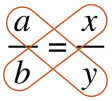
Proportions

Fill in the guided notes as you watch the video in the Digital Toolbox.

- A proportion is two **ratios** set equal to one another.
- When a proportion contains an unknown value, it can be determined by finding the **cross-product**.
  - This means to **multiply** the numerator of one ratio in the proportion by the denominator of the other ratio.



$$ay = bx$$

  - This results in an equation that you can use to solve for the **unknown value**.

Example 1

Complete the example as you watch the video in the Digital Toolbox.

Solve.

$$\frac{x}{3} = \frac{7}{15}$$

Implement	Explain
$15x = 3(7)$	
$\frac{15x}{15} = \frac{21}{15}$	Find the cross product
$x = \frac{21}{15} = \frac{7}{5}$	Solve for x

Example 2

Complete the example as you watch the video in the Digital Toolbox.

Solve.

$$\frac{9}{4x} = \frac{8}{3}$$

$$9(3) = 4x(8)$$

$$\frac{27}{32} = \frac{32x}{32}$$

$$x = \frac{27}{32}$$

Practice

Complete the problems. Show your work.

1) $\frac{10}{21} = \frac{x}{7}$

$10(7) = 21x$

$\frac{70}{21} = \frac{21x}{21}$

$x = \frac{70}{21} = \frac{10}{3}$

2) $\frac{5}{12} = \frac{x}{18}$

$5(18) = 12x$

$\frac{90}{12} = \frac{12x}{12}$

$x = \frac{90}{12} = \frac{15}{2}$

3) $\frac{x}{8} = \frac{11}{5}$

$5x = 8(11)$

$\frac{5x}{5} = \frac{88}{5}$

$x = \frac{88}{5}$

4) $\frac{7x}{5} = \frac{13}{11}$

$7x(11) = 5(13)$

$\frac{77x}{77} = \frac{65}{77}$

$x = \frac{65}{77}$

5) $\frac{3x}{15} = \frac{52}{5}$

$3x(5) = 52(15)$

$\frac{15x}{15} = \frac{52(15)}{15}$

$x = 52$

6) $\frac{9}{35} = \frac{x}{75}$

$9(75) = 35x$

$\frac{675}{35} = \frac{35x}{35}$

$x = \frac{675}{35} = \frac{135}{7}$

Complete the problems. Show your work.

7) $\frac{x}{100} = \frac{3}{8}$

$8x = 100(3)$

$\frac{8x}{8} = \frac{300}{8}$

$x = \frac{300}{8} = \frac{75}{2}$

8) $\frac{2x}{15} = \frac{3}{4}$

$2x(4) = 3(15)$

$\frac{8x}{8} = \frac{45}{8}$

$x = \frac{45}{8}$

9) $\frac{7}{15} = \frac{2}{x}$

$7x = 15(2)$

$\frac{7x}{7} = \frac{30}{7}$

$x = \frac{30}{7}$

10) $\frac{20}{x} = \frac{5}{3}$

$20(3) = 5x$

$\frac{60}{5} = \frac{5x}{5}$

$x = 12$

11) $\frac{26}{5} = \frac{x}{15}$

$26(15) = 5x$

$\frac{390}{5} = \frac{5x}{5}$

$x = 78$

12) $\frac{13}{3x} = \frac{1}{5}$

$13(5) = 3x$

$\frac{65}{3} = \frac{3x}{3}$

$x = \frac{65}{3}$