

Homework 2.3

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Solve each equation.

1) $38 + 2n = 6(3n + 1)$

$$\begin{array}{r} 38 + 2n = 18n + 6 \\ -2n \quad -2n \\ \hline 38 = 16n + 6 \\ -6 \quad -6 \\ \hline 32 = 16n \end{array}$$

$$\begin{array}{r} 32 = 16n \\ 16 \quad 16 \\ \hline 2 = n \end{array}$$

2) $-2b + 2(3b + 3) = -18 + b$

$$\begin{array}{r} -2b + 6b + 6 = -18 + b \\ 4b + 6 = -18 + b \\ -b \quad -b \\ \hline 3b + 6 = -18 \end{array}$$

$$\begin{array}{r} 3b + 6 = -18 \\ -6 \quad -6 \\ \hline 3b = -24 \\ 3 \quad 3 \\ \hline b = -8 \end{array}$$

3) $5x - 24 = -2(-4x - 8) + 5x$

$$\begin{array}{r} 5x - 24 = 8x + 16 + 5x \\ 5x - 24 = 13x + 16 \\ -5x \quad -5x \\ \hline -24 = 8x + 16 \\ -16 \quad -16 \\ \hline -40 = 8x \\ 8 \quad 8 \\ \hline -5 = x \end{array}$$

4) $-2(7m + 1) = -6(3m - 5)$

$$\begin{array}{r} -14m - 2 = -18m + 30 \\ +18m \quad +18m \\ \hline 4m - 2 = 30 \\ +2 \quad +2 \\ \hline 4m = 32 \end{array}$$

$$\begin{array}{r} 4m = 32 \\ 4 \quad 4 \\ \hline m = 8 \end{array}$$

5) $v - 4(v + 4) = 4v - 8(2 - 8v)$

$$\begin{array}{r} v - 4v - 16 = 4v - 16 + 64v \\ -3v - 16 = 68v - 16 \\ +3v \quad +3v \\ \hline -16 = 71v - 16 \\ +16 \quad +16 \\ \hline 0 = 71v \\ 0 = v \end{array}$$

6) $8(6 + 4x) = 4(6x + 4)$

$$\begin{array}{r} 48 + 32x = 24x + 16 \\ -24x \quad -24x \\ \hline 48 + 8x = 16 \\ -48 \quad -48 \\ \hline 8x = -32 \\ 8 \quad 8 \\ \hline x = -4 \end{array}$$

Solve each proportion.

7) $\frac{(-p-10)}{2} = (p-1)2$

$$\begin{array}{r} -p - 10 = 2(-p - 1) \\ -p - 10 = -2p - 2 \\ +2p \quad +2p \\ \hline p - 10 = -2 \\ +10 \quad +10 \\ \hline p = 8 \end{array}$$

9) $\frac{(8k-2)}{5} = (2k-1)5$

$$\begin{array}{r} 8k - 2 = 5(2k - 1) \\ 8k - 2 = 10k - 5 \\ -8k \quad -8k \\ \hline -2 = 2k - 5 \end{array}$$

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

$$\frac{3}{2} = \frac{2k}{2}$$

$$\frac{3}{2} = k$$

8) $\frac{(3a+4)}{3} = \frac{(2a-16)}{3}$

$$\begin{array}{r} 3(3a + 4) = 2a - 16 \\ 9a + 12 = 2a - 16 \\ -2a \quad -2a \\ \hline 7a + 12 = -16 \\ -12 \quad -12 \\ \hline 7a = -28 \end{array}$$

$$\frac{7a}{7} = \frac{-28}{7}$$

$$a = -4$$

Solve each equation.

10) $-2.1m + 3.5(4.3m - 0.6) = -27.4764 + 5m$

$$-2.1m + 15.05m - 2.1 = -27.4764 + 5m$$

$$12.95m - 2.1 = -27.4764 + 5m$$

$$\begin{array}{r} -5m \\ \hline 7.95m - 2.1 = -27.4764 \end{array}$$

$$\begin{array}{r} +2.1 \quad +2.1 \\ \hline 7.95m = -25.3764 \end{array}$$

$$7.95m = -25.3764$$

11) $-13.964 + 0.4n = -5.9(2 + 3.6n)$

$$-13.964 + 0.4n = -11.8 - 21.24n$$

$$\begin{array}{r} +21.24n \\ \hline -13.964 + 21.64n = -11.8 \end{array}$$

$$-13.964 + 21.64n = -11.8$$

$$\begin{array}{r} +13.964 \quad +13.964 \\ \hline 21.64n = 2.164 \end{array}$$

$$21.64n = 2.164$$

$$\begin{array}{r} 21.64 \quad 21.64 \\ \hline n = 0.1 \end{array}$$

$$n = 0.1$$

12) $-4.944 - 0.3x = -5.9x - 3.2(1.8 - 1.9x)$

$$-4.944 - 0.3x = -5.9x - 5.76 + 6.08x$$

$$-4.944 - 0.3x = +0.18x - 5.76$$

$$\begin{array}{r} +0.3x \quad +0.3x \\ \hline -4.944 = 0.48x - 5.76 \end{array}$$

$$-4.944 = 0.48x - 5.76$$

$$-4.944 = 0.48x - 5.76$$

$$\begin{array}{r} +5.76 \quad +5.76 \\ \hline 0.816 = 0.48x \end{array}$$

$$\begin{array}{r} 0.816 = 0.48x \\ 0.48 \quad 0.48 \\ \hline 1.7 = x \end{array}$$

$$1.7 = x$$

Find the mistake that was made when solving each equation. Explain why the work shown is incorrect. Solve each equation correctly.

13) $-84 = -6(4r - 2)$

$$-84 = -24r - 12$$

$$-72 = -24r$$

$$3 = r$$

$$-84 = -6(4r - 2)$$

$$-84 = -24r + 12$$

$$\begin{array}{r} -12 \quad -12 \\ \hline -96 = -24r \end{array}$$

$$\begin{array}{r} -96 = -24r \\ -24 \quad -24 \\ \hline 4 = r \end{array}$$

$$4 = r$$

-6 times
-2 is a
+12

14) $2 - 4(1 + 3n) = 70$

$$2 - 4 - 12n = 70$$

$$6 - 12n = 70$$

$$-12n = 64$$

$$n = -\frac{16}{3}$$

$$2 - 4(1 + 3n) = 70$$

$$2 - 4 - 12n = 70$$

$$-2 - 12n = 70$$

$$\begin{array}{r} +2 \quad +2 \\ \hline -12n = 72 \end{array}$$

$$-12n = 72$$

$$\begin{array}{r} -12 \quad -12 \\ \hline n = -6 \end{array}$$

$$n = -6$$

2 - 4 = -2
not 6

15) $-5(-3 + 2x) = 65$

$$15 - 10x = 65$$

$$-10x = 50$$

$$x = -500$$

$$-5(-3 + 2x) = 65$$

$$15 - 10x = 65$$

$$\begin{array}{r} -15 \quad -15 \\ \hline -10x = 50 \end{array}$$

$$\begin{array}{r} -10x = 50 \\ -10 \quad -10 \\ \hline x = -5 \end{array}$$

$$x = -5$$

50 should
be divided
by -10