

## Mid-Unit Test Review

Date \_\_\_\_\_

Solve each equation.

$$1) 36 = -2 + 2r$$

$$\begin{array}{r} +2 \quad +2 \\ \hline 38 = 2r \\ \frac{38}{2} = \frac{2r}{2} \end{array}$$

$$19 = r$$

$$3) -9 - 6k = -4k + 6 - 5$$

$$\begin{array}{r} -9 - 6k = -4k + 6 - 5 \\ +6k \quad +6k \end{array}$$

$$-9 = 2k + 1$$

$$\begin{array}{r} -1 \\ \hline -10 = 2k \\ \frac{-10}{2} = \frac{2k}{2} \end{array}$$

$$-5 = k$$

$$5) \frac{a+2}{3} = \frac{a+1}{6}$$

$$\begin{array}{r} 3(a+1) = 6(a+2) \\ 3a+3 = 6a+12 \\ -3a \quad -3a \\ \hline 3 = 3a+12 \\ -12 \quad -12 \end{array}$$

$$\begin{array}{r} -9 = 3a \\ \frac{-9}{3} = \frac{3a}{3} \end{array}$$

$$-3 = a$$

Solve each equation.

$$7) 11 = \sqrt{\frac{n}{7}} + 10$$

$$\begin{array}{r} -10 \quad -10 \\ \hline 1 = \sqrt{\frac{n}{7}} \end{array}$$

$$(1)^2 = \left(\sqrt{\frac{n}{7}}\right)^2$$

$$7 \times 1 = \frac{n}{7} \times 7$$

$$7 = n$$

Solve each equation by taking square roots.

$$9) v^2 - 6 = 29$$

$$\begin{array}{r} +6 \quad +6 \\ \hline v^2 = 35 \end{array}$$

$$\sqrt{v^2} = \sqrt{35}$$

$$v = \sqrt{35}$$

Solve each equation and tell how many solutions it has.

$$11) 7 + 6a - 6a = 11$$

$$7 = 11$$

no solution

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

$$\begin{array}{r} +1 \quad +1 \\ \hline 2 = \frac{x}{8} \end{array}$$

$$8 \times 2 = \frac{x}{8} \times 8$$

$$16 = x$$

$$4) 8 = \frac{8+k}{8} \times 8$$

$$\begin{array}{r} 8 = 8 + k \\ -8 \quad -8 \end{array}$$

$$0 = k$$

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

$$\begin{array}{r} -3 + 10m - 10 = 16m + 28 - 5 \\ -10m \quad -10m \end{array}$$

$$10m - 13 = 16m + 23$$

$$\begin{array}{r} -10m \quad -10m \\ \hline -13 = 6m + 23 \end{array}$$

$$\begin{array}{r} -23 \quad -23 \\ \hline -36 = 6m \end{array}$$

$$\frac{-36}{6} = \frac{6m}{6}$$

$$-6 = m$$

$$8) -5 + \sqrt{3x+4} = -1$$

$$\begin{array}{r} +5 \quad +5 \\ \hline \sqrt{3x+4} = 4 \end{array}$$

$$(\sqrt{3x+4})^2 = (4)^2$$

$$3x+4 = 16$$

$$\begin{array}{r} -4 \quad -4 \\ \hline 3x = 12 \end{array}$$

$$\frac{3x}{3} = \frac{12}{3}$$

$$x = 4$$

$$10) 4b^2 = 116$$

$$\begin{array}{r} \frac{4b^2}{4} = \frac{116}{4} \\ b^2 = 29 \end{array}$$

$$\sqrt{b^2} = \sqrt{29}$$

$$b = \sqrt{29}$$

$$13) 2r + 6 - 2r = 6$$

$$6 = 6$$

infs

$$14) 1 + 2x - 2x = -1$$

$$1 = -1$$

no solution

$$15) \left( \frac{5x}{3} + 2x = 11 \right) \cdot 3$$

$$5x + 6x = 11$$

$$\frac{11x}{11} = \frac{11}{11}$$

$$x = 1$$

$$15.5) 2x = 5x$$

$$-2x \quad -2x$$

$$0 = 3x$$

$$0 = x$$

Write an equation to represent the word problem and then answer the question being asked.

16) John's Lawn Mowing Company charges a service charge of \$1.50 for the first square foot of lawn that is mowed and then \$0.75 for every additional square foot mowed. Write an equation to represent the price P of mowing a lawn that is x square feet, for any amount of square feet larger than or equal to 1 square foot.

$$P = 1.50 + 0.75(x - 1) = 1.50 + 0.75x - 0.75 = 0.75 + 0.75x$$

17) A plane flies 5,000 miles on 60 gallons of fuel. How many gallons will the plane need to travel only 3,000 miles?

$$\frac{5000 \text{ mi}}{60 \text{ gal}} = \frac{3000 \text{ mi}}{x \text{ gal}}$$

$$5000x = 3000(60)$$

$$5000x = 180000$$

$$\frac{5000x}{5000} = \frac{180000}{5000}$$

$$x = 36 \text{ gallons}$$

Justify the Steps of the Equation Solved Below

$$18) 2 - 4x = -4(1 - 8x) + 6$$

$$\textcircled{1} 2 - 4x = -4(1 - 8x) + 6$$

$$2 - 4x = -4 + 32x + 6$$

\textcircled{1} distributive property

$$\textcircled{2} 2 - 4x = -4 + 6 + 32x$$

\textcircled{2} commutative property

$$\textcircled{3} 2 - 4x = 2 + 32x$$

\textcircled{3} combine like terms

$$\textcircled{4} \begin{array}{r} 2 - 4x = 2 + 32x \\ +4x \quad \quad +4x \\ \hline 2 = 2 + 36x \end{array}$$

\textcircled{4} additive property

$$\textcircled{5} \begin{array}{r} 2 = 2 + 36x \\ -2 \quad -2 \\ \hline 0 = 36x \end{array}$$

\textcircled{5} additive property

$$\textcircled{6} \begin{array}{r} 0 = 36x \\ \hline 36 \quad 36 \end{array}$$

\textcircled{6} multiplicative property

$$x = 0$$