

Hard Percent Problems # 2

INSTRUCTION

A percent IS a ratio. A percent, like 15%, is a ratio of 15 to 100. If 15% of the students walk to school, then 15 out of every 100 walk to school. If there are 400 students in the school, we can compare the ratio of the walkers to the total number of students and the ratio of 15 for every 100.

Set it up like this: $\frac{\text{part (the walkers)}}{\text{whole (all students)}} = \frac{\%}{100}$ but put the numbers in place. The percent is 15%, we don't know the "part" (how many walk) and the "whole" (total students at the school) is 400.

Set it up like this- $\frac{\text{Part}}{400} = \frac{15\%}{100}$

When two ratios are equal it is called a proportion.

To find the missing number in a proportion, multiply the two numbers across from each other up and down, then divide that answer by the third number (the number not used yet).

$\frac{\text{Part}}{400} = \frac{15\%}{100}$ Multiply 400 times 15 (6000). Now divide that answer (6000) by 100. The answer 60 means that 60 students walk to school, that is 15% of the school's total number of students is 60.

Another example- Mike earns 25% commission on his total sales. Last week his commission was \$40. How much did he sell in all?

The "WHOLE" (his total or whole sales) is missing. Set it up- $\frac{\text{part}}{\text{whole}} = \frac{\%}{100} \rightarrow \frac{40}{\text{whole}} = \frac{25\%}{100}$

Multiply (40 times 100), divide by 25. His sales total was \$ 160

- 1) 60% of ____ = 12
- 2) 5% of ____ = 50
- 3) 32 % of ____ = 620
- 4) ____% of 400 = 160
- 5) ____% of 8000 = 240
- 6) ____% of 25 = 10
- 7) 40% of 505 = _____
- 8) 3 % of 800 = _____
- 9) 25% of 6 = _____
- 10) ____% of 1000 = 30

PROBLEMS

ANSWERS

1) 60% of **20** = 12

The key word "OF" is before the whole, so we knew the whole was missing.

$$\frac{\text{part}}{\text{whole}} = \frac{\text{percent}}{100} \rightarrow \frac{12}{x} = \frac{60}{100} \rightarrow \frac{12}{x} = \frac{60}{100} \quad \text{Multiply } (12 \times 100), \text{ then divide by } 60$$

2) 5% of **1000** = 50

3) 32 % of **1937.5** = 620

4) **40** % of 400 = 160

The key word "OF" comes right before the whole, so we know 400 is the whole.

$$\frac{\text{part}}{\text{whole}} = \frac{\text{percent}}{100} \rightarrow \frac{160}{400} = \frac{x}{100} \rightarrow \frac{160}{400} = \frac{x}{100} \quad \text{Multiply } (100 \times 160), \text{ then divide by } 400$$

5) **3** % of 8000 = 240

6) **40** % of 25 = 10

7) 40% of 505 = **202**

8) 3 % of 800 = **24**

9) 25% of 6 = **1.5**

10) **3** % of 1000 = 30