

7-5 Notes

Int 1

Solving Proportions

Unit 7

Define proportion:

Two fractions (ratios) that are EQUAL.

1. Are the following ratios proportional? Are the 2 fractions EQUAL to each other? Multiple ways to check this!

a. $\frac{6 \div 2 \rightarrow 3}{8 \div 2 \rightarrow 4}$ yes! way 1 • or \div straight by the same #

b. $\frac{4 \cdot 3}{7} = \frac{12}{28}$ • 4

$\frac{6}{8} = \frac{3}{4}$ 24 24 way 2 Multiply across & get same #

NOT proportional!

c. $\frac{6 \cdot 4}{7} = \frac{24}{35}$ • 5 way 1 NOT proportional!

d. $\frac{18 \div 3}{24 \div 3} = \frac{6}{8}$ Yes, proportional!

way 2 $\frac{6}{7} = \frac{24}{35}$ 168 210

Solve each proportion. we use way 2 to find the missing value!

1. $\frac{x}{4} = \frac{9}{10}$
 $\frac{36}{10} = \frac{x \cdot 10}{10}$
3.6 = x

2. $\frac{2}{34} = \frac{5}{y}$
 $\frac{170}{2} = \frac{2 \cdot y}{2}$
85 = y

3. $\frac{7}{3} = \frac{n}{21}$
 $\frac{3 \cdot n}{3} = \frac{147}{3}$
n = 49

4. Olivia bought 6 yogurts for \$7.68. Write an equation relating the cost to the number of yogurts. How much would Olivia pay for 10 yogurts at the same rate?

$\frac{6 \text{ yogurts}}{\$7.68} = \frac{10 \text{ yogurts}}{? \$}$

$\frac{6}{7.68} = \frac{10}{x}$
 $\frac{76.8}{6} = \frac{6x}{6}$

x = 12.8

\$12.80

5. In a local soccer league the ratio of 7th grade students to 8th grade students is 17:23. If the number of students increases to 200 students in all, how many are in 7th grade?

Need Total! = 40

$$\frac{17}{40} = \frac{x}{200}$$

← Top is 7th grade ← Bottom is total FOR BOTH sides!

$$40x = 3400$$

$x = 85$ 7th graders

6. Ethan is making a delicious beverage. He mixed 4 ounces of Sprite with 5 ounces of orange juice. He decided to create the 27 ounces of the same mixture. How many ounces of Sprite does Ethan need for the new mixture?

4oz Sprite
5oz O.J.
9oz Total

$$\frac{\text{Sprite}}{\text{total}} = \frac{\text{Sprite}}{\text{total}}$$

$$\frac{4}{9} = \frac{x}{27}$$

12 oz of Sprite

$$\frac{9x}{9} = \frac{108}{9}$$

$x = 12$

7. For every 6 students who graduate from college only about 2 students find jobs in their field. If 75 students graduate with a college degree, how many of those students will find jobs in their field?

$$\frac{\text{Graduate}}{\text{JOBS}} = \frac{\text{Grad.}}{\text{JOBS}}$$

$$\frac{6}{2} = \frac{75}{x}$$

$$\frac{150}{6} = \frac{60x}{6}$$

$x = 25$ would find JOBS

8. Michelle was collecting food for the Utah Food Bank. Is the relationship between pounds of food and weeks proportional? Explain.

Weeks of Collecting	4	8	12	16	20	24
Pounds of Food	35.6	71.2	106.8	142.4	178	213.6

check by doing $\frac{y}{x}$

$$\frac{35.6}{4} = 8.9$$

$$\frac{71.2}{8} = 8.9$$

$$\frac{106.8}{12} = 8.9$$

All are EQUAL

$$\frac{142.4}{16} = 8.9$$

$$\frac{178}{20} = 8.9$$

$$\frac{213.6}{24} = 8.9$$

So, yes. The relationship between pounds of food & weeks is prop.