

# Math Connections for Parents

Grade 4 Module 7

Exploring Measurement with Multiplication

Welcome to Module 7 of the EngageNY curriculum. In this final module, students will work with measurement and relate multiplication to the conversion of measurement units. Students will look at different ways to solve the same kinds of problems. At the end of the module, students will review skills learned in fourth grade math, such as measuring angles, drawing lines, multiplication and division and vocabulary.

## Important Words and Concepts

- Customary system of measurement: U.S. system using measurements including yards, pounds and gallons.
- Liquid Volume measurements: cup, pint, quart, gallon
- Weight measurements: ounce, pound
- Metric system of measurement: system of measurement used internationally including meters, kilograms, and liters
- Capacity: the maximum amount that a container can hold
- Convert: to express a measurement in a different unit
- Equivalent: the same

## **Multiplication and Division within 100**

By the end of fourth grade, students should have mastered all products of two one-digit numbers. Knowing the multiplication and division facts up to 100 will be key in moving forward next year in fifth grade math.

## KEY STANDARDS

- Know that a multiplication expression is also a comparison (e.g.  $35 = 5 \times 7$  is also *5 times as many as 7* and *7 times as many as 5*)
- Multiply or divide to solve word problems involving comparison
- Solve multi-step word problems with whole numbers, using the four operations (+, -, x, ÷). Represent these problems with equations and a variable standing for the unknown (e.g.  $32 = h \times 8$ )
- Tell if an answer is reasonable by mental computation and rounding

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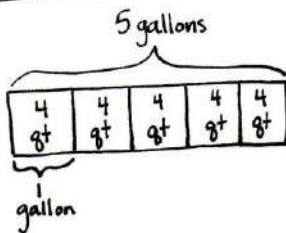
Exploring Measurement with Multiplication

## Graphics and Strategies you may see...

Students will be asked to solve word problems involving conversion of units. For example:

*Brendan made 5 gallons of iced tea for his party. How many cups of iced tea can he serve?*

Solution A

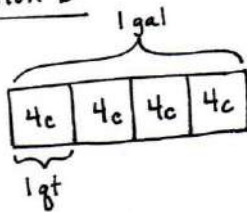


$$5 \times 4 \text{ qt} = 20 \text{ quarts}$$

$$20 \times 4 \text{ c} = 80 \text{ cups}$$

Brandon can serve  
80 cups.

Solution B



$$4 \times 4 \text{ c} = 16 \text{ c}$$

$$5 \times 16 \text{ c} = 80 \text{ c}$$

He can serve  
80 cups.

- Know the relative sizes of measurement (for example, know that 1 ft is 12 times as long as 1 in. or that a 4ft snake is also 48 in.)
- Use the four operations (+, -,  $\times$ ,  $\div$ ) to solve word problems involving distances, time, liquid volumes, masses, and money. Some may have simple fractions or decimals.

Some problems will involve adding and subtracting mixed units of length.

*2 years – 9 months is how many months?*

$$2 \text{ years} = 24 \text{ months}$$

$$24 - 9 = 15 \text{ months}$$

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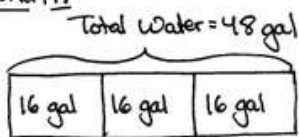
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Exploring Measurement with Multiplication

Students will be asked to solve problems that are multi-step and require conversions.

Grades 3, 4 and 5 have their annual field day together. Each grade level is given 16 gallons of water. If there are a total of 350 students, will there be enough water for each student to have 2 cups?

Solution A



$$\begin{array}{r} 48 \\ \times 16 \\ \hline 288 \\ + 480 \\ \hline 768 \end{array}$$

16 cups = 1 gallon

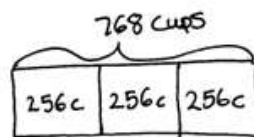
# of cups = 16 cups  $\times$  48 = 768 cups

350  $\times$  2 cups = 700 cups

700 cups < 768 cups

There is enough for each child to have 2 cups.

Solution B



$$\begin{array}{r} 256 \\ \times 3 \\ \hline 768 \end{array}$$

16 gal = 64 quarts  
= 256 cups

$$\begin{array}{r} 16 \\ \times 4 \\ \hline 64 \end{array} \quad \begin{array}{r} 64 \\ \times 4 \\ \hline 256 \end{array}$$

$$\begin{array}{r} 384 \\ 2 \overline{)768} \\ \underline{-6} \phantom{0} \\ 16 \\ \underline{-16} \\ 08 \\ \underline{-8} \\ 0 \end{array}$$

There is enough water for 384 students to each have 2 cups. There is enough for each child to have 2 cups if there are 350 students.

Students will also work with mixed number measurements to make them into smaller units.

If I need to know how many minutes  $5 \frac{1}{2}$  hours is, I need to know how many minutes are in an hour.

60 minutes = 1 hour

60  $\times$  5 = 300 minutes in 5 hours

30 minutes in  $\frac{1}{2}$  hour

330 minutes in  $5 \frac{1}{2}$  hours



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For more resources, please visit [www.newarkcityschools.org](http://www.newarkcityschools.org) → Parent Math Academy K-5