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Mr. Rogove Date:_____

LEARNING OBJECTIVE: We will compare quantities with percents. (G7M4L3)

CONCEPT DEVELOPMENT:

In previous lessons, we used the following equation to find percents:

$$part = percent \times whole$$

We will tweak it now to be more inclusive:

$$\boldsymbol{quantity = percent \times whole}$$

Example: Jerome and Alonso were doing homework, and together they completed 20 problems. Jerome completed 8 of them. Compare the number of problems Jerome did as a percent of those that Alonso completed.

qty/part unknown? whole

12

$8 = x \cdot 12$

$\frac{8}{12} = \frac{\%}{100} \cdot \frac{12}{12}$ $\quad \% = \frac{2}{3}$ or $.\overline{6}$

$66.\overline{6}\%$

Compare the number of problems that Alonso completed as a percent of those that Jerome completed.

$\frac{12}{8} = \frac{x \cdot 8}{8}$ $\quad x = \frac{3}{2} = 1.5$

$1.5 \times 100 = 150\%$

150%

Question: how is the above different than asking: What percent of the total completed problems is Jerome responsible for?

8 out of 12 v. 8 out of 20

The whole changed...

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GUIDED PRACTICE:

Steps for Finding Quantities Using Percents

1. Read the word problem/situation carefully.
2. Identify your terms—what is the percent, the quantity and the whole?
3. Solve for the missing piece of information.
4. Check the reasonableness and interpret your answer in context.

1. The members of the Latino Student Union are making Ojo de Dios ornaments to sell to raise money. Christina and Yair made 54 ornaments over the weekend. They need to make 300 by the end of the week.

a. What percent of the ornaments were they able to produce over the weekend?

part = percent · whole

$\frac{54}{300} = \frac{x \cdot 300}{300}$ $\frac{18}{100} = x$ **18%**

b. Christina produced 32 of the 54 Ojo de Dios ornaments made over the weekend. Compare the number of ornaments that Yair made as a percent of those that Christina made.

Christina-32

Yair -22

$\frac{22}{32} = \frac{32 \cdot x}{32}$ $x = .6875$ **68.75%**

c. Compare the number of ornaments that Christina made as a percent of those that Yair made.

$\frac{32}{22} = \frac{22 \cdot x}{22}$ $x = 1.45\overline{45}$

$145.\overline{45}\%$

2. At Jordan Middle School, there are 750 students in the 7th grade, and 625 in the 8th grade.

a. What percent is the 7th grade of the 8th grade at Jordan Middle School?

$750 = x \cdot 625$ 120%

b. What percent is the 8th grade of the 7th grade?

$\frac{625}{750} = \frac{x \cdot 750}{750}$ $x = .83\overline{3}\ldots$

$83.\overline{3}\%$

3. At Graham, there are 104 students in the band and 80 students in the choir. What percent of the number of students in the choir is the number of students in the band.

$\frac{80}{104} = \frac{x \cdot 104}{104}$ $x = .7692\ldots$

76.9%

4. At Mountain View High School, breakfast costs \$2.25 and lunch costs \$6.75. What percent of the cost of lunch is the cost of breakfast?

whole part

$\frac{2.25}{6.75} = \frac{6.75 \cdot x}{6.75}$ $= x = .33\overline{3}$

$33.\overline{3}\%$

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Independent Practice:

A king cobra is 18 feet long and a reticulated python is 30 feet long.

a. Compare the length of the king cobra as a percent of the length of a reticulated python.

$\frac{18}{30} = .6$ 60%

$\frac{30}{18}$

b. Compare the length of the python as a percent of the length of the cobra.

$\frac{30}{18} = 1.6\overline{6}$ $166.\overline{6}\%$

Angelina's great grandma is 90 years old. Angelina is 12. What percent of Angelina's great grandma's age is Angelina?

$\frac{12}{90} =$ $13.\overline{3}\%$

Angelina's mother is 40 years old. What percent of Angelina's mom's age is Angelina's great grandma?

$\frac{90}{40} = \frac{40 \cdot x}{40}$ $x = 2.25$

225%

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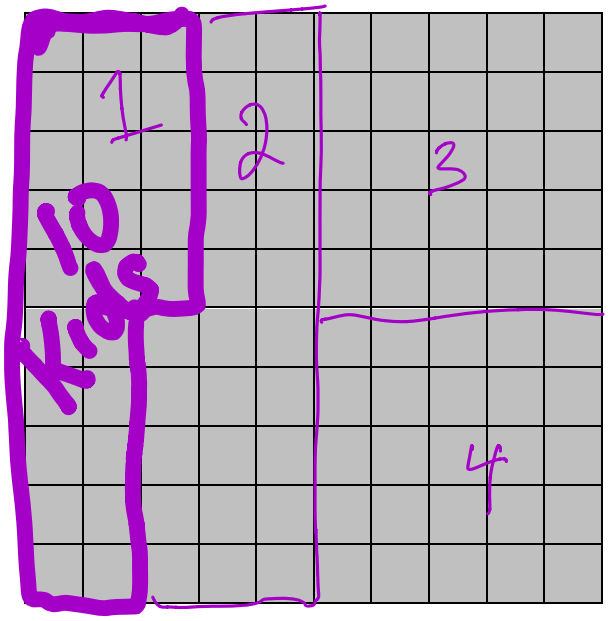
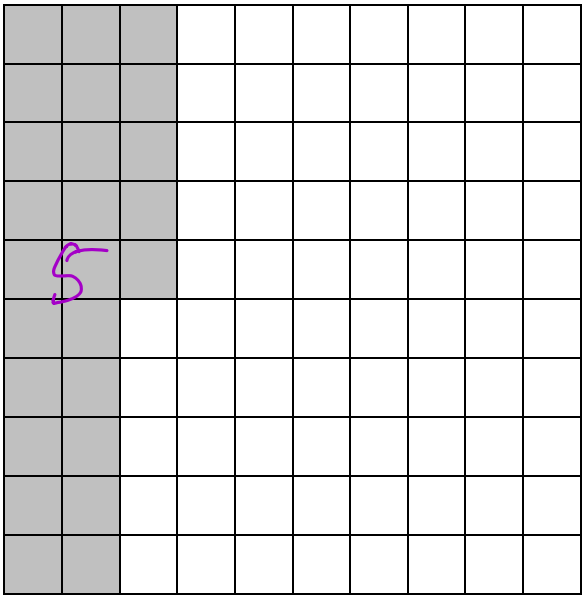
Activating Prior Knowledge:

We can use grids to finding percentages.





If each 10x10 unit square represents one whole, what percentage of the shaded region?

125%

In the model above, 25% represents a quantity of 10 students. How many students does the shaded region represent?

50

Closure:

The Missouri River winds across America for 2,540 miles. It is the longest river in the United States. The Rio Grande which forms our border with Mexico is 1900 miles. Compare the length of the Missouri River as a percent of the length of the Rio Grande. (Just write the equation, no need to solve)

$x = \frac{2540}{1900}$

$\frac{\text{part}}{\text{whole}} = \frac{\%}{\text{whole}}$

$\% = \frac{\text{part}}{\text{whole}}$

Notes:

Homework will be Lesson 4 ENY handout…this might be challenging for students.