches, feet, centimeters, and meters.   * I can estimate in inches, feet, centimeters and meters. * I can measure in inches, feet, centimeters and meters. |
| Measurement and Data 4: Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.   * I can compare the lengths of two objects. |
| Use place value understanding and properties of operations to add and subtract. | Measurement and Data 5: Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.   * I can solve measurement word problems using drawings. * I can solve measurement word problems using equations. | Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. |
| Measurement and Data 6: Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, …and represent whole number sums and differences within 100 on a number line diagram.   * I can use a number line to find the sums and differences of two lengths. * I can represent numbers as equally spaced points on a number line. |
| Tell and write time in hours and half-hours using analog and digital clocks. | Measurement and Data 7: Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.  Measurement and Data Iowa 1: Describe the relationship among standard units of time: minutes, hours, days, weeks, months and years.   * I can describe the relationship among standard units of time: minutes, hours, days, weeks, months and years. * I can tell and write time using a digital clock to the nearest 5 minutes. * I can determine the difference between a.m. and p.m. * I can tell and write time using an analog clock to the nearest 5 minutes. * I can write time using an analog clock to the nearest 5 minutes. | Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes. |

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| **Prerequisite Skills**  **(Grade 1)** | **Unit Two Standards (Continued)**  **Grade 2** | **Looking Ahead**  **(Grade 3)** |
| Unit One students had experiences identifying coins and their values. | Measurement and Data 8: Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*   * I can count money combinations including quarters, dimes, nickels, and pennies under a dollar. * I can write money amounts using the symbols $ and ¢. | I can count money combinations including quarters, dimes, nickels and pennies over a dollar (Unit 3). |
| Measure lengths indirectly and by iterating length units.  Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. | Measurement and Data 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.   * I can measure objects to the nearest unit and record my data. * I can record measurement data on a line plot. | Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.  Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. |
| Measurement and Data 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[[1]](#footnote-1) using information presented in a bar graph.  Measurement and Data Iowa 2: Use interviews, surveys, and observations to collect data that answer questions about students' interests and/or their environment.   * I can use interviews, surveys and observations to collect data that answer questions about students’ interests and/or environment. * I can solve word problems using the data from a bar graph. * I can draw a picture graph and a bar graph to represent data with up to four categories. |

\*In standards that are repeated in several units, the I Can Statements represent a progression of skills to scaffold learning.

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| |  |  | | --- | --- | | **Standard** | **Learner Objectives** | | Measurement and Data 1:  Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. | * I can identify measuring tools. * I can select the appropriate tool to measure the length of an object. * I can measure the length of an object using a ruler, yardstick, meter stick and measuring tape. |  |  | | --- | | **What does this standard mean the students will know and be able to do?** | | Second Graders build upon their non-standard measurement experiences in First Grade by measuring in standard units for the first time. Using both customary (inches and feet) and metric (centimeters and meters) units, Second Graders select an attribute to be measured (e.g., length of classroom), choose an appropriate unit of measurement (e.g., yardstick), and determine the number of units (e.g., yards).  Have students measure the same length with different-sized units then discuss what they noticed. Ask questions to guide the discussion so students will see the relationship between the size of the units and measurement, i.e. the measurement made with the smaller unit is more than the measurement made with the larger unit and vice versa.  Insist that students always estimate lengths before they measure. Estimation helps them focus on the attribute to be measured, the length units, and the process. After they find measurements, have students discuss the estimates, their procedures for finding the measurements and the differences between their estimates and the measurements.  By the end of Second Grade, students will have learned specific measurements as it relates to feet, yards and meters:   * There are 12 inches in a foot. * There are 3 feet in a yard. * There are 100 centimeters in a meter. |  |  |  |  | | --- | --- | --- | | **Lessons and Resources for Measurement and Data 1** | | | | Unit 9 Inv 1 (sessions 1-5)  Unit 9 Inv 2 (sessions 1-3)  Unit 9 Inv 3 (sessions 1-3) | [More Than One Way](https://sharepoint.dmps.k12.ia.us/sites/divisions/curr/Public%20Curriculum%20Documents/Mathematics/Elementary%20Math%202013%20-%202014/2nd%20Grade/More%20Than%20One%20Way.pdf) | Teacher Teams may need to find/create extra experiences with MD.1. |  |  |  |  | | --- | --- | --- | | **Emphasized Standards for Mathematical Practice** | | | | [5. Use appropriate tools strategically](http://elementarymath.dmschools.org/5-use-appropriate-tools-strategically2.html) | [6. Attend to Precision](http://elementarymath.dmschools.org/6-attend-to-precision2.html) | [7. Look for and make use of structure.](http://elementarymath.dmschools.org/7-look-for-and-make-use-of-structure2.html) | |

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| |  |  | | --- | --- | | **Standard** | **Learner Objectives** | | Measurement and Data 2:  Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. | * I can measure one object using two different units of measurement. * I can compare two different units of measurement of one object. |  |  | | --- | | **What does this standard mean the students will know and be able to do?** | | This standard calls for students to measure an object using two units of different lengths.  A student measures the length of their desk and finds that it is 3 feet and 36 inches. Students should explore the idea that the length of the desk is larger in inches than in feet, since inches are smaller units than feet.    Students need multiple opportunities to measure using different units of measure. They should not be limited to measuring within the same standard unit. Students should have access to tools, both U.S. Customary and metric. The more students work with a specific unit of measure, the better they become at choosing the appropriate tool when measuring.  The students should be able to describe the relationship between the size of the measurement unit and the number of units needed to measure something. For instance, a student might say, ―The longer the unit, the fewer I need.‖ |  |  |  | | --- | --- | | **Lessons and Resources for Measurement and Data 2** | | | Unit 9 Inv 1 (sessions 1-5)  Unit 9 Inv 2 (sessions 1-3)  Unit 9 Inv 3 (sessions 1-3) | [From Feet to Yards](http://qta.quantiles.com/m/resources/downloads/QuantileResource32473.pdf) |  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Emphasized Standards for Mathematical Practice** | | | | | | [2. Reason abstractly and quantitatively.](http://elementarymath.dmschools.org/2-reason-abstractly-and-quantitatively2.html) | [3. Construct viable arguments and critique the reasoning of others.](http://elementarymath.dmschools.org/3-construct-viable-arguments-and-critique-the-reasoning-of-others1.html) | [5. Use appropriate tools strategically](http://elementarymath.dmschools.org/5-use-appropriate-tools-strategically2.html) | [6. Attend to precision](http://elementarymath.dmschools.org/6-attend-to-precision2.html) | [7. Look for and make use of structure.](http://elementarymath.dmschools.org/7-look-for-and-make-use-of-structure2.html) | |

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| |  |  | | --- | --- | | **Standard** | **Learner Objectives** | | Measurement and Data 3:  Estimate lengths using units of inches, feet, centimeters, and meters. | * I can estimate in inches, feet, centimeters and meters. * I can measure in inches, feet, centimeters and meters. |  |  | | --- | | **What does this standard mean the students will know and be able to do?** | | This standard calls for students to estimate the lengths of objects using inches, feet, centimeters, and meters. Students should make estimates after seeing a benchmark unit, such as the length of one inch, before making their estimate.  Example: Look at your ruler to see how long one inch is. Now, estimate the length of this paper in inches.  Estimation helps develop familiarity with the specific unit of measure being used. To measure the length of a shoe, knowledge of an inch or a centimeter is important so that one can approximate the length in inches or centimeters. Students should begin practicing estimation with items which are familiar to them (length of desk, pencil, favorite book, etc.). | | **Example** | | **Teacher:** How many inches do you think this string is if you measured it with a ruler?  **Student:** An inch is pretty small. I’m thinking it will be somewhere between 8 and 9 inches.  **Teacher:** Measure it and see.  **Student:** It is 9 inches. I thought that it would be somewhere around there. |  |  |  |  |  | | --- | --- | --- | --- | | **Lessons and Resources for Measurement and Data 3** | | | | | Unit 9 Inv 3 (sessions 1-3) | [Estimate and Measure Inches](http://qta.quantiles.com/m/resources/downloads/QuantileResource32472.pdf) | [How long is an army ant (cm)?](http://qta.quantiles.com/m/resources/downloads/QuantileResource32476.pdf) | [Estimate with army ants (cm)?](http://qta.quantiles.com/m/resources/downloads/QuantileResource32477.pdf) | | [100 Army Ants and More (meters)](http://qta.quantiles.com/m/resources/downloads/QuantileResource32478.pdf) | Unit 9 Inv 2 (sessions 1-3) |  |  |  |  |  |  | | --- | --- | --- | | **Emphasized Standards for Mathematical Practice** | | | | [2. Reason abstractly and quantitatively.](http://elementarymath.dmschools.org/2-reason-abstractly-and-quantitatively2.html) | [5. Use appropriate tools strategically](http://elementarymath.dmschools.org/5-use-appropriate-tools-strategically2.html) | [6. Attend to precision.](http://elementarymath.dmschools.org/6-attend-to-precision2.html) | |

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| |  |  | | --- | --- | | **Standard** | **Learner Objectives** | | Measurement and Data 4:  Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. | * I can compare the lengths of two objects. |  |  | | --- | | **What does this standard mean the students will know and be able to do?** | | This standard calls for students to determine the difference in length between two objects. Students should choose objects, identify appropriate tools and units, measure both objects, and then determine the differences in lengths.  Second graders should be familiar enough with inches, feet, yards, centimeters, and meters to be able to compare the differences in lengths of two objects. They can make direct comparisons by measuring the difference in length between two objects by laying them side by side and selecting an appropriate standard length unit of measure.  Students should use comparative phrases such as ―It is longer by 2 inches‖ or ―It is shorter by 5 centimeters‖ to describe the difference between two objects. It is important that students have multiple opportunities to work with actual objects in the process of measuring. | | **Example** | | **Teacher:** Choose two pieces of string to measure. How many inches do you think each string is?  **Student:** I think String A is about 8 inches long. I think string B is only about 4 inches long. It’s really short.  **Teacher:** Measure to see how long each string is. Student measures. What did you notice?  **Student:** String A is definitely the longest one. It is 10 inches long. String B was only 5 inches long. I was close!  **Teacher:** How many more inches does your short string need to be so that it is the same length as your long string?  **Student:** Hmmm. String B is 5 inches. It would need 5 more inches to be 10 inches. 5 and 5 is 10. |  |  |  | | --- | --- | | **Lessons and Resources for Measurement and Data 4** | | | Unit 9 Inv 1 (sessions 1-5)  Unit 9 Inv 2 (sessions 1-3)  Unit 9 Inv 3 (sessions 1-3) | [How Long? How Tall?](http://qta.quantiles.com/m/resources/downloads/QuantileResource32475.pdf) |  |  |  |  | | --- | --- | --- | | **Emphasized Standards for Mathematical Practice** | | | | [2. Reason abstractly and quantitatively.](http://elementarymath.dmschools.org/2-reason-abstractly-and-quantitatively2.html) | [5. Use appropriate tools strategically](http://elementarymath.dmschools.org/5-use-appropriate-tools-strategically2.html) | [6. Attend to precision.](http://elementarymath.dmschools.org/6-attend-to-precision2.html) | |

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| |  |  | | --- | --- | | **Standard** | **Learner Objectives** | | Measurement and Data 5:  Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. | * I can solve measurement word problems using drawings. * I can solve measurement word problems using equations. |  |  |  | | --- | --- | | **What does this standard mean the students will know and be able to do?** | | | The students must apply the concept of length to solve addition and subtraction word problems with numbers within 100. Students must use the same unit in these problems.  Students need experience working with addition and subtraction to solve word problems which include measures of length. It is important that word problems stay within the same unit of measure. Counting on and/or counting back on a number line will help tie this concept to previous knowledge. Some representations students can use include drawings, number lines, rulers, pictures, and/or physical objects. | | | **Example:**  **In P.E. class Kate jumped 14 inches. Mary jumped 23 inches. How much farther did Mary jump than Kate? Write an equation and then solve the problem.** | | | **Student A**  My equation is 14 + \_\_\_ = 23 since I thought, “14 and what makes 23?”. I used Unifex cubes. I made a train of 14. Then I made a train of 23. When I put them side by side, I saw that Kate would need 9 more cubes to be the same as Mary. So, Mary jumped 9 more inches than Kate. 14 + 9 = 23   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | **Student B**  My equation is 23 – 14 = \_\_\_ since I thought about what the difference was between Kate and Mary. I broke up 14 into 10 and 4. I know that 23 minus 10 is 13. Then, I broke up the 4 into 3 and 1. 13 minus 3 is 10. Then, I took one more away. That left me with 9. So, Mary jumped 9 more inches than Kate. That seems to make sense since 23 is almost 10 more than 14. 23 – 14 = 9.  23 – 10 = 13  13 – 3 = 10  10 – 1 = 9 |  |  |  |  |  | | --- | --- | --- | --- | | **Lessons and Resources for Measurement and Data 5** | | | | | [Height and Length Problems](http://qta.quantiles.com/m/resources/downloads/QuantileResource32365.pdf) | Unit 9 Inv 1 (sessions 1-5) | Unit 9 Inv 2 (sessions 1-3) | Unit 9 Inv 3 (sessions 1-3) |  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Emphasized Standards for Mathematical Practice** | | | | | | [1. Make sense of problems and persevere.](http://elementarymath.dmschools.org/1-make-sense-of-problems-and-persevere-in-solving-them1.html) | [2. Reason abstractly and quantitatively.](http://elementarymath.dmschools.org/2-reason-abstractly-and-quantitatively2.html) | [4. Model with mathematics.](http://elementarymath.dmschools.org/4-model-with-mathematics1.html) | [5. Use appropriate tools strategically](http://elementarymath.dmschools.org/5-use-appropriate-tools-strategically2.html) | [8. Look for and express regularity in repeated reasoning.](http://elementarymath.dmschools.org/8-look-for-and-express-regularity-in-repeated-reasoning3.html) | |

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| |  |  | | --- | --- | | **Standard** | **Learner Objectives** | | Measurement and Data 6:  Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, …and represent whole number sums and differences within 100 on a number line diagram. | * I can use a number line to find the sums and differences of two lengths. * I can represent numbers as equally spaced points on a number line. |  |  |  | | --- | --- | | **What does this standard mean the students will know and be able to do?** | | | This standard calls for students to create number lines using numbers within 100 to solve addition and subtraction problems. Students should create the number line with evenly spaced points corresponding to the numbers.  Students represent their thinking when adding and subtracting within 100 by using a number line.  Possible equations for MD. 5 and MD. 6 include:   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 20 + 35 = c | c – 20 = 35 | c – 35 = 20 | 20 + b = 55 | 35 + a = 55 | 55 = a + 35 | 55 = 20 + b |   Example: A word problem for 5 – n = 2 could be: Mary is making a dress. She has 5 yards of fabric. She uses some of the fabric and has 2 yards left. How many yards did Mary use? | | | **Example:**  **There were 27 students on the bus. 19 got off the bus. How many students are on the bus?** | | | **Student A**  I used a number line. I started at 27. I broke up 19 into 10 and 9. That way, I could take a jump of 10. I landed on 17. Then I broke the 9 up into 7 and 2. I took a jump of 7. That got me to 10. Then I took a jump of 2. That’s 8. So, there are 8 students now on the bus. | **Student B**  I used a number line. I saw that 19 is really close to 20. Since 20 is a lot easier to work with, I took a jump of 20. But, that was one too many. So, I took a jump of 1 to make up for the extra. I landed on 8. So, there are 8 students on the bus. |  |  | | --- | | **Lessons and Resources for Measurement and Data 6** | | Number line strategy use embedded in multiple Investigations throughout the year |  |  |  |  | | --- | --- | --- | | **Emphasized Standards for Mathematical Practice** | | | | [2. Reason abstractly and quantitatively.](http://elementarymath.dmschools.org/2-reason-abstractly-and-quantitatively2.html) | [4. Model with mathematics.](http://elementarymath.dmschools.org/4-model-with-mathematics1.html) | [5. Use appropriate tools strategically](http://elementarymath.dmschools.org/5-use-appropriate-tools-strategically2.html) | |

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| |  |  | | --- | --- | | **Standard** | **Learner Objective** | | Measurement and Data 7:  Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. | * I can tell and write time using a digital clock to the nearest 5 minutes. * I can determine the difference between a.m. and p.m. * I can tell and write time using an analog clock to the nearest 5 minutes. * I can write time using an analog clock to the nearest 5 minutes. | | Measurement and Data Iowa 1: Describe the relationship among standard units of time: minutes, hours, days, weeks, months and years. | * I can describe the relationship among standard units of time: minutes, hours, days, weeks, months and years. |  |  | | --- | | **What does this standard mean the students will know and be able to do?** | | This standard calls for students to tell (orally and in writing) and write time after reading analog and digital clocks. Time should be to 5 minute intervals, and students should also use the terms a.m. and p.m. Teachers should help students make the connection between skip counting by 5s (2.NBT.2) and telling time on an analog clock.  In first grade, students learned to tell time to the nearest hour and half-hour. Students build on this understanding in second grade 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. |  |  |  |  | | --- | --- | --- | | **Lessons and Resources for Measurement and Data 7 + Iowa 1** | | | | 2nd grade Units 1-9: Classroom Routines on ‘What time is it?’ (hour to quarter hour) | Daily Calendar Math used to address 2.MD.Iowa1 (concepts of time) | [Telling Time](http://qta.quantiles.com/m/resources/downloads/QuantileResource33144.pdf) | | [Compare Second, Minute, Hour](http://qta.quantiles.com/m/resources/downloads/QuantileResource32379.pdf) | [How Long Does it Take?](http://qta.quantiles.com/m/resources/downloads/QuantileResource32381.pdf) | [How Many? Practice](http://qta.quantiles.com/m/resources/downloads/QuantileResource32485.pdf) |  |  |  | | --- | --- | | **Emphasized Standards for Mathematical Practice** | | | [5. Use appropriate tools strategically](http://elementarymath.dmschools.org/5-use-appropriate-tools-strategically2.html) | [6. Attend to precision.](http://elementarymath.dmschools.org/6-attend-to-precision2.html) | |

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| |  |  | | --- | --- | | **Standard** | **Learner Objective** | | Measurement and Data 8:  Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?* | * I can count money combinations including quarters, dimes, nickels, and pennies under a dollar. * I can write money amounts using the symbols $ and ¢. |  |  |  | | --- | --- | | **What does this standard mean the students will know and be able to do?** | | | In Second Grade, students have not been introduced to decimals, problems focus on whole dollar amounts or cents.  Students will need numerous experiences with coin recognition and values of coins (Unit One) before using coins to solve problems. Once students are solid with coin recognition and values, they can then begin using the values coins to count sets of coins, compare two sets of coins, make and recognize equivalent collections of coins (same amount but different arrangements), select coins for a given amount, and make change.  As teachers provide students with sufficient opportunities to explore coin values (25 cents) and actual coins (2 dimes, 1 nickel), teachers will help guide students over time to learn how to mentally give each coin in a set a value, place the random set of coins in order and use mental math, adding on to find differences, and skip counting to determine the final amount. | | | **Example A** | **Example B** | | 2 nickels + 1 dime = \_\_\_\_\_\_ cents | 2 quarters + 2 nickels + 3 pennies = \_\_\_\_\_ cents |  |  |  |  | | --- | --- | --- | | **Lessons and Resources for Measurement and Data 8** | | | | Unit 1 Inv 2.4 | Use coin manipulatives to routinely practice combining coins up to one dollar / record amounts using money symbols | [Counting Coins/Dollars](http://qta.quantiles.com/m/resources/downloads/QuantileResource32350.pdf) |  |  |  |  | | --- | --- | --- | | **Emphasized Standards for Mathematical Practice** | | | | [1. Make sense of problems and persevere.](http://elementarymath.dmschools.org/1-make-sense-of-problems-and-persevere-in-solving-them1.html) | [2. Reason abstractly and quantitatively.](http://elementarymath.dmschools.org/2-reason-abstractly-and-quantitatively2.html) | [4. Model with mathematics.](http://elementarymath.dmschools.org/4-model-with-mathematics1.html) | | [5. Use appropriate tools strategically](http://elementarymath.dmschools.org/5-use-appropriate-tools-strategically2.html) | [6. Attend to precision.](http://elementarymath.dmschools.org/6-attend-to-precision2.html) | [8. Look for and express regularity in repeated reasoning.](http://elementarymath.dmschools.org/8-look-for-and-express-regularity-in-repeated-reasoning3.html) | |

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| |  |  | | --- | --- | | **Standard** | **Learner Objectives** | | Measurement and Data 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. | * I can measure objects to the nearest unit and record my data. * I can record measurement data on a number line. |  |  | | --- | | **What does this standard mean the students will know and be able to do?** | | This standard 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.  At first students should create real object or picture graphs (where the object is drawn rather than a number). On picture graphs record the number of countable parts. These graphs show items in a category and do not have a numerical scale. For example, a real object graph could show the students’ shoes (one shoe per student) lined end to end in horizontal or vertical rows by their color. Students would simply count to find how many shoes are in each row or bar. The graphs should be limited to 2 to 4 rows or bars.  Students would then move to making horizontal or vertical bar graphs with two to four categories and a single-unit scale. Use the information in the graphs to pose and solve simple put together, take-apart, and compare problems. | | **Example:**  **Measure 8 objects in the basket to the nearest inch. Then, display your data on a line plot.** | | **Teacher:** What do you notice about your data?  **Student:** Most of the objects I measured were 9 inches. Only 2 objects were smaller than 4 inches. I was surprised that none of my objects measured more than 9 inches!  **Teacher:** Do you think that if you chose all new objects from the basket that your data would look the same? Different? Why do you think so? |  |  |  | | --- | --- | | **Lessons and Resources for Measurement and Data 9** | | | [Under the Same Roof](http://qta.quantiles.com/m/resources/downloads/QuantileResource33150.pdf) | Unit 4 Inv 2 (1-7) – provides experience with line plots (not specifically measurement data) |  |  |  |  |  | | --- | --- | --- | --- | | **Emphasized Standards for Mathematical Practice** | | | | | [4. Model with mathematics.](http://elementarymath.dmschools.org/4-model-with-mathematics1.html) | [5. Use appropriate tools strategically](http://elementarymath.dmschools.org/5-use-appropriate-tools-strategically2.html) | [6. Attend to precision.](http://elementarymath.dmschools.org/6-attend-to-precision2.html) | [8. Look for and express regularity in repeated reasoning.](http://elementarymath.dmschools.org/8-look-for-and-express-regularity-in-repeated-reasoning3.html) | |

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| |  |  | | --- | --- | | **Standard** | **Learner Objectives** | | Measurement and Data 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. | * I can solve word problems using the data from a bar graph. * I can draw a picture graph and a bar graph to represent data with up to four categories. | | Measurement and Data Iowa 2:  Use interviews, surveys, and observations to collect data that answer questions about students' interests and/or their environment. | * I can use interviews, surveys and observations to collect data that answer questions about students’ interests and/or environment. |  |  |  |  |  | | --- | --- | --- | --- | | **What does this standard mean the students will know and be able to do?** | | | | | This standard calls for students to work with categorical data by organizing, representing and interpreting data. Students should have 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. Students answer simple problems related to addition and subtraction that ask them to put together, take apart, and compare numbers.  In second grade, picture graphs (pictographs) include symbols that represent single units. Pictographs should include a title, categories, category label, key, and data.  Second graders should draw both horizontal and vertical bar graphs. Bar graphs include a title, scale, scale label, categories, category label, and data. | | | | | **Step One:**  Students pose a question and the 4 possible responses. | **Step Two:**  Students collect their data using tallies and then organize data in a chart/table. | **Step Three:**  Students draw picture or bar graph representing the data. | **Step 4:**  Students use data to solve put together, take apart and compare problems. |  |  |  |  | | --- | --- | --- | | **Lessons and Resources for Measurement and Data 10 + Iowa 2** | | | | Unit 4 Inv 1.1, 1.4A | [What’s Your Favorite Vegetable?](http://qta.quantiles.com/m/resources/downloads/QuantileResource32327.pdf) | [Interpreting Data Practice](http://qta.quantiles.com/m/resources/downloads/QuantileResource42195.pdf) | | [Grouping Coins](http://qta.quantiles.com/m/resources/downloads/QuantileResource42112.pdf) | [Ice Cream Survey](http://qta.quantiles.com/m/resources/downloads/QuantileResource33148.pdf) |  |  |  |  |  | | --- | --- | --- | | **Emphasized Standards for Mathematical Practice** | | | | [1. Make sense of problems and persevere.](http://elementarymath.dmschools.org/1-make-sense-of-problems-and-persevere-in-solving-them1.html) | [2. Reason abstractly and quantitatively.](http://elementarymath.dmschools.org/2-reason-abstractly-and-quantitatively2.html) | [4. Model with mathematics.](http://elementarymath.dmschools.org/4-model-with-mathematics1.html) | | [5. Use appropriate tools strategically](http://elementarymath.dmschools.org/5-use-appropriate-tools-strategically2.html). | [6. Attend to precision.](http://elementarymath.dmschools.org/6-attend-to-precision2.html) | [8. Look for and express regularity in repeated reasoning.](http://elementarymath.dmschools.org/8-look-for-and-express-regularity-in-repeated-reasoning3.html) | |

**Optional Whole Group Lesson Progression**

Unit Pacing: 7 weeks

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| **Resource** | **Location** | **Primary Focus** | **Standard** |
| Investigations | Units 1-9: Classroom Routines on ‘What time is it?’ (hour to quarter hour)  \*Build concept throughout year | * I can tell and write time using a digital clock to the nearest 5 minutes. * I can determine the difference between a.m. and p.m. * I can tell and write time using an analog clock to the nearest 5 minutes. * I can write time using an analog clock to the nearest 5 minutes. | 2.MD.7 |
| Investigations | Unit 1   * Inv 2.4 (combining coins) – provide ongoing experiences with coins routinely throughout the year | * I can count money combinations including quarters, dimes, nickels, and pennies under a dollar. * I can write money amounts using the symbols $ and ¢. | 2.MD.8 |
| Investigations | Unit 9   * Inv 1 (sessions 1-5) * Inv 2 (sessions 1-3) * Inv 3 (sessions 1-3) | * I can identify measuring tools. * I can select the appropriate tool to measure the length of an object. * I can measure the length of an object using a ruler, yardstick, meter stick and measuring tape. * I can measure one object using two different units of measurement. * I can compare two different units of measurement of one object. * I can estimate in inches, feet, centimeters and meters. * I can measure in inches, feet, centimeters and meters. * I can compare the lengths of two objects. * I can solve measurement word problems using drawings. * I can solve measurement word problems using equations. | 2.MD.1  2.MD.2  2.MD.3  2.MD.4  2.MD.5 |
| Investigations | Unit 4   * Inv 1.1, 1.4A | * I can solve word problems using the data from a bar graph. * I can draw a picture graph and a bar graph to represent data with up to four categories. * I can use interviews, surveys and observations to collect data that answer questions about students’ interests and/or environment. | 2.MD.10  2.MD.Iowa 2 |
| [Grouping Coins](http://qta.quantiles.com/m/resources/downloads/QuantileResource42112.pdf) | Quantiles.com | 2.MD.10  2.MD.Iowa 2 |
| [What’s Your Favorite Vegetable?](http://qta.quantiles.com/m/resources/downloads/QuantileResource32327.pdf) | Quantiles.com |
| [Ice Cream Survey](http://qta.quantiles.com/m/resources/downloads/QuantileResource33148.pdf) | Quantiles.com |
| [Interpreting Data Practice](http://qta.quantiles.com/m/resources/downloads/QuantileResource42195.pdf) | Quantiles.com |
| Investigations | Unit 4   * Inv 2 (1-7) – provides experience with line plots (not specifically measurement data) | * I can measure objects to the nearest unit and record my data. * I can record measurement data on a number line. | 2.MD.9 |

**\*Unit pacing is approximate. Some lessons may take more than one day. Use teacher discretion based on student need when planning unit length.**

1. [↑](#footnote-ref-1)