

Solving Equations with Variables on Both Sides

$$\begin{array}{r}
 1. \quad -5r + 17 = r \\
 \quad +5r \quad \quad +5r \\
 \quad \quad \quad \frac{17}{6} = \frac{6r}{6} \\
 \quad \quad \quad \frac{17}{6} = r
 \end{array}$$

$$\begin{array}{r}
 3. \quad -4 + 5w = -3(7 + w) \\
 \quad -4 + 5w = -21 - 3w \\
 \quad \quad +3w \quad \quad +3w \\
 \quad -4 + 8w = -21 \\
 \quad +4 \quad \quad +4 \\
 \quad \quad \quad \frac{8w}{8} = \frac{-17}{8} \\
 \quad \quad \quad w = \frac{17}{8}
 \end{array}$$

$$\begin{array}{r}
 2. \quad 10y - 20 = 10(y - 2) \\
 \quad 10y - 20 = 10y - 20 \\
 \quad \quad -10y \quad \quad -10y \\
 \quad \quad \quad -20 = -20
 \end{array}$$

All Real Numbers

$$\begin{array}{r}
 4. \quad -4x + 11 - 30x = \frac{1}{3}(-15x + 681) \\
 \quad -34x + 11 = -5x + 227 \\
 \quad \quad +34x \quad \quad +34x \\
 \quad \quad \quad 11 = 29x + 227 \\
 \quad \quad \quad \quad -227 \quad \quad -227 \\
 \quad \quad \quad \quad \quad -216 = 29x \\
 \quad \quad \quad \quad \quad \quad 29 \quad \quad 29 \\
 \quad \quad \quad \quad \quad \quad \quad -\frac{216}{29} = x
 \end{array}$$

Older Stuff

1. What is 18% of 10000?

$$10000 \bullet \frac{18}{100} = \frac{x}{10000} \bullet 10000$$

$$\mathbf{1800 = x}$$

2. Convert 25 mph to feet/sec

$$\frac{25 \text{ mi}}{1 \text{ hr}} \bullet \frac{5280 \text{ ft}}{1 \text{ mi}} \bullet \frac{1 \text{ hr}}{60 \text{ min}} \bullet \frac{1 \text{ min}}{60 \text{ sec}} = \mathbf{36.67 \frac{\text{ft}}{\text{sec}}}$$

3. 4158 is what percent of 18900?

$$100 \bullet \frac{4158}{18900} = \frac{x}{100} \bullet 100$$

$$\mathbf{22\% = x}$$

4. Convert 30 mph to m/sec

$$\frac{30 \text{ mi}}{1 \text{ hr}} \bullet \frac{5280 \text{ ft}}{1 \text{ mi}} \bullet \frac{0.3048 \text{ m}}{1 \text{ ft}} \bullet \frac{1 \text{ hr}}{60 \text{ min}} \bullet \frac{1 \text{ min}}{60 \text{ sec}} = \mathbf{13.4112 \frac{\text{m}}{\text{sec}}}$$

5. 172900 is 95% of what number?

$$\frac{172900}{x} = \frac{95}{100}$$

$$172900 \bullet \frac{x}{172900} = \frac{100}{95} \bullet 172900$$

$$\mathbf{x = 182,000}$$

6. Mr. Fisch can run the 40 (yards) in 4.4 seconds. What would that be in miles per hour?

$$\frac{40 \text{ yards}}{4.4 \text{ sec}} \bullet \frac{3 \text{ ft}}{1 \text{ yd}} \bullet \frac{1 \text{ mi}}{5280 \text{ ft}} \bullet \frac{60 \text{ sec}}{1 \text{ min}} \bullet \frac{60 \text{ min}}{1 \text{ hr}} = \mathbf{18.595 \frac{\text{mi}}{\text{hr}}}$$