

Complex Cross Products

Proportions can also be written with fractions and mixed numbers. Using cross products to solve for missing numbers works the same way as with whole numbers.

Algebra

Find the missing number in the proportion

$$\frac{x}{4} = \frac{\frac{2}{5}}{\frac{1}{8}}$$

Find the cross products.

$$x \times \frac{1}{8} = 4 \times \frac{2}{5}$$

Multiply each side.

$$\frac{x}{8} = \frac{8}{5}$$

Multiply by the reciprocal.

$$8 \times \frac{x}{8} = \frac{8}{5} \times 8$$

Simplify.

$$x = \frac{64}{5} \text{ or } 12\frac{4}{5}$$

Find the missing number in each proportion.

1. $\frac{\frac{1}{2}}{\frac{3}{4}} = \frac{j}{24}$

$j =$ _____

2. $\frac{\frac{1}{4}}{\frac{1}{6}} = \frac{18}{t}$

$t =$ _____

3. $\frac{\frac{1}{3}}{14} = \frac{r}{36}$

$r =$ _____

4. $\frac{\frac{5}{6}}{x} = \frac{18}{72}$

$x =$ _____

5. $\frac{p}{12} = \frac{(5\frac{1}{2})}{(27\frac{1}{2})}$

$p =$ _____

6. $\frac{\frac{1}{3}}{\frac{1}{4}} = \frac{m}{48}$

$m =$ _____

7. $\frac{\frac{2}{5}}{\frac{5}{8}} = \frac{24}{b}$

$b =$ _____

8. $\frac{a}{60} = \frac{\frac{1}{2}}{\frac{9}{10}}$

$a =$ _____

9. $\frac{8}{w} = \frac{\frac{11}{12}}{(1\frac{1}{2})}$

$w =$ _____

10. $\frac{\frac{8}{9}}{\frac{6}{7}} = \frac{56}{y}$

$y =$ _____