

measuring wheel
System

Measuring Length

one point to another

CLASS MID 8



Customary Tool



Unit

abbreviation

Yard stick

inch

yard

yd



rule

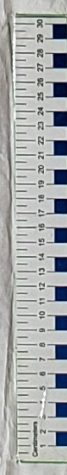
inch

in



foot

ft



rule

centimeter

cm

(original had real yard stick)

meter stick

centimeters

cm

meter

m

Metric system

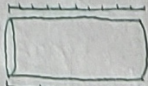
Standards

- 1) We will know which tool to use to measure an object or a distance.
- 2) We will estimate and measure using inches, feet, centimeters, and meters attending to precision.
- 3) We will make a line plot.

How long?
6 inches
15 centimeters



How tall?



4 in.
10 cm

Estimate



educated guess

Measure

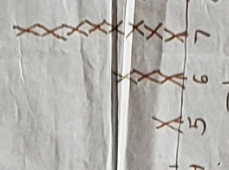
use your tools
accurate answer

longer

shorter

the same

Length of our feet



Inquiry Chart

What we know about measuring length

A ruler measures different objects. It can have centimeters, inches or both (experience). Rulers are long.

A measuring tape and a yardstick are tools for measuring length. (book)

We can measure with a pencil, a crayon and a marker.

What we want to know about measuring length

How do I use a ruler?

Line the starting point up at the zero. Measure a straight line (experience)

How do I use a measuring tape?

You decide whether to use centimeters or inches. Run line it up at zero and measure.

What could we measure with a measuring wheel?

We could measure around the soccer field or from here to the bus drop-off with a measuring wheel. (video)



Measurement and data

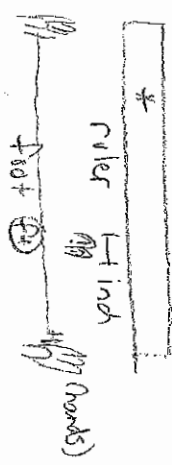
Measuring Length

one point to another

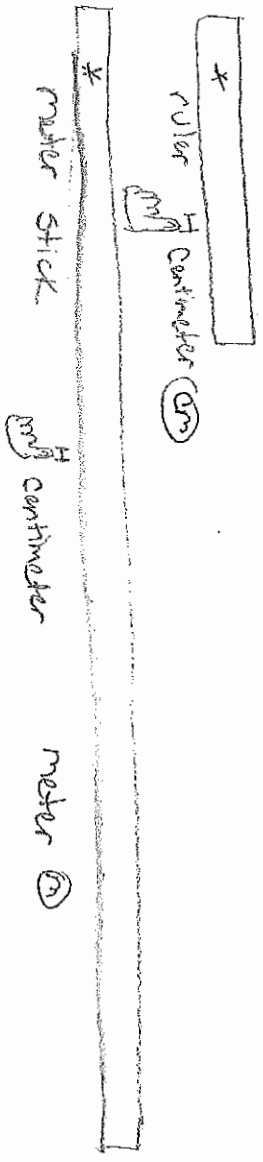
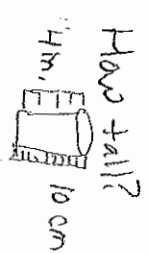
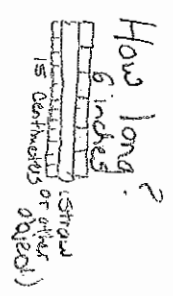
US Customary Tool

Unit (Abbreviation)

Yard stick 1/3 inch 1/2 Yard 1/4



longer
shorter
the same

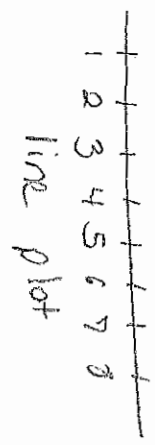


Metric System



Always line up with 0.

Length of our shoes



What we know about measuring length

Inquiry What we want to know about measuring length

Standards

1) We will know which tool to use to measure on object.

2) We will estimate and measure using inches, feet, centimeters, and meters.

3) We will make a line plot.

UNIT PLANNING TOOL

Unit _____:

CCSSM: Mathematical Practices:

- 3- Construct viable arguments and critique the reasoning of others.
- 5- Use appropriate tools strategically.
- 6- Attend to precision.

Essential Question(s):

- ① Which measurement tool is the best to use? Why?
- ② How do you make a realistic estimate?
- ③ How do you accurately use a ruler?

Pre and Post Assessments

Simple paper and pencil test
+ teacher observation

Pre → see attached.

Key Concepts

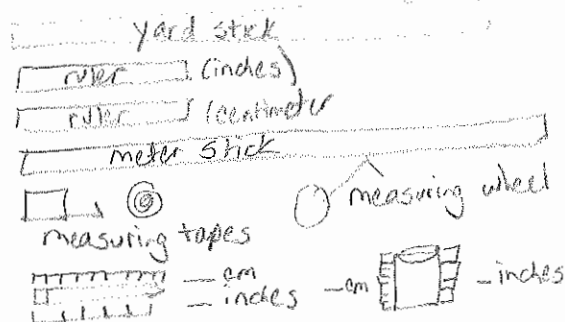
- * Select ^{best} measurement tool
- * Estimate inches, feet, centimeters and meters
- * Accurately measure to whole unit

Students need to understand:

- iteration (repeating) of units
- larger units can be subdivided (partition)
- the smaller the unit, the more units needed

(Compensatory principle)

Visual Models of Concepts



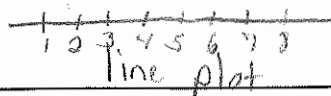
Algorithms/Diagrams/Models

longer
shorter
the same



A is 2 inches
longer than B.

Length of shoe



Connections (Real World Applications)

- distance from one point to another (school to your house)
- how tall you are or how far you jumped, length of your foot
- to tell if someone/something is taller/shorter, longer/shorter

<p>explain describe</p> <p>The length is _____.</p> <p>I used a _____ to measure _____ because _____.</p> <p>I would use a _____ because _____.</p>	<p>Language Functions/Structures</p> <p>The _____ is about _____.</p> <p>How much longer is _____ than _____? The _____ is longer/shorter.</p> <p>The _____ is _____ longer/shorter.</p>
---	---

<p>inch foot yard</p> <p>about almost round</p>	<p>Centimeter meter unit</p>	<p>Vocabulary</p> <p>ruler yardstick meter stick measuring tape measuring wheel</p>	<p>estimate measure line plot</p>
---	--------------------------------------	--	---

<p><u>Chants</u></p> <p>Units Tools Because of Measurement (note: link to SC standards)</p> <p><u>Books</u></p> <p>How Big is a Foot? by Rolf Myller Length in Math Counts series Twelve Snails to One Lizard by Susan Hightower</p> <p><u>Technology</u></p> <p>www.studyjams.scholastic.com → measurement → tools www.bridgeworks.com → measurement → measure length* → inches and feet → centimeters, meters, kilometers.</p>	<p>Focus and Motivation</p>
--	------------------------------------

Mathematics | Grade 2

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

(1) Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

(2) Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

(3) Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.
(Compensatory principle)

(4) Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Measurement and Data**2.MD****Measure and estimate lengths in standard units.**

- 1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
- 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.
- 3. Estimate lengths using units of inches, feet, centimeters, and meters.
- 4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate addition and subtraction to length.

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.
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.

Work with time and money.

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

Represent and interpret 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.
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 problems⁴ using information presented in a bar graph.

Geometry**2.G****Reason with shapes and their attributes.**

- 1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.⁵ Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

⁴See Glossary, Table 1.⁵Sizes are compared directly or visually, not compared by measuring.