

3-6 Study Guide and Intervention *(continued)***Ratios and Proportions**

Solve Proportions If a proportion involves a variable, you can use cross products to solve the proportion. In the proportion $\frac{x}{5} = \frac{10}{13}$, x and 13 are called **extremes** and 5 and 10 are called **means**. In a proportion, the product of the extremes is equal to the product of the means.

Means-Extremes Property of ProportionsFor any numbers a , b , c , and d , if $\frac{a}{b} = \frac{c}{d}$, then $ad = bc$.**Example**

Solve $\frac{x}{5} = \frac{10}{13}$.

$$\frac{x}{5} = \frac{10}{13}$$

Original proportion

$$13(x) = 5(10)$$

Cross products

$$13x = 50$$

Simplify.

$$\frac{13x}{13} = \frac{50}{13}$$

Divide each side by 13.

$$x = \frac{50}{13}$$

Look

SHOW ALL WORK NEATLY ON LOOSE LEAF, PUT THIS SHEET ON TOP WITH YOUR NAME ON THIS SHEET AND ALL LOOSE LEAF SHEETS -- Mr. C.

Exercises**Solve each proportion.**

1. $\frac{-3}{x} = \frac{2}{8}$

2. $\frac{1}{t} = \frac{5}{3}$

3. $\frac{0.1}{2} = \frac{0.5}{x}$

4. $\frac{x+1}{4} = \frac{3}{4}$

5. $\frac{4}{6} = \frac{8}{x}$

6. $\frac{x}{21} = \frac{3}{63}$

7. $\frac{9}{y+1} = \frac{18}{54}$

8. $\frac{3}{d} = \frac{18}{3}$

9. $\frac{5}{8} = \frac{p}{24}$

10. $\frac{4}{b-2} = \frac{4}{12}$

11. $\frac{1.5}{x} = \frac{12}{x}$

12. $\frac{3+y}{4} = \frac{-y}{8}$

13. $\frac{a-8}{12} = \frac{15}{3}$

14. $\frac{12}{k} = \frac{24}{k}$

15. $\frac{2+w}{6} = \frac{12}{9}$

Use a proportion to solve each problem.

16. MODELS To make a model of the Guadeloupe River bed, Hermie used 1 inch of clay for 5 miles of the river's actual length. His model river was 50 inches long. How long is the Guadeloupe River?

17. EDUCATION Josh finished 24 math problems in one hour. At that rate, how many hours will it take him to complete 72 problems?