

# Showing work for solving Algebra problems

Be neat & organized  
 Always do the opposite of what is normally being done to the variable

3.1  
 Solving by + or -

$$\begin{array}{r} g - 27 = 148 \\ + 27 \quad + 27 \\ \hline g = 175 \end{array}$$

always keep = lined up

$$\begin{array}{r} j + 8.7 = 11.9 \\ - 8.7 \quad - 8.7 \\ \hline j = 3.2 \end{array}$$

problems that originally have decimals should use decimals in the answer (if needed)

$$\begin{array}{r} y + \frac{2}{3} = \frac{7}{9} \\ - \frac{2}{3} \quad - \frac{2}{3} \\ \hline y = \frac{1}{9} \end{array}$$

Use fractions (improper) for answers if needed

3.3  
 Two-step problems

$$\begin{array}{r} 9 - c = -13 \\ - 9 \quad - 9 \\ \hline -c = -22 \\ \frac{-c}{-1} = \frac{-22}{-1} \\ c = 22 \end{array}$$

$$\begin{array}{r} 4y + 3 = 13 \\ - 3 \quad - 3 \\ \hline 4y = 10 \\ \frac{4y}{4} = \frac{10}{4} \\ y = \frac{5}{2} \end{array}$$

show division using a fraction bar

$$\begin{array}{r} 10 = \frac{x}{4} + 5 \\ - 5 \quad - 5 \\ \hline 5 = \frac{x}{4} \\ 4(5) = 4\left(\frac{x}{4}\right) \\ 20 = x \end{array}$$

show multiplication using ( )

3.2  
 Solving by x

$$\begin{array}{r} 7x = 56 \\ \frac{7x}{7} = \frac{56}{7} \\ x = 8 \end{array}$$

$$\begin{array}{r} \frac{2x}{3} = \frac{3}{4} \\ \frac{3}{2} \left( \frac{2x}{3} \right) = \left( \frac{3}{4} \right) \frac{3}{2} \\ x = \frac{9}{8} \end{array}$$

instead of multiplying, dividing by 2/3 to solve, multiply by the reciprocal

$$\begin{array}{r} \frac{p}{111} = -10 \\ \frac{p}{111} = -10 \\ p = -1110 \end{array}$$

3.4  
 Variable on both sides

$$\begin{array}{r} 5h - 7 = 2h + 2 \\ - 2h \quad - 2h \\ \hline 3h - 7 = 2 \\ + 7 \quad + 7 \\ \hline 3h = 9 \\ \frac{3h}{3} = \frac{9}{3} \\ h = 3 \end{array}$$

3.5  
 "Simplify before you solve"

$$\begin{array}{r} 3 - 2(y - 1) = 2 + 3y + y \\ 3 - 2y + 2 = 2 + 4y \\ 5 - 2y = 2 + 4y \\ + 2y \quad + 2y \\ \hline 5 = 2 + 6y \\ - 2 \quad - 2 \\ \hline 3 = 6y \\ \frac{3}{6} = \frac{6y}{6} \\ \frac{1}{2} = y \end{array}$$

simplify  
 solve

3.6  
 Solving literal equations

Solve  $2a + 2b = c$  for  $b$

Normally done to  $b$   
 Complete Opposite to Solve

$$\begin{array}{r} 2a + 2b = c \\ - 2a \quad - 2a \\ \hline 2b = c - 2a \\ \frac{2b}{2} = \frac{c - 2a}{2} \\ b = \frac{c - 2a}{2} \end{array}$$

$\times 2$   
 $+ 2a$   
 $- 2a$   
 $\div 2$

$$\frac{3}{6} = \frac{6y}{6}$$

$$\frac{1}{2} = y$$