

Howdy!!!!

Coach Watson

FOA

Find your seat

*Pencil

Foundations of Algebra

Unit1: Number Sense & Quantity

Notes

Unit 1: Number Sense & Quantity

Learning Goal #1.4: Intro to Percents

After completion of this unit, you will be able to...

- Explain the similarities and differences between percents, fractions, and decimals
- Convert between fractions, decimals, and percents
- Use mental math to calculate percents
- Determine the part, whole, or percent of a number
- Apply percents to real world problems (tax, tip, discounts)

Timeline for Unit 1

Monday	Tuesday	Wednesday	Thursday	Friday
	20 th Day 12 1.3 Assessment; Intro to Percents	21 th Day 13 Percents on a Number Line	22 th Day 14 Percents of a Number EquationS	23 rd Day 15 1.4 Assessment

Percents
of
equation

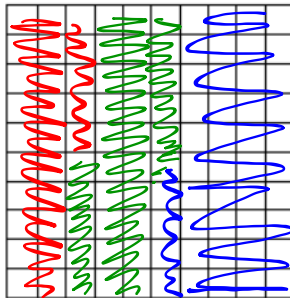
Test

	Monday	Tuesday	Wednesday	Thursday	Friday
AM	NONE	NONE	Mr. Webb 7:45 – 8:15 Room 1205	Mr. Watson 7:45 – 8:15 Room 1208	Mr. Watson 7:45 – 8:15 Room 1208
PM	Mrs. Petersen 3:30 – 4:30 Room 1210	Mr. Webb 3:30 – 4:30 Room 1205	Mrs. Jackson 3:30 – 4:30 Room 1210	Mrs. Jackson 3:30 – 4:30 Room 1210	NONE

Day 13: Introduction to Percents

Robb's Fruit Farm consists of 100 acres on which ~~three different types~~ of apples grow. On 25 acres, the farm grows Honeycrisp apples. McIntosh apples grow on 30% of the farm. The remainder of the farm grows Fuji apples. Shade in the grid below to represent the portion of the farm each type of apple occupies.

45%



Type	Color	Fraction	Decimal	Percent
Honeycrisp	Red	$\frac{25}{100}$ $\frac{1}{4}$.25	25%
McIntosh	Green	$\frac{30}{100}$ $\frac{3}{10}$.3	30%
Fuji	Blue	$\frac{45}{100}$ $\frac{9}{20}$.45	45%

Percents, fractions, and decimals can be used interchangeably. Percents are fractions that are out of 100. Percent is also another name for hundredths. The percent symbol "%" means out of 100. Percents are also considered ratios.

Percents

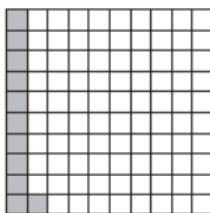
35% means 35 out of 100.

35% as a fraction is $\frac{35}{100}$.

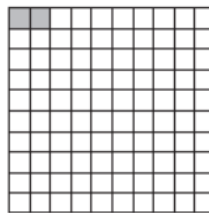
35% as a decimal is 0.35.

35% as a ratio is 35 to 100 or 35:100.

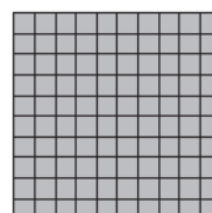
a. Represent each hundredth grid as a percent, fraction, and decimal.



$\frac{11}{100}$
 .11
 11%



$\frac{2}{100}$
 .02
 2%



$\frac{100}{100}$
 1.00
 100%

Converting Between Decimals, Percents, & Fractions

Percents to Decimals: *move decimal 2 spots left*

- a. 13%
13
13
.13
- b. 6%
6
6
.06
- c. 90%
90
90
.90
- d. 125%
125
125
1.25

Decimals to Percents: *move decimal 2 spots right*

- a. 0.4
0.4
40%
- b. 0.32
0.32
32%
- c. 0.8427
0.8427
84.27%
- d. 3.26
3.26
326%

Fractions to Percents:

- a. $\frac{4}{5}$.80
 $\frac{8}{10}$
80%
- b. $\frac{3}{8}$.375
37.5%
- c. $\frac{3}{10}$.3
3
30%
- d. $\frac{1}{3}$.33
33%

Graphic Organizer for Converting Between Percents, Decimals, & Fractions

want

	Fraction	Decimal	Percent
Percent	Write the percent as a fraction with a denominator of 100.	Move the decimal point two places to the left and remove the % sign.	
Fraction		Divide the numerator by the denominator.	Use division to write the fraction as a decimal, and then convert to a percent (Move decimal two points to the right)
Decimal	Write the decimal as a fraction with a denominator of 10, 100, or 1000.		Move the decimal point two places to the right and add the % sign.

1/500

Comparing Fractions, Decimals, and Percents

Common Equivalent Fractions, Decimals, and Percents									
Fraction	$\frac{1}{5}$	$\frac{1}{4}$	$\frac{1}{3}$	$\frac{2}{5}$	$\frac{1}{2}$	$\frac{3}{5}$	$\frac{2}{3}$	$\frac{3}{4}$	$\frac{4}{5}$
Decimal	0.2	0.25	0.333̄	0.4	0.5	0.6	0.666̄	0.75	0.8
Percent	20%	25%	33 $\frac{1}{3}$ %	40%	50%	60%	66 $\frac{2}{3}$ %	75%	80%

When comparing fractions, decimals, and percents, it is important to convert each number to the same form. Knowing your decimal fractions and important, common fractions will be extremely helpful! Most students prefer to convert everything to decimals in order to compare.

a. 25%, $\frac{1}{5}$, 0.33, 45%, $\frac{7}{10}$, 66%

0.25, 0.20, 33, 45, 70, 66

b. $\frac{8}{100}$, 0.8, 0.8%, $\frac{88}{100}$, 18%, 8

.08, .008, .88, .18, 8

0.20, .25, .33, .45, .66, .70

.008, .08, .18, .88, 8

00.8%

Additional Practice

Foundations of Algebra

Unit 2: Complex Number Systems

Practice

Day 13: Percents, Fractions, & Decimals

Name: _____

Practice Assignment

0 25 50 75 100

1. For each number below, write it in fraction, decimal, AND percent form:

a. 4%

F D P

$\frac{4}{100}$.04 4%

b. 0.09

F D P

$\frac{9}{100}$.09 9%

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

F D P

$\frac{11}{20}$.55 55%

$\frac{55}{100}$

d. 130%

F D P

$\frac{130}{100}$ 1.30 130%

e. 2.25

F D P

$\frac{225}{100}$ 2.25 225%

f. $\frac{3}{5}$

F D P

$\frac{3}{5}$.6 60%

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

F D P

h. 0.5%

F D P

$\frac{5}{100}$.005 .5%

i. $\frac{2}{3}$

F D P

$\frac{2}{3}$.66 66%

2. Avery got 18 out of 20 questions right on his math test. What percent of the questions did he get correct?

$$\frac{18}{20} \div 2 \quad \frac{9}{10} = 90\%$$

3. Sienna is practicing her free throw shots. She made 17 out of 25 free throw shots. What percent of the shots did she make?

$$\frac{17}{25} \times 4 \quad \frac{68}{100} = 68\%$$

4. Using your knowledge of percents, fractions, and decimals, order the following numbers in order from least to greatest **WITHOUT a calculator**. (Hint: think of benchmark fractions and converting percents to decimals).

a.

0.35, $\frac{1}{4}$, 28%, $\frac{8}{9}$

b.

$\frac{25}{8}$, 131%, 0.9, 1.1

c.

$\frac{7}{8}$, 0.1, 65%, 1.5

Foundations of Algebra

Unit 2: Complex Number Systems

Practice

5. The table shows the portions of the day that several animals sleep.

a. Order the animals by sleep time from least to greatest.

b. Estimate the portion of the day you sleep.

c. Where do you fit on the ordered list?



Animal	Portion of Day Sleeping
Dolphin	0.433
Lion	56.3%
Rabbit	$\frac{19}{40}$
Squirrel	$\frac{31}{50}$
Tiger	65.8%

6. The map shows the portions of the population of Florida that live in five counties. List the five counties in order, by population, from least to greatest.



7. Tell what whole number you can substitute for a in each list so the numbers are ordered from least to greatest.

a. $\frac{2}{a}, \frac{a}{22}, 33\%$

b. $\frac{1}{a}, \frac{a}{8}, 33\%$



Today's Notes

Day 14: Percents on a Number Line

Complete the tables given the whole amount and then answer the following questions.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0	3	6	9	12	15	18	21	24	27	30
	33	36	39	42	45	48	51	54	57	60

$\frac{30}{30}$

a. What is 10% of 30?

3

b. What is 40% of 30?

12

c. What is 150% of 30?

45

d. 27 is what percent of 30?

90%

e. 12 is what percent of 30?

40%

f. 60 is what percent of 30?

200%

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0	8	16	24	32	40	48	56	64	72	80
	88	96	104	112	120	128	136	144	152	160

a. What is 100% of 80?

80

b. What is 130% of 80?

104

c. 64 is what percent of 80?

80%

d. What is 10% of 80?

8

e. 32 is what percent of 80?

40%

f. What is 15% of 80?

12

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0	15	30	45	60	75	90	105	120	135	150
	165	180	195	210	225	240	255	270	285	300

$\frac{150}{150}$

a. What is 100% of 150?

150

b. What is 20% of 150?

30

c. 90 is what percent of 150?

60%

d. What is 25% of 150?

37.5

e. What is 5% of 150?

7.5

f. What is 150% of 150?

225

Observations:

a. What do you notice between the 10% and 100% numbers?

divided by 10

b. How do you determine what 5% of a number is?

b/w 0% and 10%

c. How can I use the 10% number to determine any other percent?

Just keep adding

Foundations of Algebra

Unit 2: Complex Number Systems

Notes

Complete the table given part of a number.

a.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0	12	24	36	48	60	72	84	96	108	120

$$\frac{120}{10}$$

$$\frac{24}{2}$$

b.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0	2	4	6	8	10	12	14	16	18	20

$$\frac{18}{9}$$

Use the table below to answer the following questions:

a. What is 80% of 120? 96

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0	12	24	36	48	60	72	84	96	108	120

$$\frac{120}{10}$$

b. What is 20% of 60? 12

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0	6	12	18	24	30	36	42	48	54	60

c. 11 is 10% of what number? 110

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0	11	22	33	44	55	66	77	88	99	110

d. 16 is what percent of 40? 40%

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0	4	8	12	16	20	24	28	32	36	40

Calculating Percents of a Number with Common Percents

Discover: Use your calculator to determine the percent of each number:

a. 1% of 28 = _____

g. 10% of 28 = _____

b. 1% of 234 = _____

h. 10% of 234 = _____

c. 1% of 0.85 = _____

i. 10% of 0.85 = _____

d. 1% of 5.86 = _____

j. 10% of 5.86 = _____

e. 1% of 56.79 = _____

k. 10% of 56.79 = _____

f. 1% equals the decimal _____

l. 10% equals the decimal _____

Calculating 1% of a Number

• _____

• _____

Calculating 10% of a Number

• _____

• _____

Practice: Calculate the following percents:

a. 1% of 90 = _____

b. 1% of 75 = _____

c. 1% of 200 = _____

d. 10% of 90 = _____

e. 10% of 75 = _____

f. 10% of 200 = _____

There are certain percents, called **benchmark percents**, that are used commonly in real life. They are 1%, 5%, 10%, 25%, 50%, and 100%. State each relationship below:

a. How is 50% related to 100%?

d. How is 5% related to 10%?

b. How is 25% related to 100%?

e. How is 1% related to 10%?

c. How is 10% related to 100%?

f. How is 25% related to 50%?

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Unit 2: Complex Number Systems

Notes

Practice: Try calculating the following percents mentally.

Number	50%	10%	1%	5%	25%
300					
50					
400					
16					

Additional Practice

Foundations of Algebra
Day 14: Percents, Fractions, & Decimals

Unit 2: Complex Number Systems

Practice

Name: _____

Practice Assignment

0 25 50 75 100

1. Complete the tables given the whole amount and then answer the following questions.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0										

- a. What is 10% of 200?
- b. What is 60% of 200?
- c. What is 130% of 200?
- d. 40 is what percent of 200?
- e. 140 is what percent of 200?
- f. 300 is what percent of 200?

2. Complete the tables given the whole amount and then answer the following questions.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0										

- a. What is 10% of 45?
- b. What is 80% of 45?
- c. What is 170% of 45?
- d. 18 is what percent of 45?
- e. 2.25 is what percent of 45?
- f. 63 is what percent of 45?

3. Complete the tables given part of a number.

a.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0				28						

Foundations of Algebra

Unit 2: Complex Number Systems

Practice

b.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0							350			

c.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0				36						

d.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0		7								

4. Without using a calculator, calculate the following percents:

a. 50% of 60

b. 100% of 70

c. 25% of 12

d. 10% of 55

e. 1% of 150

f. 25% of 160

g. 50% of 500

h. 5% of 50

i. 25% of 40

j. 5% of 60

k. 1% of 200

l. 15% of 50