

Name: Key

Difficulty?: (easy) 1 2 3 4 5 6 7 8 9 10 (hard)

After completing the worksheet, check your solutions against the solutions given on my website

Algebra Worksheet 1

Solve the following equations for the unknown value. Remember the golden rule of algebra: Do the same thing to both sides of the equation! Please show your intermediate steps and align your equals signs vertically. Your solution should have a V shape to it.

$$\begin{array}{r} \text{a) } a + 5 = 8 \\ -5 \quad -5 \\ \hline a = 3 \end{array}$$

$$\begin{array}{r} \text{e) } 6 - e = -1 \\ -6 \quad -6 \\ \hline -e = -7 \\ -1e = -7 \\ \div(-1) \quad \div(-1) \\ \hline e = 7 \end{array}$$

$$\begin{array}{r} \text{i) } 8 - 3i = 9 \\ -8 \quad -8 \\ \hline -3i = 1 \\ \div -3 \quad \div -3 \\ \hline i = -\frac{1}{3} \end{array}$$

$$\begin{array}{r} \text{b) } b + 3 = 5 \\ -3 \quad -3 \\ \hline b = 2 \end{array}$$

$$\begin{array}{r} \text{f) } 7 + f = 4 \\ -7 \quad -7 \\ \hline f = -3 \end{array}$$

$$\begin{array}{r} \text{j) } 10 + 5j = -5 \\ -10 \quad -10 \\ \hline 5j = -15 \\ \div 5 \quad \div 5 \\ \hline j = -3 \end{array}$$

$$\begin{array}{r} \text{c) } c + 6 = -4 \\ -6 \quad -6 \\ \hline c = -10 \end{array}$$

$$\begin{array}{r} \text{g) } 9 - g = -7 \\ -9 \quad -9 \\ \hline -g = -16 \\ \div -1 \quad \div -1 \\ \hline g = 16 \end{array}$$

$$\begin{array}{r} \text{k) } 6k + 3 = -9 \\ -3 \quad -3 \\ \hline 6k = -12 \\ \div 6 \quad \div 6 \\ \hline k = -2 \end{array}$$

$$\begin{array}{r} \text{d) } d - 5 = 3 \\ +5 \quad +5 \\ \hline d = 8 \end{array}$$

$$\begin{array}{r} \text{h) } 2h + 3 = -5 \\ -3 \quad -3 \\ \hline 2h = -8 \\ \div 2 \quad \div 2 \\ \hline h = -4 \end{array}$$

$$\begin{array}{r} \text{l) } 2l = 1 + 5 \\ -1 \quad -1 \\ \hline l = 5 \end{array}$$

$$\begin{aligned}
 \text{m) } 3m &= m - 4 \\
 -m & -m \\
 2m &= -4 \\
 \div 2 & \div 2 \\
 m &= -2
 \end{aligned}$$

$$\begin{aligned}
 \text{q) } 8q + 1 &= 6q + 9 \\
 -6q & -1 \quad -6q \quad -1 \\
 2q &= 8 \\
 \div 2 & \div 2 \\
 \boxed{q = 4}
 \end{aligned}$$

$$\begin{aligned}
 \text{u) } -4 + 2u &= 3u - 8 \\
 +8 & -2u \quad -2u \quad +8 \\
 \boxed{4 = 4}
 \end{aligned}$$

$$\begin{aligned}
 \text{n) } n + 5 &= 3n - 4 \\
 -n & -n \\
 5 &= 2n - 4 \\
 +4 & +4 \\
 9 &= 2n \\
 \div 2 & \div 2
 \end{aligned}$$

$$\begin{aligned}
 \text{r) } 3r + 6 &= 5r - 7 \\
 -3r & +7 \quad -3r \quad +7 \\
 13 &= 2r \\
 \div 2 & \div 2 \\
 \boxed{\frac{13}{2} = r}
 \end{aligned}$$

$$\begin{aligned}
 \text{v) } 2(v + 3) &= 4v + 3 \\
 2v + 6 &= 4v + 3 \\
 -2v & -3 \quad -2v \quad -3 \\
 3 &= 2v \\
 \div 2 & \div 2 \\
 \boxed{\frac{3}{2} = v}
 \end{aligned}$$

$$\begin{aligned}
 \text{o) } 0 - 6 &= 5o + 8 \\
 +6 & +6 \\
 -6 &= 5o + 8 \\
 -8 & -8 \\
 -14 &= 5o \\
 \div 5 & \div 5 \\
 \boxed{-\frac{14}{5} = o}
 \end{aligned}$$

$$\begin{aligned}
 \text{s) } 8 - 3s &= -3 + 4s \\
 +3 & +3s \quad +3 \quad +3s \\
 11 &= 7s \\
 \div 7 & \div 7 \\
 \boxed{\frac{11}{7} = s}
 \end{aligned}$$

$$\begin{aligned}
 \text{w) } -2(v + 1) &= 3v + 5 \\
 -2v - 2 &= 3v + 5 \\
 +2v & -5 \quad +2v \quad -5 \\
 -7 &= 5v \\
 \div 5 & \div 5 \\
 \boxed{-\frac{7}{5} = v}
 \end{aligned}$$

$$\begin{aligned}
 \text{p) } 10 - 2p &= 3 + 2p \\
 -3 & +2p \quad -3 \quad +2p \\
 7 &= 4p \\
 \div 4 & \div 4 \\
 \boxed{\frac{7}{4} = p}
 \end{aligned}$$

$$\begin{aligned}
 \text{t) } 4 + 2t &= 10 - 3t \\
 -4 & +3t \quad -4 \quad +3t \\
 5t &= 6 \\
 \div 5 & \div 5 \\
 \boxed{t = \frac{6}{5}}
 \end{aligned}$$

$$\begin{aligned}
 \text{x) } 4(3 - x) &= 3 + x \\
 12 - 4x &= 3 + x \\
 -3 & +4x \quad -3 \quad +4x \\
 9 &= 5x \\
 \boxed{\frac{9}{5} = x}
 \end{aligned}$$