

Solving Equations with Variables on Both Sides

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

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

$$\begin{aligned}
 2. \quad 10y - 20 &= 10(y - 2) \\
 10y - 20 &= 10y - 20 \\
 \frac{-10y}{-20} &= \frac{-10y}{-20} \\
 -20 &= -20
 \end{aligned}$$

All Real Numbers

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

Older Stuff

1. What is 18% of 10000?

$$\begin{aligned}
 10000 \bullet \frac{18}{100} &= \frac{x}{10000} \bullet 10000 \\
 1800 &= x
 \end{aligned}$$

2. Convert 25 mph to feet/sec

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

3. 4158 is what percent of 18900?

$$\begin{aligned}
 100 \bullet \frac{4158}{18900} &= \frac{x}{100} \bullet 100 \\
 22\% &= x
 \end{aligned}$$

4. Convert 30 mph to m/sec

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

5. 172900 is 95% of what number?

$$\begin{aligned}
 \frac{172900}{x} &= \frac{95}{100} \\
 172900 \bullet \frac{x}{172900} &= \frac{100}{95} \bullet 172900 \\
 x &= 182,000
 \end{aligned}$$

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

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