

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

half checks done.

### Algebra Worksheet 3

Solve for the unknown value in each equation below. Perform a check in the empty space.

a)  $2(a + 1) = 5$

$$2a + 2 = 5$$

$$2a = 3$$

$$\boxed{a = \frac{3}{2}}$$

$$\begin{array}{l} \text{L} \\ 2\left(\frac{3}{2} + 1\right) \end{array} \quad \begin{array}{l} \text{R} \\ 5 \end{array}$$

$$2\left(\frac{5}{2}\right)$$

$$5 \quad \checkmark$$

d)  $4(5 - d) = 2d + 1$

$$20 - 4d = 2d + 1$$

$$19 = 6d$$

$$\boxed{\frac{19}{6} = d}$$

$$\begin{array}{l} \text{L} \\ 4\left(5 - \frac{19}{6}\right) \\ 4\left(\frac{30}{6} - \frac{19}{6}\right) \\ 4\left(\frac{11}{6}\right) \\ \frac{44}{6} \end{array} \quad \begin{array}{l} \text{R} \\ 2\left(\frac{11}{6}\right) + 1 \\ \frac{38}{6} + \frac{6}{6} \\ \frac{44}{6} \end{array} \quad \checkmark$$

b)  $3(2 - b) = 4$

$$6 - 3b = 4$$

$$-3b = -2$$

$$\boxed{b = \frac{2}{3}}$$

$$\begin{array}{l} \text{L} \\ 3\left(2 - \frac{2}{3}\right) \end{array} \quad \begin{array}{l} \text{R} \\ 4 \end{array}$$

$$3\left(\frac{6}{3} - \frac{2}{3}\right)$$

$$3\left(\frac{4}{3}\right)$$

$$4 \quad \checkmark$$

e)  $3(e + 2) = 4(e - 1)$

$$3e + 6 = 4e - 4$$

$$\boxed{10 = e}$$

$$\begin{array}{l} \text{L} \\ 3(10 + 2) \\ 3(12) \\ 36 \end{array} \quad \begin{array}{l} \text{R} \\ 4(10 - 1) \\ 4(9) \\ 36 \end{array} \quad \checkmark$$

c)  $2(2 + c) = 3c$

$$4 + 2c = 3c$$

$$\boxed{4 = c}$$

$$\begin{array}{l} \text{L} \\ 2(2 + 4) \end{array} \quad \begin{array}{l} \text{R} \\ 3(4) \end{array}$$

$$2(6)$$

$$12 \quad \checkmark$$

f)  $-2(f - 1) = 2(f + 3)$

$$-2f + 2 = 2f + 6$$

$$-4 = 4f$$

$$\boxed{-1 = f}$$

$$-2(-1 - 1) = 2(-1 + 3)$$

$$-2(-2) = 2(-2)$$

$\checkmark$

g)  $3g - 4 = 4(2 - g)$     L  $3\left(\frac{12}{7}\right) - 4$     R  $4\left(2 - \frac{12}{7}\right)$     j)  $-3(j - 1) = 2j - 5$

$3g - 4 = 8 - 4g$      $\frac{36}{7} - 4$      $4\left(\frac{14}{7} - \frac{12}{7}\right)$      $-3j + 3 = 2j - 5$

$7g - 4 = 8$      $\frac{36}{7} - \frac{28}{7}$      $4\left(\frac{2}{7}\right)$      $3 = 5j - 5$

$7g = 12$      $\frac{8}{7} - \frac{28}{7}$      $8 = 5j$     L  $-3\left(\frac{8}{5} - 1\right)$     R  $2\left(\frac{8}{5}\right) - 5$

$\boxed{g = \frac{12}{7}}$      $\frac{8}{7} \checkmark \frac{8}{7}$      $\boxed{\frac{8}{5} = j}$      $-3\left(\frac{8}{5} - \frac{5}{5}\right)$      $\frac{16}{5} - \frac{25}{5}$

$-3\left(\frac{3}{5}\right)$      $-\frac{9}{5}$      $\checkmark \frac{9}{5}$

h)  $2h + 3 = 5 - 2(h + 2)$

$2h + 3 = 5 - 2h - 4$

$2h + 3 = 1 - 2h$

$4h + 3 = 1$

$4h = -2$

$\boxed{h = -\frac{1}{2}}$

L  $2\left(-\frac{1}{2}\right) + 3$     R  $5 - 2\left(-\frac{1}{2} + 2\right)$

$-1 + 3$      $5 - 2\left(-\frac{1}{2} + \frac{4}{2}\right)$

$2$      $5 - 2\left(\frac{3}{2}\right)$

$\checkmark \frac{5-3}{2}$

k)  $3k - 4 = 2(k + 1) + 4$

$3k - 4 = 2k + 2 + 4$

$k - 4 = 2 + 4$

$k = 6 + 4$

$\boxed{k = 10}$

L  $3(10) - 4$     R  $2(10 + 1) + 4$

$30 - 4$      $2(11) + 4$

$26$      $22 + 4$

$\checkmark 26$

i)  $i - 1 = 3(i + 6)$

~~$i - 1 = 3i + 18$~~

$i - 1 = 3i + 18$

$i - 14 = 3i$

$-14 = 2i$

$\boxed{-\frac{14}{2} = i}$

L  $-\frac{14}{2} - 1$

$-\frac{14}{2} - \frac{2}{2}$

$-\frac{21}{2}$

R  $3\left(-\frac{14}{2} + 6\right)$

$3\left(-\frac{14}{2} + \frac{12}{2}\right)$

$3\left(-\frac{2}{2}\right)$

$-\frac{21}{2}$

$\checkmark$

l)  $-2l + 6 = -4(2 - l)$

$-2l + 6 = -8 + 4l$

$6 = -8 + 6l$

$14 = 6l$

$\boxed{\frac{14}{3} = l}$

L  $-2\left(\frac{14}{3}\right) + 6$

$-\frac{14}{3} + \frac{18}{3}$

$\frac{4}{3}$

R  $-4\left(2 - \frac{14}{3}\right)$

$-4\left(\frac{6}{3} - \frac{14}{3}\right)$

$-4\left(-\frac{8}{3}\right)$

$\frac{4}{3}$

$\checkmark$

$$m) 3m - \frac{1}{2} = 2(m+1)$$

$$3m - \frac{1}{2} = 2m + 2$$

$$m - \frac{1}{2} = 2$$

$$\boxed{m = 2\frac{1}{2} = \frac{5}{2}}$$

$$L \quad 3\left(\frac{5}{2}\right) - \frac{1}{2} \quad R \quad 2\left(\frac{5}{2} + 1\right)$$

$$\frac{15}{2} - \frac{1}{2} \quad 2\left(\frac{5}{2} + \frac{2}{2}\right)$$

$$\frac{14}{2} \quad 2\left(\frac{7}{2}\right)$$

$$7 \quad \checkmark \quad 7$$

$$n) -2n + \frac{2}{3} = -3(3-n)$$

$$-2n + \frac{2}{3} = -9 + 3n$$

$$\frac{2}{3} = -9 + 5n$$

$$9\frac{2}{3} = 5n$$

$$\frac{29}{3} = 5n$$

$$\boxed{\frac{29}{15} = n}$$

$$o) 3 - 2o = \frac{3}{5} + o$$

$$3 = \frac{3}{5} + 3o$$

$$3 - \frac{3}{5} = 3o$$

$$\frac{15}{5} - \frac{3}{5} = 3o$$

$$\frac{12}{5} = 3o$$

$$\boxed{\frac{4}{5} = o}$$

$$p) 2\left(\frac{1}{3} + 2p\right) = 3p + 2$$

$$\frac{2}{3} + 4p = 3p + 2$$

$$\frac{2}{3} + p = 2$$

$$p = 2 - \frac{2}{3}$$

$$\boxed{p = \frac{4}{3}}$$

$$q) \frac{2}{3} - 3q = 2(q + \frac{1}{3})$$

$$\frac{2}{3} - 3q = 2q + \frac{2}{3}$$

$$\frac{2}{3} = 5q + \frac{2}{3}$$

$$\frac{2}{3} - \frac{2}{3} = 5q$$

$$\frac{6}{15} - \frac{10}{15} = 5q$$

$$-\frac{4}{15} = 5q$$

$$\boxed{-\frac{4}{75} = q}$$

$$r) 4r - 5 = \frac{2}{3} - 2r$$

$$6r - 5 = \frac{2}{3}$$

$$6r = 5\frac{2}{3}$$

$$6r = \frac{17}{3}$$

$$\boxed{r = \frac{17}{18}}$$

$$s) -2(s - \frac{1}{2}) = 3s - 4$$

$$-2s + 1 = 3s - 4$$

$$1 = 5s - 4$$

$$5 = 5s$$

$$\boxed{1 = s}$$

$$t) 3t - \frac{4}{5} = -2t + 1$$

$$5t - \frac{4}{5} = 1$$

$$5t = 1 \frac{4}{5}$$

$$5t = \frac{9}{5}$$

$$\boxed{t = \frac{9}{25}}$$

$$u) -2u - 2 = u + 1$$

$$-2 = 3u + 1$$

$$-3 = 3u$$

$$\boxed{-1 = u}$$

$$v) \frac{2}{3}v + 1 = -2(v + 3)$$

$$\frac{2}{3}v + 1 = -2v - 6$$

$$2\frac{2}{3}v + 1 = -6$$

$$2\frac{2}{3}v = -7$$

$$\frac{8}{3}v = -7$$

$$8v = -21$$

$$\boxed{v = \frac{-21}{8}}$$

$$w) -\frac{1}{4}w - 3 = \frac{1}{5}(2w + 4)$$

$$-\frac{1}{4}w - 3 = \frac{2}{5}w + \frac{4}{5}$$

$$-5w - 60 = 8w + 16$$

$$-60 = 13w + 16$$

$$-76 = 13w$$

$$\boxed{\frac{-76}{13} = w}$$

$$x) -3(x + 1) = \frac{2}{5}x - 2$$

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

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

$$-1 = 3\frac{2}{5}x$$

$$-1 = \frac{17}{5}x$$

$$-5 = 17x$$

$$\boxed{\frac{-5}{17} = x}$$