

3-6-2 Proportion Problems

The proportions on this page require the algebra methods learned to solve.

Example:

$\frac{2x-5}{7} = \frac{x+2}{8}$ $8(2x-5) = 7(x+2)$ $16x-40 = 7x+14$ $\begin{array}{r} -7x \quad -7x \\ \hline 9x-40 = 14 \\ \quad +40 \quad +40 \\ \hline 9x = 54 \\ x = 6 \end{array}$	<p>Cross multiply.</p> <p>Then distribute.</p> <p>Subtract to get the variables to the same side of the equation.</p> <p>Solve the two step equation.</p>
--	---

Practice:

a) $\frac{2a-9}{-3} = \frac{3a+8}{5}$

$$\frac{2x-5}{3} = \frac{3x-8}{5}$$

$$\frac{m+10}{7} = \frac{m-4}{5}$$

b) $\frac{2a-9}{-3a+2} = \frac{8}{5}$

$$\frac{m+10}{5m+2} = \frac{4}{3}$$

$$\frac{2-9f}{5-f} = \frac{10}{15}$$

c) $\frac{9}{-1} = \frac{8s+9}{5s-10}$

$$\frac{3}{4} = \frac{t+3}{t-8}$$

$$\frac{24}{8} = \frac{k}{10k-8}$$

d) $\frac{6}{-y+8} = \frac{8}{5y-10}$

$$\frac{16}{3-w} = \frac{8}{w+5}$$

$$\frac{45}{u+8} = \frac{3}{5u-10}$$

Remember to solve proportion problems, cross multiply, and then solve.

Examples:	$\frac{x-7}{8} = \frac{3}{4}$ $4(x-7) = 24$ $4x - 28 = 24$ $\quad + 28 \quad + 28$ $\hline 4x = 52$ $\frac{4x}{4} = \frac{52}{4}$ $x = 13$	$\frac{2x}{5} = \frac{5x+1}{100}$ $100 \cdot 2x = 5(5x+1)$ $200x = 25x + 5$ $175x = 5$ $x = \frac{1}{35}$	$\frac{3x-2}{x+5} = \frac{4}{3}$ $3(3x-2) = 4(x+5)$ $9x - 6 = 4x + 20$ $\quad - 4x \quad - 4x$ $\hline 5x - 6 = 20$ $\quad + 6 \quad + 6$ $\hline 5x = 26$ $x = 5\frac{1}{5}$
-----------	--	---	---

Practice:

a) $\frac{x+4}{5} = \frac{2}{3}$

$\frac{x-2}{6} = \frac{3x}{5}$

$\frac{8}{2x-7} = \frac{5}{3x}$

b) $\frac{-x-2}{6} = \frac{3}{8}$

$\frac{5}{8} = \frac{2x-5}{3x+8}$

$\frac{2x-6}{7} = \frac{3x-5}{8}$

c) $\frac{2x+4}{9} = \frac{1}{3}$

$\frac{5}{3} = \frac{2(x-7)}{3x+8}$

$\frac{x-6}{2} = \frac{3(x-5)}{5}$

d) $\frac{3x-4}{5} = \frac{2}{5}$

$\frac{2x-7}{3(x+8)} = 8$

$\frac{6-x}{3} = \frac{3x+1}{-2}$