

Grade Six Chapter 6 - Units of Measure

Overview & Support

Standards:

Understand ratio concepts and use ratio reasoning to solve problems.

- 6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
- d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Suggested Routines:

- division using proportional reasoning, multiplying or dividing by decimal and by powers of ten
- Continue with ratio word problems using bar model/tape diagram and double number line.

Manipulatives/tools:

conversion charts

table of equivalent ratios

double number lines

Vocabulary:

convert

convert units

conversions

conversion factor

length

meter

capacity

gallon

liter

pint

quart

gram

mass

ounce

pound

ton

weight

Strategies for Chapter:

- convert units of length, capacity, and mass using conversion charts
- equivalent ratios
- powers of 10 (metric system)

Color Coding:

Green (G) - The lesson accurately reflects the Framework standard(s).

Yellow (Y) - This lesson includes notes to refer to while planning the lesson.

Red (R) - This lesson does not accurately reflect the Framework standard(s). Skip the lesson.

Essential Question:

How can you use measurements to help you describe and compare objects?

Lesson-by-Lesson Overview:

Lesson #, Standard	Title	Materials	Vocab	Notes
Show What You Know	Show What You Know			Pre Teach vocabulary before beginning lesson 6.1
6.1 G 6.RP.3d	Convert Units of Length	Conversion Chart	conversion factor, length, meter	It may be helpful to use a Metric Conversion chart, see TE p. 229A or create a table of equivalent ratios to help students understand unit conversions.
6.2 Y 6.RP.3d	Convert Units of Capacity	Conversion chart	capacity, gallon, liter, pint, quart	<p>Use the <i>Developing Math Language</i> on TE p.227F with students to help them understand and see connections between the different sizes of the capacity units.</p> <p>The Vocabulary Builder on TE p. 233B may be a nice launch for the lesson. This will be particularly helpful to students if you have items of the different sized units so they can visually/physically compare.</p>
6.3 Y 6.RP.3d	Convert Units of Weight and Mass	Conversion chart	gram, mass, ounce, pound, ton, weight	<p>The standard calls for students to use ratio reasoning to convert units.</p> <p>Explain the difference between weight and mass, TE p. 237A.</p> <p>Enrich 6.3 could be used as a sorting activity if printed and cut out. Each group would need one envelope of the activity cut out. They would find the correctly converted units.</p>
Mid-Chapter Checkpoint				
6.4 G 6.RP.3d	Transform Units	Conversion chart	Convert, convert units, conversions	
6.5 R 6.RP.3d	Distance, Rate, and Time Formulas	N/A	N/A	<p>The distance-time equation is not a 6th grade standard. The equation will be addressed in 8th grade. For this lesson, instead focus on the ratio relationship.</p> <p>6.RP.3d See Framework p. 8 and Example #3 p. 12</p>

3. Use the information in the following table to find the number of yards that equals 24 feet (6.RP.3d▲).

Feet	3	6	9	15	24
Yards	1	2	3	5	?

Solution: Students can solve this in several ways.

1. They can observe the associated rate from the table, 3 feet per yard, and they can use multiplication to see that 24 feet = 8×3 feet, so the answer is 8×1 yard, or 8 yards.
2. They can notice that 24 feet = $4 \times (6 \text{ feet})$, so the answer is $4 \times (2 \text{ yards}) = 8$ yards.
3. They can see that with ratios, you can add entries in a table because of the distributive property:

$$9 \text{ feet} + 15 \text{ feet} = 24 \text{ feet}$$

$$3(3 \text{ feet}) + 5(3 \text{ feet}) = 8(3 \text{ feet})$$

And since 3 feet = 1 yard, the correct answer is 8 yards.

This standard is also partially embedded in 9.3

Ch. 6 Test

- Amend directions on items #3 and #4 – to “Use ratio reasoning to solve”
- Consider omitting #13 from test as it asks students to analyze the distance –time equation.

Reteach Options

Reteach standards from this unit to help meet students’ need. Some ideas for reteach activities are listed below:

- Math centers or math games focused on unit standards
- Small group instruction focused on a single standard
- Whole group instruction focused on a single standard
- My Favorite No – Rewrite student work with an error and work as a class to identify positives in the work and areas that need to be revised
- Select 1 – 3 problems to resolve in their groups and discuss whole class. We want new learning to occur on this day that helps students over misconceptions.
- Complete the “Performance Task” from Go Math! In the Assessment Book in small groups. Share strategies and discuss whole class.
- Use the Reteach activities based on standards that need intervention.