Module 3 - Lesson 5:

Convert larger customary measurement units to smaller measurement units.

CCSS Standard – 5.NF.B.4.a / 5.NF.B.5.b / 5.MD.A.1

Whiteboard Exchange: Multi-Digit Whole Numbers

Write and complete the equation by using the standard algorithm.

$15 \times 23 =$ _____

$42 \times 61 =$ _____

$85 \times 27 =$ _____

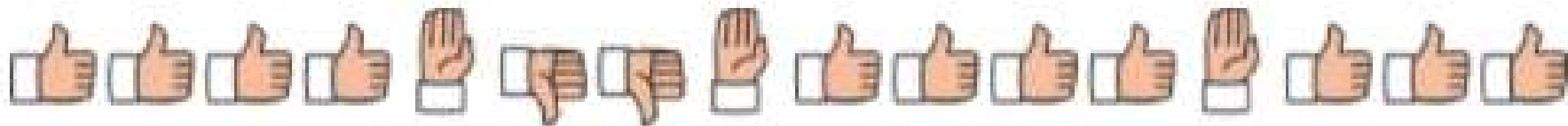**When I give this signal, count up.** 👍

When I give this signal, count down. 👎

When I give this signal, stop. ✋

Let's count by thirds. **Today we will rename the fractions as whole numbers or mixed numbers when possible. The first number you say is 0 thirds. Ready?**

👍 👍 👍 👍 👍 ✋ 👎 👎 ✋ 👍 👍 👍 👍 ✋ 👍 👍 👍

Choral Response: Multiply a Whole Number by a Unit Fraction

What is ½ of 8? Raise your hand when you know.

$\frac{1}{2}$ of 8 is _____.

$\frac{1}{2}$ of 8 is ___4___.

$\frac{1}{3}$ of 9 is _____.

$\frac{1}{3}$ of 9 is ___3___.

$\frac{1}{2}$ of 12 is _____.

$\frac{1}{2}$ of 12 is ___6___.

$\frac{1}{3}$ of 12 is _____.

$\frac{1}{3}$ of 12 is ___4___.

$\frac{1}{2}$ of 18 is _____.
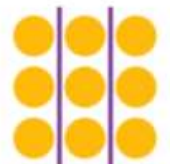
$\frac{1}{2}$ of 18 is ___9___.

Continue…..

$\frac{1}{3}$ of 24 is ____.

$\frac{1}{3}$ of 24 is __8__.
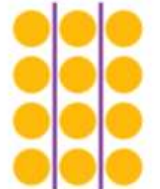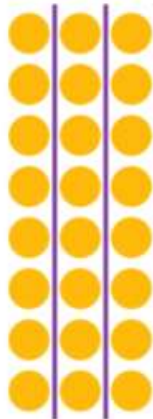
$\frac{1}{4}$ of 12 is ____.

$\frac{1}{4}$ of 12 is __3__.
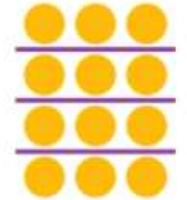
$\frac{1}{4}$ of 8 is ____.

$\frac{1}{4}$ of 8 is __2__.
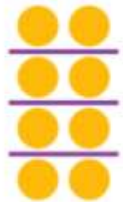
$\frac{1}{4}$ of 20 is ____.

$\frac{1}{4}$ of 20 is __5__.
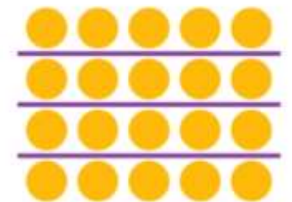
Students compare two different measurement units.

1 minute: Silent Thinking. Then discuss with a partner.
(BTW – you can substitute your favorite activity instead of basketball)

Would you rather play basketball

for $\frac{3}{10}$ hours or 1,080 seconds? Why?

What do you notice about the units?

Which is the larger unit?
Hours or Seconds?

Can we compare these units of time as they are right now? No! To accurately compare the units, we need to **convert**, or **rename** them so they are the same.

There are 3,600 seconds in 1 hour. But we need to know the number of seconds in 3/10 hour.
What could we do?

$$\frac{3}{10} \times 3{,}600 = \frac{10{,}800}{10} = 1{,}080$$

They are the same amount of time!
Today, we will use multiplication to convert larger measurement units to smaller measurement units.

**Use Grade 5 Mathematics Reference Sheet

$\frac{1}{6}$ foot = _____ inches.

What do you notice?

Let's convert 1/6 foot to inches. What is 1/6 foot as a multiplication expression?

$\frac{1}{6}$ x 12 = 2 inches

1 foot

1 inch
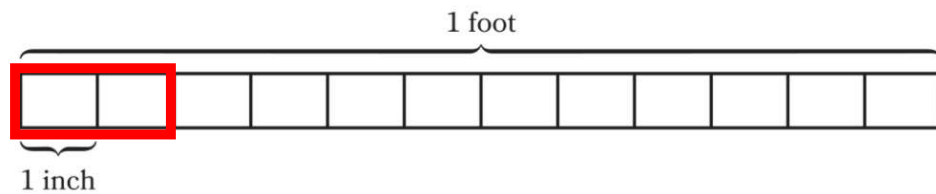
Why is our final answer of 2 inches less than 12 inches (a foot)?

EUREKA MATH²™

GREAT MINDS

Grade 5 Mathematics Reference Sheet

Conversions

1 mile = 5,280 feet   1 pound = 16 ounces   1 cup = 8 fluid ounces

1 mile = 1,760 yards   1 ton = 2,000 pounds   1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 liter = 1,000 cubic centimeters

Volume Formula

Right rectangular prism .... $V = B \times h$ or $V = l \times w \times h$

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Convert.

1. $\frac{2}{3}$ lb = _____ oz
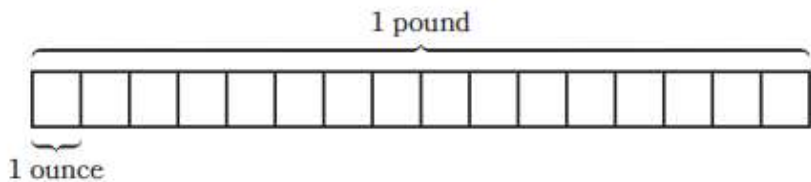
1 pound

1 ounce

Let's convert 2/3 pounds to ounces. We first need to know how many ounces make up one pound?

$$\frac{2}{3} \times 16 = \frac{32}{3} = 10\frac{2}{3}$$

If you were weighing an object on a scale, would you rather see 10 2/3 ounces or 32/3 ounces. Why?

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Grade 5 Mathematics Reference Sheet

Conversions

1 mile = 5,280 feet	**1 pound = 16 ounces**	1 cup = 8 fluid ounces
1 mile = 1,760 yards	1 ton = 2,000 pounds	1 pint = 2 cups
		1 quart = 2 pints
		1 gallon = 4 quarts
		1 liter = 1,000 cubic centimeters

Volume Formula

Right rectangular prism ....$V = B \times h$ or $V = l \times w \times h$

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2. $\frac{7}{4}$ c = _____ fl oz

1 cup
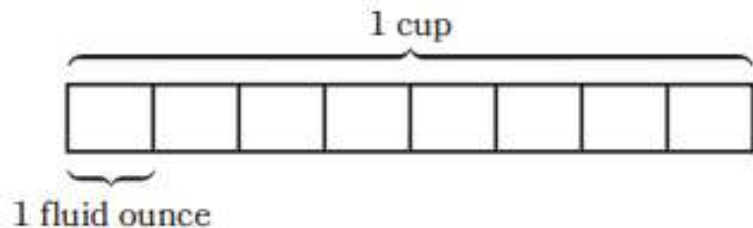
1 fluid ounce

Let's convert 7/4 cups to fluid ounces. We first need to know how many fluid ounces make up one cup?

$$\frac{7}{4} \times 8 = \frac{56}{4} = 14$$

Why is our final answer of 14 fluid ounces more than 8 fluid ounces (a cup)?

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GREAT MINDS

Grade 5 Mathematics Reference Sheet

Conversions

1 mile = 5,280 feet	1 pound = 16 ounces	**1 cup = 8 fluid ounces**
1 mile = 1,760 yards	1 ton = 2,000 pounds	1 pint = 2 cups
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		1 gallon = 4 quarts
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Volume Formula

Right rectangular prism . . . . $V = B \times h$ or $V = l \times w \times h$

Conversions in the Real World

1 day, or 24 hours

at work

at home

?

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Use the Read–Draw–Write process to solve each problem.

3. Mr. Sharma spends $\frac{3}{8}$ of a day at work. He spends the rest of the day at home. How many hours does he spend at home?
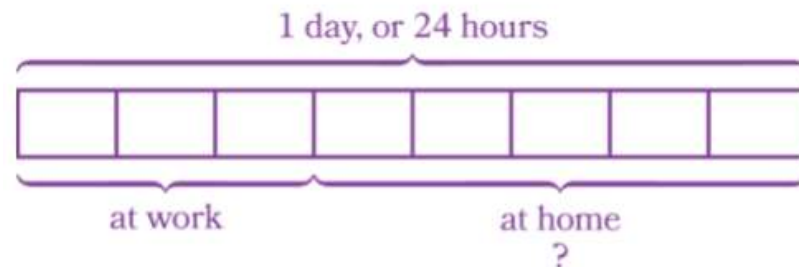
What do we know from reading this problem? $\frac{3}{8}$ *of the day* *at work* $\frac{5}{8}$ *of the day* *at home*

What do we need to convert?   *One day into hours.*

1 day is equal to 24 hours.

$$\frac{3}{8} \times 24 = \frac{72}{8} = 9 \text{ hours at work}$$

$$\frac{5}{8} \times 24 = \frac{120}{8} = 15 \text{ hours at home}$$

Would a tape diagram help us to represent this problem?

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4. Ryan is in a 2-mile race. He jogs $1\frac{3}{10}$ miles and walks the rest of the distance. How many yards does Ryan walk?

What do we know from reading this problem? $1\frac{3}{10}$ *jogs* $\frac{7}{10}$ *walks*

What do we need to convert?   *A mile into yards.*

1 mile is equal to 1,760 yards

$$\frac{7}{10} \times 1,760 = \frac{12,320}{10} = 1,232 \text{ yards walked}$$

Grade 5 Mathematics Reference Sheet

Conversions

1 mile = 5,280 feet	1 pound = 16 ounces	1 cup = 8 fluid ounces
1 mile = 1,760 yards	1 ton = 2,000 pounds	1 pint = 2 cups
		1 quart = 2 pints
		1 gallon = 4 quarts
		1 liter = 1,000 cubic centimeters

Exit Ticket

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Small Group Time:
Problem Set Page 45 - 46

Homework:
Page 33   APPLY BOOK

TEACHER HELP   QUICK CHECK   GOOD TO GO

5
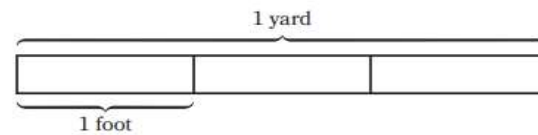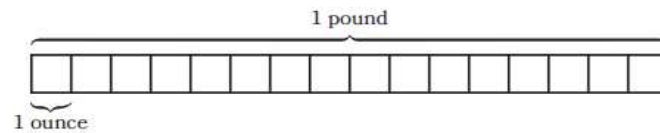
Name _____   Date _____

Convert each measurement. Use the tape diagrams or reference sheet if needed.

1. $\frac{5}{6}$ yards = _____ feet

1 yard

1 foot

2. $\frac{3}{4}$ pounds = _____ ounces

1 pound

1 ounce