

## Solving Equations Using Ratio and Proportion

Quick Review	
A <i>ratio</i> is a fraction	$\frac{a}{b}$
A <i>proportion</i> is an equation that sets two ratios equal to each other.	$\frac{a}{b} = \frac{c}{d}$
Solve a proportion by multiplying both sides of the equation by the common denominator of $b$ and $d$ .	<p><b>Example:</b> Solve <math>\frac{3x}{5} = \frac{x+16}{7}</math> .</p> <p><b>solution:</b></p> $\cancel{35}^7 \left( \frac{3x}{5} \right) = \left( \frac{x+16}{7} \right) \cancel{35}^5$ <p><math>21x = 5x + 80</math></p> <p><math>16x = 80</math> and <math>x = 5</math></p>

### Problems

Solve each of the following proportions

1.  $\frac{x}{12} = \frac{3}{4}$

2.  $\frac{2}{16} = \frac{x+3}{8}$

3.  $\frac{5}{x} = \frac{15}{8}$

4.  $\frac{x-2}{2} = \frac{3-x}{3}$

5.  $\frac{4x-7}{13} = \frac{3-2x}{-7}$

6.  $\frac{14}{3x} = \frac{3}{x+1}$

7.  $\frac{5x}{-12} = \frac{1-x}{4}$

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

9. Solve for  $p$ :  $\frac{3}{4} = \frac{r+p}{2p}$

10. Solve for  $a$ :  $\frac{a+b}{b} = \frac{a-b}{2b}$