

Ratios and Proportions 7.1



Overview of Problems

Example Set: A

Write the ratio in the simplest form:

1. $\frac{14}{16}$

2. $\frac{3x}{12x}$

3. $\frac{4xy^2}{8x^2y}$

4. $\frac{30}{50}$

5. $\frac{6n^2}{3n}$

6. $\frac{2x+2}{-5(x+1)}$

Solve the proportions:

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

2. $\frac{6}{5} = \frac{12}{y}$

3. $\frac{x+1}{2} = 4$

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Example Set: B

Find the value of x :

1. $\frac{3x}{10} = \frac{2}{7}$

2. $\frac{2x-1}{4x+3} = \frac{2}{3}$

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

4. $\frac{x}{x+5} = \frac{x-4}{x}$

5. $\frac{x-2}{x+1} = \frac{x+4}{x+2}$

Example Set: C

Show that the given proportions are equivalent:

1. $\frac{a+b}{b} = \frac{c+d}{d}$ and $\frac{a}{b} = \frac{c}{d}$

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Example Set: A -ANSWER KEY

Write the ratio in the simplest form:

$$1. \frac{14}{16} = \frac{7}{8}$$

$$2. \frac{3x}{12x} = \frac{1}{4}$$

$$3. \frac{4xy^2}{8x^2y} = \frac{y}{2x}$$

$$4. \frac{30}{50} = \frac{3}{5}$$

$$5. \frac{6n^2}{3n} = 2n$$

$$6. \frac{2x+2}{-5(x+1)} = -\frac{2}{5}$$

Solve the proportions:

$$1. \frac{x}{3} = \frac{12}{4} \quad x = 9$$

$$2. \frac{6}{5} = \frac{12}{y} \quad y = 10$$

$$3. \frac{x+1}{2} = 4 \quad x = 7$$

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Example Set: B- ANSWER KEY

Find the value of x :

$$1. \frac{3x}{10} = \frac{2}{7} \quad x = \frac{20}{21}$$

$$2. \frac{2x-1}{4x+3} = \frac{2}{3} \quad x = -\frac{9}{2}$$

$$3. \frac{x+3}{2} = \frac{x-3}{5} \quad x = -7$$

$$4. \frac{x}{x+5} = \frac{x-4}{x} \quad x = 20$$

$$5. \frac{x-2}{x+1} = \frac{x+4}{x+2} \quad x = -\frac{8}{5}$$

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Example Set: C-ANSWER KEY

Show that the given proportions are equivalent:

1. $\frac{a+b}{b} = \frac{c+d}{d}$ and $\frac{a}{b} = \frac{c}{d}$

$$\frac{a+b}{b} = \frac{c+d}{d}$$

$$d(a+b) = b(c+d)$$

$$da + db = bc + db$$

$$\begin{array}{r} da + db = bc + db \\ \hline -db \qquad -db \\ \hline da = bc \end{array}$$

$$\frac{da}{b} = \frac{bc}{b}$$

$$\frac{da}{b} = c$$

$$\frac{1}{d} \cdot \frac{da}{b} = c \cdot \frac{1}{d}$$

$$\frac{a}{b} = \frac{c}{d}$$