
Contents

Introduction	5
Time Units	7
The 24-Hour Clock	10
Elapsed Time or How Much Time Passes	12
Measuring Temperature: Celsius	17
Measuring Temperature: Fahrenheit	21
Temperature Line Graphs	23
Measuring Length	25
Measuring in Inches	28
More Measuring in Inches and Centimeters	33
Feet, Yards, and Miles	35
Metric Units for Measuring Length	40
Customary Units of Weight	43
Metric Units of Weight	47
Customary Units of Volume	50
Metric Units of Volume	53
Review 1	56
Decimals in Measuring Units and More	58
Rounding and Estimating	62
The Metric System	64
Converting Between Customary Units of Measurement	67
Fractions and Decimals in Measuring Units	71
Review 2	73

Convert Customary Measuring Units	75
Convert Metric Measuring Units	79
Convert Between Customary and Metric	82
Review 3	84
 Using Rates to Convert Measuring Units	 86
Review 4	90
 Answers	 92
 More from Math Mammoth	 115

Introduction

Math Mammoth Measuring 2 is a worktext that covers time, temperature, length, weight, and volume related lessons, aimed for 4th-5th grade. The focus in these lessons is no longer on the actual act of measuring (as was the case in earlier grades), but on calculations that involve conversions between different measuring units.


In the lessons about time, the students get to do fairly complex calculations concerning hours and minutes. In lessons about temperature, the students are introduced to negative numbers and even get to do a few simple calculations with them.

Each lesson about measuring units, whether it is for length, volume, or weight, includes a table or a chart that lists the units and the conversion factors. For metric units, those tables always include all of the units, even when they are not in common usage. For example, when studying metric units of volume, the chart looks like this:

10	↩	liter	L	for larger amounts of volume
10	↩	deciliter	dl	(not used much)
10	↩	centiliter	cl	(not used much)
10	↩	milliliter	ml	for small amounts of volume

Only milliliters and liters are dealt with in the lesson, but the chart shows the two other units (deciliters and centiliters) as well, in order to familiarize students with the two basic ideas of metric measuring units:

1. The units always differ by a factor of ten;
2. The units are *named* consistently, with always the same prefixes (milli-, centi-, deci-, deca-, hecto-, and kilo-). These prefixes and their meanings are *not* commonly studied in detail in fourth or fifth grade; instead they are typically studied in 6th grade or later in conjunction with scientific notation. You may, of course, at your discretion, explain them to the student even at an earlier time.

The last three lessons deal with using decimal numbers with measuring units, such as expressing 0.7 liters in milliliters, or converting 3.4 miles to miles and feet. These lessons are better left for 5th grade. In these lessons, the symbol of a calculator next to a problem () means that students are allowed to use a basic calculator to solve the problem.

I wish you success in math teaching!

Maria Miller, the author

Helpful Resources on the Internet

Use these free online resources to supplement the “bookwork” as you see fit.

Calculating Time from BBC SkillsWise

Factsheets, worksheets, and an online game to practice time calculations.

<http://www.bbc.co.uk/skillswise/numbers/measuring/time/calculatingtime/>

A Dictionary of Units of Measurement

Explains the common measuring systems and has lots of background info of their history.

<http://www.unc.edu/~rowlett/units/>

Measuring Units Worksheets

Generate worksheets for conversions between various measuring units. Includes both customary and metric system units.

<http://www.homeschoolmath.net/worksheets/measuring.php>

Measure It!

Practice measuring lines with either centimeters or inches. Multiple choice questions.

<http://onlineintervention.funbrain.com/measure/index.html>

Measures

Activities, revision bites, and quizzes about measuring time, weight, and capacity (in metric units).

http://www.bbc.co.uk/schools/ks2bitesize/maths/shape_space_measures.shtml

Measurements

Online lessons with interactive exercises on metric prefixes, symbols, number values, metric mass, length, volume, US length and volume, and temperature conversions.

<http://www.aaamath.com/B/mea.htm>

Units of Measurement Quizzes

Quizzes for area, distance, volume, and mass - both metric and English systems.

http://www.quiz-tree.com/Units_of_Measurement_main.html

Metric Measurement Matching Game

Match metric terms and prefixes with the correct match

<http://www.quia.com/mc/4177.html>

Reading a tape measure worksheets

Worksheet generator - you can choose to which accuracy to measure, inches, or inches & feet.

http://themathworksheetsite.com/read_tape.html

The Metric Units Tutorial—Metric Number line

A tutorial of the common metric unit prefixes, and a way to convert between metric units using a “metric unit number line,” which visually shows you how many steps you need to move the decimal point.

[http://www.dmacc.edu/medmath1/METRIC/Metric Number Line HTML/sld001.htm](http://www.dmacc.edu/medmath1/METRIC/Metric%20Number%20Line%20HTML/sld001.htm)