

## Homework 2.1

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Solve each equation.

$$1) -3(x-4) = -4 - x$$

$$\begin{array}{r} -3x + 12 = -4 - x \\ +3x \quad +3x \\ \hline 12 = -4 + 2x \\ +4 \quad +4 \\ \hline 16 = 2x \\ \frac{16}{2} = \frac{2x}{2} \\ 8 = x \end{array}$$

$$3) x-1 = -(x-4) + 5$$

$$\begin{array}{r} x-1 = -x+4+5 \\ x-1 = -x+9 \\ +x \quad +x \\ \hline 2x-1 = 9 \\ 2x-1 = 9 \\ +1 \quad +1 \\ \hline 2x = 10 \\ \frac{2x}{2} = \frac{10}{2} \\ x = 5 \end{array}$$

$$5) -4(k+7) + 16 = 3(k-4) + 4k$$

$$\begin{array}{r} -4k-28+16 = 3k-12+4k \\ -4k-12 = 7k-12 \\ +4k \quad +4k \\ \hline -12 = 11k-12 \\ +12 \quad +12 \\ \hline 0 = 11k \\ \frac{0}{11} = \frac{11k}{11} \\ 0 = k \end{array}$$

Solve each proportion.

$$7) \frac{m+2}{4} = \frac{-m+23}{4}$$

$$\begin{array}{r} 4(m+2) = -m+23 \\ 4m+8 = -m+23 \\ +m \quad +m \\ \hline 5m+8 = 23 \\ 5m+8 = 23 \\ -8 \quad -8 \\ \hline 5m = 15 \\ \frac{5m}{5} = \frac{15}{5} \\ m = 3 \end{array}$$

$$9) \frac{-n+19}{2} = \frac{n+2}{2}$$

$$\begin{array}{r} -n+19 = n+2 \\ -n+19 = n+2 \\ +n \quad +n \\ \hline 19 = 3n+2 \\ -2 \quad -2 \\ \hline 17 = 3n \\ \frac{17}{3} = \frac{3n}{3} \\ \frac{17}{3} = n \end{array}$$

$$2) 2(1-4a) = 7-7a$$

$$\begin{array}{r} 2-8a = 7-7a \\ +8a \quad +8a \\ \hline 2 = 7+a \\ -7 \quad -7 \\ \hline -5 = a \end{array}$$

$$4) 3(-7p-4) = 4(1-5p)$$

$$\begin{array}{r} -21p-12 = 4-20p \\ +21p \quad +21p \\ \hline -12 = 4+p \\ -12 = 4+p \\ -4 \quad -4 \\ \hline -16 = p \end{array}$$

$$6) 4(-6+x) = -6(-x+5) + 2$$

$$\begin{array}{r} -24+4x = 6x-30+2 \\ -24+4x = 6x-28 \\ -4x \quad -4x \\ \hline -24 = 2x-28 \\ +28 \quad +28 \\ \hline 4 = 2x \\ \frac{4}{2} = \frac{2x}{2} \\ 2 = x \end{array}$$

$$8) \frac{x-1}{7} = \frac{2x-17}{7}$$

$$\begin{array}{r} 7(x-1) = 2x-17 \\ 7x-7 = 2x-17 \\ -2x \quad -2x \\ \hline 5x-7 = -17 \\ +7 \quad +7 \\ \hline 5x = -10 \\ \frac{5x}{5} = \frac{-10}{5} \\ x = -2 \end{array}$$

Solve each equation.

10)  $4.5n - 1.00652 = 3.98n + 2.2(0.9n - 4)$

$$4.5n - 1.00652 = 3.98n + 1.98n - 8.8$$

$$4.5n - 1.00652 = 5.96n - 8.8$$

$$\begin{array}{r} -4.5n \quad -4.5n \\ \hline -1.00652 = 1.46n - 8.8 \\ +8.8 \quad +8.8 \\ \hline \end{array}$$

$$\begin{array}{r} 7.99348 = 1.46n \\ 1.46 \quad 1.46 \\ \hline \end{array}$$

$$5.338 = n$$

11)  $-2.7(1 - 2.1r) = -26.604 - 1.8r$

$$-2.7 + 5.67r = -26.604 - 1.8r$$

$$\begin{array}{r} -2.7 + 5.67r = -26.604 - 1.8r \\ +2.7 \quad +2.7 \\ \hline \end{array}$$

$$\begin{array}{r} 7.47r = -23.904 \\ 7.47 \quad 7.47 \\ \hline \end{array}$$

$$r = -3.2$$

12)  $-0.5(m + 1.5) = -1.41 + 0.6m$

$$\begin{array}{r} -0.5m - 0.75 = -1.41 + 0.6m \\ +0.5m \quad +0.5m \\ \hline \end{array}$$

$$\begin{array}{r} -0.75 = -1.41 + 1.1m \\ +1.41 \quad +1.41 \\ \hline \end{array}$$

$$\begin{array}{r} 0.66 = 1.1m \\ 1.1 \quad 1.1 \\ \hline \end{array}$$

$$\begin{array}{r} 0.66 = 1.1m \\ 1.1 \quad 1.1 \\ \hline \end{array}$$

$$0.6 = m$$

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

13)  $-72 = 6(x - 6) - 3x$

$$-72 = 6x - 36 - 3x$$

$$-72 = 3x - 36$$

$$-108 = 3x$$

$$-36 = x$$

$$-72 = 6(x - 6) - 3x$$

$$-72 = 6x - 36 - 3x$$

$$-72 = 3x - 36$$

$$\begin{array}{r} +36 \quad +36 \\ \hline \end{array}$$

$$\begin{array}{r} -36 = 3x \\ 3 \quad 3 \\ \hline \end{array}$$

$$-12 = x$$

Should have

Added 36

to both sides

14)  $4(5k + 6) = 5k - 6$

$$20k + 6 = 5k - 6$$

$$15k = -12$$

$$k = -\frac{4}{5}$$

$$4(5k + 6) = 5k - 6$$

$$20k + 24 = 5k - 6$$

$$\begin{array}{r} -5k \quad -5k \\ \hline \end{array}$$

$$15k + 24 = -6$$

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

$$\begin{array}{r} 15k = -30 \\ 15 \quad 15 \\ \hline \end{array}$$

$$k = -2$$

Should have

distributed the

4 to the 6 in

the 1st step.

15)  $4(6a + 3) = 120 + 18a$

$$24a + 12 = 120 + 18a$$

$$6a + 12 = 120$$

$$6a = 108$$

$$a = 18$$

$$4(6a + 3) = 120 + 18a$$

$$24a + 12 = 120 + 18a$$

$$\begin{array}{r} -18a \quad -18a \\ \hline \end{array}$$

$$6a + 12 = 120$$

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

$$\begin{array}{r} 6a = 108 \\ 6 \quad 6 \\ \hline \end{array}$$

$$a = 18$$

Should subtract

12 from both

sides