Unit 2 Fractions, Decimals, & Percents
2-1 Understanding Parts of a Whole

Fractions • A part of a whole	Ex $\frac{5}{7}$
• One or more plus an additional fraction	Ex $3\frac{1}{4}$
A proper fraction represents a value less than one whole.	Ex: Fraction $\frac{5}{7}$ = 5 out of 7 pieces
A decimal fraction also represents a value less than one whole	Ex: decimal .83 = 83 out of 100 (100 = whole)
Percentages represent the amount out of a whole of 100.	Ex: percent 41% = 41 out of 100 (100= whole)
We can represent the same amount less than 1 whole in all 3 ways	

2-2 Converting Decimals to Percents

1.Percents use 100 to represent 1 whole because our number system is based on 10 we know we need 2 places to equal 100… 10*10

2. To change the decimals to percents we move the decimal points 2 places to the right.

3. What? Can you have percents greater than 100%? Certainly!

EX
.73 = 73%

EX
.047 = 4.7%

EX
1.6 = 160%

EX:
If you need 2,000 calories a day and you eat 2,000 ; you are at 100%

If you eat 4,000 calories a day you are at 200%

If you eat 7,000 Calories; 350%

EX:
If you get an entire test correct you earn 100%

If you get an entire test and the extra credit correct you will earn more than 100% right?

Try these

.09 =

	.387 =
	1.02 =
	.75 =
	.004 =
	7 =
Did you get the last problem correct? If not let me help. Think money… we can write seven dollar as $7 right? We can also write it as $7.00 Notice the decimal point? Where is it? If you do not see the decimal point? Where is it? If you do not see the decimal as in 7 , it is always right behind the number	

2-3 Convert Percents to Decimals

1. This is a the opposite operation from yesterdays lesson.

2. If we move the decimal <u>two</u> places to the <u>right</u> to change decimals to percents…

3. We move the decimal <u>two</u> places to the _____ to change percents to decimals.

4. Remember, if you do not see a decimal it is right behind the number.

Ex 67% = .67

Ex 8.4% = .084

Ex 936% = 9.36

Try These:

1) 29% =

2) 5% =

3) 386% =

4) 34.6%

2-4 Convert Decimals to Fractions

2. We need to review decimal place value before we begin

2. This is important to read decimals, and if we can read deimals we can write them as fractions.

3. Six is written as a whole number
   - Thousandths is the denominator
   - One hundred twenty-five=numerator

4. Simplify if possible

Step 1 Determine the last place-value name

Step 2 Read the number…AND separate whole numbers and fractions

Step 3 The number read AFTER "and"becomes the numerator

Step 4 Simplify if possible

Ones Tenths Hundreths thousandths and tenthousandths

___.____ _____ _____ _____

Ex: .26 is read"twenty-six hundreths"
- To write this as a fraction put the last word(hundreths) as the denominator
- Place the number words as the numerator $\frac{26}{100}$
- Simplify is possible

Ex 6.125 is read "six and one hundred twenty-five thousandths"

$$6\frac{125}{1000}$$

$$6\frac{1}{8}$$

EX 3.00$\underline{8}$
- Ten thousandths

$$3\frac{8}{10{,}000}$$

$$3\frac{1}{1250}$$

Try This

1) .15

2) 4.6

3) 19.002

4) 31.72

2-5 Convert Percents to Fractions

Percents means out of 100... so when changing percents to fractions.

Steps
1. Make 100 your denominator

2. Make the % number your numerator

3. Simplify or reduce the fraction

What is the decimal is a percent?

Multiply both numerator & denominator to get rid of the decimal.

Simplify

1. $68\% = \frac{68}{100} = \frac{17}{25}$

2. 3%

3. 75%

4. 6.4%

5. 250%

Try This

6. 78%

7. 35%

8. 22.5%

9. 364%

2-6 Convert Fractions to Decimals

There is more than one way to teach it. Choose the one you like.

<u>Method</u>

1. The fraction bar means divide so set up a division problem

2. Mark where the decimal point is in the dividend.

3. Put the decimal is the quatient/answer

4. Add zeros behind the decimal and divide

Example

1. Change $\frac{19}{40}$ to a decimal

2. Change $\frac{22}{75}$ to a decimal

3. Change $\frac{22}{30}$ to a decimal

Try This

4. $\frac{2}{5}$

5. $\frac{9}{16}$

6. $\frac{14}{20}$

2-7 Convert Fractions to Percents

*Remember percents mean per 100 or out of 100.

If we start with a fraction and want a percent, we first change fractions to decimals and then into percents.

$$16\% = \frac{16}{100} = \frac{4}{25}$$

Simplify

1. $\frac{4}{25}$

2. $\frac{6}{11}$

3. $\frac{12}{25}$

Try This

4. $\frac{3}{8}$

5. $\frac{7}{10}$

	6. $\frac{14}{25}$
	7. $\frac{5.2}{31}$
In some case we can use equivalent fractions.	
If the denominator is a factor of 100 we use equivalent fractions.	1, 2, 4, 5, 10, 20, 25, 50, and 100
What numbers are factors of 100?	8. $\frac{1}{2} = \frac{50}{100} = 50\%$
If the denominators of the fractions are any of these numbers use equivalent fractions.	9. $\frac{1 \cdot 50}{2 \cdot 50} = \frac{50}{100} = 50\%$
	10. $\frac{3}{4}$

11. $\frac{2}{5}$

12. $\frac{9}{10}$

Try This

13. $\frac{11}{20}$

14. $\frac{13}{25}$

2-8 Everyday Fractions, Decimals, and Percents

Fractions	Decimals	Percents
$\frac{1}{10}$	.1	10%
$\frac{1}{8}$	.125	12.5%
$\frac{1}{5}$	.2	20%
$\frac{1}{4}$	.25	25%
$\frac{1}{3}$	.33333...	$33\frac{1}{3}\%$
$\frac{1}{2}$	.5	50%

These should be memorized.
There will be a quiz!

2-9 Add and Subtract Decimals

Add Decimals

Line up the decimal point and add the columns from right to left.

Place a decimal point in the answer directly below the other decimal points

Simplify

1. 0.37 + 0.68

2. 0.6232 + 0.0591

3. 12.5 + 4.479

Try This

4. 0.2305 + 0.249

Subtract Decimals

Line up the decimal points.

Subtract the columns from right to left, regrouping if necessary.

Place a decimal point in the answer directly below the other decimal points.

5. 0.9327 - 0.394

6. 23.78 - 14. 65

7. 52. 2359 - 5.246

Try This
8. 67. 93 - 56.48

2-10 Multiplying & Dividing Decimals

Multiplying Decimals Steps for Multiplying Decimals 1. Ignore the decimals 2. Multiply as normal 3. Count the number of digits after the decimal in the original problem and make sure the answer has the same number of digits after the decimal.	Simplify 1. 0.05×0.006 2. 0.15×0.03 3. 0.021×0.078

Dividing Decimals

Steps for dividing by whole numbers

1. Use long division as if there were no decimal point involved.

2. If necessary, add zeros after last digit in the decimal.

3. Place decimal point directly above the decimal point in the problem.

4. $0.3 \div 0.9$

5. $0.46 \div 0.99$

6. $0.20 \div 0.769$

7. $0.81 \div 0.9703$