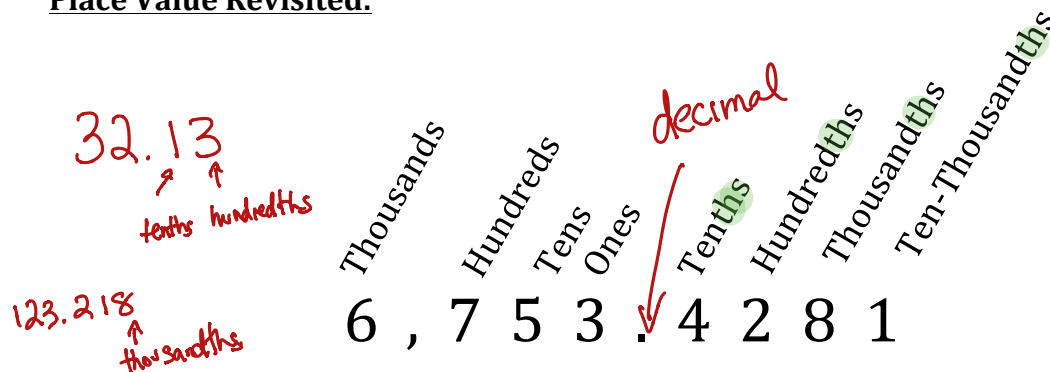


**LEARNING OBJECTIVE:**

We will convert between fractions and terminating decimals. (G7M2L10)

**CONCEPT DEVELOPMENT:**

**Place Value Revisited:**



Terminating decimals can be converted to a fraction using place value.

Examples:

$$2.03 = 2 \frac{3}{100}$$

↑  
"3 hundredths"

$$4.25 = 4 \frac{25}{100} = 4 \frac{1}{4}$$

25 hundredths

GO TO PAGE 2

**Powers of 10:**

$$10^1 = 10$$

$$10^2 = 10 \times 10 = 100$$

$$10^3 = 10 \times 10 \times 10 = 1,000$$

$$10^4 = 10 \times 10 \times 10 \times 10 = 10,000$$

$$10^5 = 10 \times 10 \times 10 \times 10 \times 10 = 100,000$$

$$10^6 = 10 \times 10 \times 10 \times 10 \times 10 \times 10 = 1,000,000$$

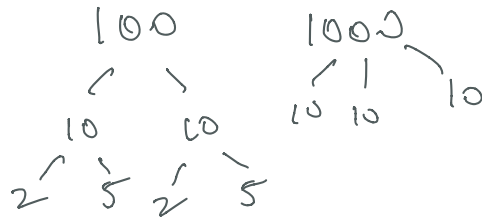
We can convert fractions to decimals more easily when the denominators only have factors of 2 or 5 (using powers of 10).

Examples:

$$\frac{7}{20} = \frac{7 \times 5}{5 \times 2 \times 2 \times 5} = \frac{35}{100} = .35$$

$$\frac{7}{40} = \frac{7}{2 \cdot 2 \cdot 2 \cdot 5} = \frac{7 \cdot 5}{2 \cdot 2 \cdot 2 \cdot 5 \cdot 5} = \frac{35}{200} = \frac{175}{1000} = .175$$

- ① Convert denominator to factors of 2 and 5
- ② Multiply numerator & denominator to get the denominator to be a power of ten



**GUIDED PRACTICE:****Steps to Convert Terminating Decimals into Fractions**

1. Identify the place value of the last digit to the right.
2. Rewrite the decimal as a fraction or mixed number with the appropriate denominator (based on place value).
3. Rewrite the fraction in its simplest form (simplify if numerator is divisible by 2 or 5).

<p>4.<u>36</u></p> <p>36 hundredths</p> <p><math>4 \frac{36 \div 4}{100 \div 4}</math> CAN I SIMPLIFY?</p> <p><math>4 \frac{9}{25}</math> YES! BOTH ARE EVEN &amp; HAVE A COMMON FACTOR</p>	<p>* <u>7.88</u></p> <p><math>7 \frac{88 \div 4}{100 \div 4}</math> CAN I SIMPLIFY?</p> <p><math>7 \frac{22}{25}</math></p>
<p>18.<u>607</u></p> <p>607 thousandths</p> <p>CAN I SIMPLIFY?</p> <p><math>18 \frac{607}{1000}</math></p>	<p>* <u>1.117</u></p> <p>117 thousandths</p> <p><math>1 \frac{117}{1000}</math></p>
<p>0.21<u>8</u> ← thousandths</p> <p><math>\frac{218 \div 2}{1000 \div 2} = \frac{109}{500}</math> CAN I SIMPLIFY?</p> <p><math>\frac{109}{2 \overline{)218}}</math></p> <p>&gt; Is 218 divisible by 2 or 5? YES</p> <p>&gt; Is 109 divisible by 2 or 5? NO</p>	<p>0.43<u>5</u> thousandths</p> <p><math>\frac{435 \div 5}{1000 \div 5} = \frac{87}{200}</math></p> <p><math>\frac{87}{5 \overline{)435}}</math></p>
<p>0.000<u>4</u> ten-thousandths</p> <p><math>\frac{4}{10,000} \div \frac{1}{2} = \frac{2}{5,000} \div 2 = \frac{1}{2,500}</math></p> <p><math>\frac{1}{2,500}</math></p>	<p>0.000<u>6</u> ten thousandths</p> <p><math>\frac{6}{10,000} = \frac{3}{5,000}</math></p>

NAME: \_\_\_\_\_

Math 7.1

Mr. Rogove

Date: \_\_\_\_\_

**Steps to Convert Fractions in to Decimals (Using Powers of 10)**

1. Identify the factor(s) of 2 or 5 that are needed to make the denominator a power of 10.
2. Multiply the fraction (both numerator and denominator by the missing factor(s) of 2 or 5 in order to create an equivalent fraction with a power of 10 denominator.
3. Rewrite the fraction as a decimal paying attention to the place value.

$\frac{7}{5} \times \frac{20}{20} = \frac{140}{100} = 1.40$ $\frac{7}{6} \times \frac{2}{2} = \frac{14}{10} = 1.4$	$\frac{13}{2} \times \frac{5}{5} = \frac{65}{10} = 6.5$
$\frac{13}{20} \times \frac{5}{5} = \frac{65}{100} = .65$ <p><i>(Handwritten: 5 → 2)</i></p>	$\frac{23}{50} \times \frac{2}{2} = \frac{46}{100} = .46 \quad 4.6$
<p><i>(Handwritten: 3/16 circled)</i></p> $\frac{3}{16} \times \frac{625}{625} = \frac{1875}{10000} = .1875$ <p><i>(Handwritten: 2 × 2 × 2 × 2 × 5 × 5 × 5)</i></p> <p><i>(Handwritten: 625 × 3 = 1875)</i></p>	$\frac{26}{80} = \frac{13}{40} = \frac{13}{2 \times 2 \times 2 \times 5} \times \frac{5 \times 5}{5 \times 5} = \frac{325}{1000} = .325$
$\frac{46}{160} \times \frac{23}{80} = \frac{23}{2 \times 2 \times 2 \times 2 \times 5} \times \frac{5 \times 5 \times 5}{5 \times 5 \times 5} = \frac{23 \times 125}{10000} = \frac{2875}{10000} = .2875$	$\frac{11}{32} = \frac{11}{2 \times 2 \times 2 \times 2 \times 2} \times \frac{5 \times 5 \times 5 \times 5}{5 \times 5 \times 5 \times 5} = \frac{11 \times 3125}{100000} = \frac{34375}{100000} = .34375$

NAME: \_\_\_\_\_

Math 7.1

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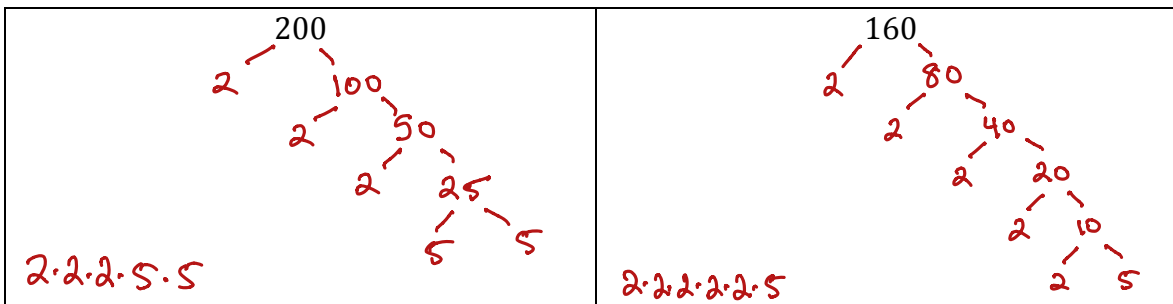
**INDEPENDENT PRACTICE:**

Convert Between Decimals and Fractions using the Steps on pages 2 and 3

$0.37$ $\frac{37}{100}$	$12.433$ $12 \frac{433}{1000}$
$0.00012$ $\frac{12}{100,000} \div \frac{2}{2} = \frac{6}{50,000}$ $\boxed{\frac{3}{25,000}}$	$* \quad 1.5467$ <p style="text-align: right; margin-right: 20px;"> <i>tenths</i>  <i>hundredths</i>  <i>thousandths</i>  <i>ten thousandths</i> </p> $\frac{5467}{10,000}$
$\frac{23}{20}$	$\frac{7}{125} = \frac{7}{5 \times 5 \times 5} \times \frac{2 \times 2 \times 2}{2 \times 2 \times 2} = \frac{56}{1000}$ $= .056$
$\frac{34}{160}$	$\frac{11}{2}$

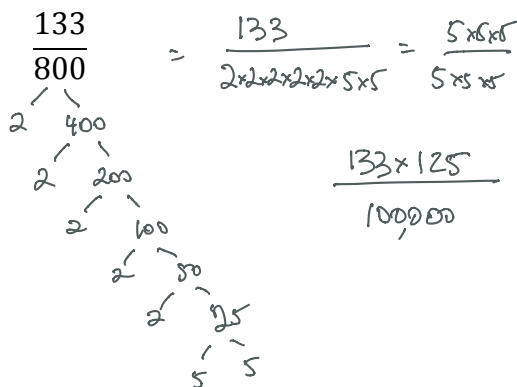
**ACTIVATING PRIOR KNOWLEDGE:**

We know how to find prime factors of numbers using a factor tree



**CLOSURE:**

If you were converting the following fraction to a decimal what denominator would you want to get to?



What would your decimal be?

**TEACHER NOTES:**

This lesson is foundational to help divide rational numbers.  
 Correlates to Lesson 13 in ENY Module 2.

Might need to break this lesson up into 2 days.