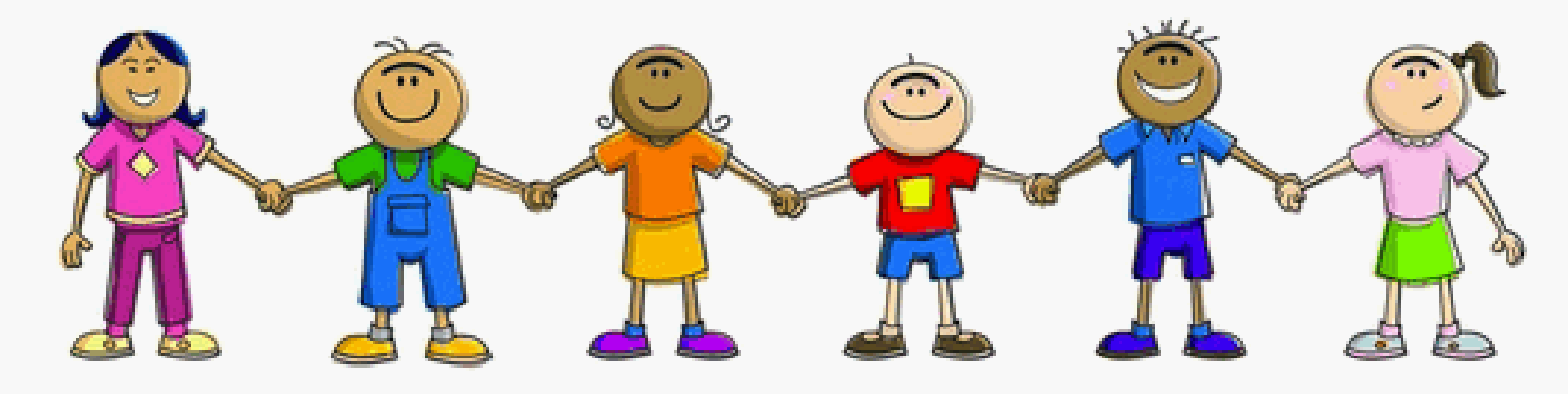
Second Grade Unit 5 Math Curriculum



Overview

As students work with measurement data in grades k-5, they build foundations for their study of statistics and probability in grades 6 and beyond and they strengthen and apply what they are learning in arithmetic. First and second graders solve addition and subtraction problems in a data context. This work will lead to work in fraction concepts, fraction arithmetic and solving problems that involve the four operations in grades 3-5.

Geometric measurement connects the two most critical domains of early mathematics, geometry and number, with each providing conceptual support to the other. Measurement is central to mathematics. Measurement also relates to other subject matter domains, especially science, and to activities in everyday life. For these reasons, measurement is a core component of the mathematics curriculum.

Unit 5:	CCSS Standards	Description

Measurement and Data	2.MD.1	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
	2.MD.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.
	2.MD.3	Estimate lengths using units of inches, feet, centimeters, and meters.
	2.MD.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
	2.MD.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.
	2.MD.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.
	2.MD.7	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
	2.MD.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?
	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.
	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 problems1 using information presented in a bar graph.

Student Learning Objectives (What Students Need To Be Able To Do)	**What Students Need to Understand**

☐ Estimate or measure lengths of objects using appropriate tools (inches, centimeters, feet, and meters). (2.MD.1, 2.MD.3) ☐ Compare measurements of an object taken with two different units of measure and explain that the difference is related to the size of unit chosen. (2.MD.2) ☐ Compare lengths of two objects and determine how much longer one object is than another using the same standard of measure. (2.MD.4) ☐ Add and subtract within 100 in word problems involving lengths using a symbol to represent the unknown number. For example, if Angela needs 30 feet of ribbon for gifts, but she only has 17 feet, equations 17 + x = 30 and 30 – x = 17 both represent the x feet she still needs. (2.MD.5) ☐ Use a number line to represent the solution of whole number sums and differences related to length within 100 by using equally spaced points. (2.MD.6) ☐ Tell and write time using analog and digital clocks to the nearest five minutes using AM and PM. (2.MD.7) Identify, recognize, and solve word problems with dollar bills, quarters, dimes, nickels, and pennies using the $ and ¢ symbol appropriately. (2.MD.8) ☐ Use tools of measurement to measure lengths of several objects to the nearest whole unit and represent the data on a line plot with appropriate whole number units on the horizontal scale. (2.MD.9) ☐ 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 the graph. (2.MD.10)	☐ Measurement processes are used in everyday life to describe and quantify. (2.MD.1) ☐ Data displays, describe and represent data in alternative ways. 2.MD.1) ☐ Select several appropriate units of length (e.g., inches, feet, centimeter, meter) to measure an object. (2.MD.2) ☐ Accurately measure an object with two different unit lengths. ☐ Compare the measurement using the shorter unit length to the measurement using the longest unit length, and explain how the size of the unit length affects the measurement. (2.MD.2) ☐ Estimate the length of a given object in inches and feet. (2.MD.3) ☐ Estimate the length of a given object in centimeters and meters. (2.MD.3) ☐ Measure the length of any object in a given unit. (2.MD.4) ☐ Find the difference in length between two objects using standard units. (2.MD.4) ☐ I can solve problems about measurement. (2.MD.5) ☐ Create a number line with whole number intervals (equal spacing). (2.MD.6) ☐ Represent whole numbers on a number line. (2.MD.6) ☐ Find sums and differences within 100 using a number line. (2.MD.6) ☐ Explain the difference between a.m. and p.m. (2.MD.7) ☐ Look at the time on an analog clock (when the hour hand is pointing to any of the numbers), say what time it is, and write the time as it would appear on a digital clock. (2.MD.7) ☐ Look at the time on a digital clock (when the minutes are displayed as a multiple of 5), say what time it is, and draw in the hands on an analog clock. (2.MD.7) ☐ Write the time and draw in the hands on an analog clock when someone tells me what time it is to the nearest 5 minutes. (2.MD.7) ☐ Understand and use special terms such as: half past, quarter after/past, quarter to, minutes after/past, minutes to (2.MD.7) ☐ Identify and give the value of dollar bills, quarters, dimes, nickels,

	and pennies. (2.MD.8) ☐ Use $ (dollar) and ¢ (cents) symbol appropriately. (2.MD.8) ☐ Solve a word problem with dollar bills, quarters, dimes, nickels, and pennies. (2.MD.8) ☐ Measure and record the lengths of several objects to the nearest whole-number. (2.MD.9) ☐ Create a line plot with a horizontal scale marked off in whole-number units. . (2.MD.9) ☐ Record length measurements on a line plot. (2.MD.9) ☐ Make a picture or bar graph with up to four categories to represent data. (2.MD.10) ☐ Compare data on a bar graph. (2.MD.10) ☐ Solve addition and subtraction problems using data from a picture or gar graph. (2.MD.10)

Vocabulary Words			
Length	nonstandard measurement	half	picture graph
Tool	centimeter	quarter	bar graph
Unit of measure	estimate	second	line plot
Ruler	actual	minute	value
Inch	difference	hour	
Foot	number line	dollars	
Yard	sum	cents	
Yardstick	distance	quarters	
Meter	analog clock	dimes	
Meter sick	digital clock	nickels	
Measuring tape	a.m. p.m.	pennies	

Lesson Planning

Unit 5: Measurement and Data	**EDM Textbook Alignment**		**Common Misconceptions**
	<u>Estimate Lengths in Standard Unit</u> 7.6 (2.MD.1, 2, 4, 9) 7.7 (2.MD.4) 7.8 (2.MD.4, 8, 9) 9.1 (2.MD.1, 3, 4) 9.2 (2.MD.1, 2, 3) 9.3 (2.MD.1, 2, 3, 4) 9.4 (2.MD.1) <u>Relate Addition and Subtraction to Length</u> 6.2 (2.MD.5) 6.3 (2.MD.5) 6.5 (2.MD.6) 6.7 (2.MD.5) 7.3 (2.MD.6) 12.3 (2.MD.6)	<u>Work with Time and Money</u> 3.3 (2.MD.7) 5.1 (2.MD.7) pg. 319 10.1 (2.MD.8) 10.3 (2.MD.8) 10.4 (2.MD.8) 10.5 (2.MD.8, 9) 10.6 (2.MD.8) 11.1 (2.MD.8) 11.2 (2.MD.8) 12.2 (2.MD.7) <u>Represent and Interpret Data</u> 11.3 (2.MD.9) 12.6 (2.MD.10) 12.7 (2.MD.9, 10) Project 4 Project 8	Students may encounter difficulty lining up the object and the ruler because they are lining up the ruler next to the object or picture and paying little attention to markings on the ruler. Students need to understand that when measuring, the length of an object is the number of units (spaces not marks on the ruler) between the beginning point and endpoint. Some students begin counting at one instead of seeing the first inch as the space between 0 and 1. Students focus on the numbers not the spaces. Students may have difficulty in seeing the difference between the hour hand and minute hand. They may read 3:00 PM as 12:15. They may not see the relationship that there are five minutes between the 1 and 2 and 2 and 3, etc. Counting by fives sometimes helps them make those connections. Students may have difficulty reading a graph. They are used to reading from left to right. Reading a graph requires students to interpret the information both horizontally and vertically. Students may need to put a finger on the horizontal axis and another finger on the vertical axis and then move the fingers until they intersect. When reading a picture graph, students need to make sure they interpret the key which tells them what the symbols represent as far as quantity.

Technology Integration:

Games:

http://www.funbrain.com/measure/

http://www.ixl.com/math/grade-2/which-metric-unit-of-length-is-appropriate

http://www.ixl.com/math/grade-2/metric-units-of-length-word-problems

http://www.ixl.com/math/grade-2/customary-units-of-length-word-problems

Videos:

http://www.neok12.com/php/watch.php?v=zX01505a5e65516c5b734f6b&t=Measurements (Exploring Measurement Video)

http://learnzillion.com/lessons/2536-use-everyday-objects-to-determine-the-difference-in-the-length-of-two-objects

Printable Centers:

http://www.k-5mathteachingresources.com/support-files/estimatinglength.pdf

http://www.k-5mathteachingresources.com/support-files/gummywormstretch.pdf

Additional Lessons:

http://www.mathsolutions.com/documents/LongandShort.pdf (Measuring Lesson)

https://grade2commoncoremath.wikispaces.hcpss.org/file/view/Body%20Measurement%20Lesson.pdf/350732178/Body%20Measurement%20Lesson.pdf (Measuring your Body)