LEARNING OBJECTIVE: We will gain more fluency when solving problems involving percents. (G7M4L6)

CONCEPT DEVELOPMENT:

What is the difference between
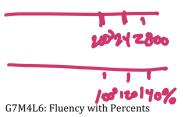
$$quantity = percent \times whole$$ *COMPARISON OF TWO QUANTITIES*

and

$$part = percent \times whole$$ *PART OF A WHOLE*

ANSWER: Is the question a comparison of two quantities, or is part of a whole?

Don't solve, indicate a comparison of two quantities of part of a whole:

Scenario	Comparison of two quantities	Part of a Whole
Mr. Rogove teaches 89 students. 40 of them are girls. What percent is that of the total?		✓ $\frac{40}{89}$
In 3rd period, there are 23 students and in 1st period there are 33 students. Compare the number of students in 1st period as a percent of the number of students in 3rd period.	✓ $\frac{33}{23}$	
Mr. Rogove and Ms Galassi go out for lunch. The bill is $35.00. Mr. Rogove's portion is $20. What is Ms. Galassi's bill as a percent of Mr. Rogove's	✓ $\frac{15}{20}$	
Referring to the lunch above, what percent of the total did Ms. Galassi pay?		✓ $\frac{15}{35}$
They want to leave a tip of 20%. How much is 20% of the $35 bill?		✓ 20% of 35
Molly's vocabulary grew by 40% in the past year. She now knows 2800 words. How many words did she know last year?		✓

20% 2800

100% 120% 140%

Guided / Independent Practice:

Express 9 hours as a percentage of 3 days.	Express 3 feet as a percentage of 9 inches.

Left cell:

$3 \text{ days} = 72 \text{ hours}$

$\% = \dfrac{Part}{Whole}$

$\% = \dfrac{9}{72} = \dfrac{1}{8} = .125 = \boxed{12.5\%}$

9 hours is 12.5% of 3 days

Right cell:

$>100\%$

3 feet = 36 inches

$\% = \dfrac{36}{9} = 400\%$

3 ft. is 400% of 9 inches

Mary works from 11:00AM until 3:00AM. Her dinner break is 75% of the way through her work shift. When does she break for dinner?	Ben is 60% done with a 12 mile run when his legs cramp up and he needs to stop for water. How far has Ben gone when he stops?

Left cell:

11 AM — 3AM   16 hours...

75% of 16 = ?   16 · .75 = 12

Whole · % = Part

16 ÷ 4 = 4 × 3 = 12

Mary had dinner at 11 PM

Right cell:

$0.6 \times 12 = 7.2$

20 40 60% 80% 100%

2.4	2.4	2.4	

7.2   12

Ben ran 7.2 miles

At a basketball playoff game, 38 fans were cheering for Hyde and 57 fans were cheering for Graham. Express the number of fans cheering for Hyde as a percent of the number of fans cheering for Graham.

$$\% = \frac{hyde\ fans}{graham\ fans}$$

$$\% = \frac{38}{57} = \frac{2}{3} = .6\overline{6}$$

$$\boxed{66.\overline{6}\%}$$

Now, express the number of fans cheering for Graham as a percent of the number of fans cheering for Hyde.

$$\% = \frac{graham}{hyde} = \frac{57}{38} = \frac{3}{2}$$

$$1.5$$

$$\boxed{\text{Graham has 150\% of the number of fans that Hyde has.}}$$

Before you can vote on a ballot measure, people must collect a minimum amount of signature on a petition before it can be submitted. A recent measure to ban plastic bags got on the ballot after getting 67,200 signatures—this was 40% MORE than it needed. How many signatures were needed to get on the ballot?

In order for his avocado farm to be profitable, Joe's father in law whose name is Art (short for Arthur) needs each tree to produce a certain number of avacados per tree. Art had a very good year, as his trees on average produced 810 pieces of fruit each—35% above the number he needs to be profitable. What is that number?

A plant in Ophelia's garden was 40 inches tall one day, and then was 4 feet tall one week later. By what percent did the plant's height increase over the week?	At birth, Molly was measured at 20 inches long. By the time she was 7, she was 4 feet, 4 inches tall. How much had she grown in terms of percent?
A king size bag of Skittles has 88 pieces of candy in it whereas the regular size bag 55. Express the amount of Skittles in a regular size bag as a percent of the amount in a king size bag.	Referring to the problem to the left, the family size bag of Skittles contains 572 pieces of candy. Express the amount of candy in the family size bag as a percent of the amount in a king size bag. . How would you express the amount in a family bag in relation to a regular size bag as a percent?

Independent Practice:
Could be problem set from lesson 6…or could be homework???

Activating Prior Knowledge:
39 is 1% of what number.
39 is 10% of what number?
39 is 5% of what number?
39 is 15% of what number?
39 is 25% of what number?

Closure:
Complete exit ticket—hand in!

Teacher Notes:
Lesson 6 from Mod 4, Grade 7
Do a problem of the week, or the ice cream handout??