

## Chapter 3 Review

Name: Key

## Solving equations and word problems

Date: \_\_\_\_\_ Pd: \_\_\_\_\_

Solve each equation, show all steps, and circle your final answer.

1.  $\frac{3}{4}t - \frac{5}{6} = \frac{2}{3}t$

$$12 \left[ \frac{3}{4}t + \left(-\frac{5}{6}\right) \right] = \left[ \frac{2}{3}t \right] 12$$

$$\begin{array}{r} 9t + (-10) = 8t \\ +(-9t) \quad +(-9t) \end{array}$$

$$\begin{array}{r} -10 = -t \\ -1 \quad -1 \end{array}$$

$$\boxed{t = 10}$$

Check

$$\frac{15}{2} + \left(-\frac{5}{6}\right) = \frac{20}{3}$$

$$\frac{45}{6} + \left(-\frac{5}{6}\right) = \frac{20}{3}$$

$$\frac{40}{6} = \frac{20}{3} \checkmark$$

2.  $3(3y-1) = -3+6y$

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

$$9y+(-3) = 6y+(-3)$$

$$\begin{array}{r} +(-6y) \quad +3 \quad +(-6y) \quad +3 \end{array}$$

$$\frac{3y}{3} = \frac{0}{3}$$

$$\boxed{y = 0}$$

Check

$$3(-1) = -3 \checkmark$$

3.  $4-3(4m-5) = \frac{1}{2}(24m-10)$

$$4+(-3)(4m+(-5)) = \frac{1}{2}(24m+(-10))$$

$$4+(-12m)+15 = 12m+(-5)$$

$$-12m+19 = 12m+(-5)$$

$$\begin{array}{r} +12m \quad +5 \quad +12m \quad +5 \end{array}$$

$$\frac{24}{24} = \frac{24m}{24}$$

$$\boxed{m = 1}$$

Check

$$4-3(-1) = \frac{1}{2}(14)$$

$$4+3 = 7 \checkmark$$

4. Gary makes toy tables and chairs as a hobby. The cost of the materials to make a table and two chairs is \$45.50. He sells this set for \$120. Gary wants to buy a new table saw that costs \$1200. How many sets of tables and chairs must he sell to make enough money to buy the new table saw? (Do the 5 things!)

\$45.50 - Cost of materials  
for 1 set of a table +  
chairs

$$\left( \begin{array}{c} \text{Cost of} \\ \text{table saw} \end{array} \right) = \left( \begin{array}{c} \text{Profit from} \\ \text{selling sets} \end{array} \right)$$

\$120 - Selling price  
for each set

$$\left( \begin{array}{c} \text{Cost of} \\ \text{table saw} \end{array} \right) = \left( \begin{array}{c} \text{Selling} \\ \text{Price} \end{array} \right) \left( \begin{array}{c} \# \text{ of} \\ \text{sets} \end{array} \right) - \left( \begin{array}{c} \text{material} \\ \text{Cost} \end{array} \right) \left( \begin{array}{c} \# \text{ of} \\ \text{sets} \end{array} \right)$$

\$1200 - Cost of table saw

$$1200 = 120n - 45.5n$$

$n$  = # of sets to  
be sold

$$1200 = 120n + (-45.5n)$$

$$\frac{1200}{74.5} = \frac{74.5n}{74.5}$$

$$n \approx 16.1$$

Gary must sell 17 sets in order to make enough money to pay for the new table saw.

5. A gas station offers a discount card that costs \$75 a year, but gives you a \$0.25 discount per gallon of gas purchased. How many gallons of gas do you need to purchase to justify buying the discount card? (Do the 5 things!)

\$75 - Cost of  
discount card

\$0.25 - discount per gallon

$g$  = # of gallons  
purchased

Cost of discount card = Amount saved

$$\left( \begin{array}{c} \text{Cost of} \\ \text{card} \end{array} \right) = \left( \begin{array}{c} \text{Discount} \\ \text{per} \\ \text{gallon} \end{array} \right) \left( \begin{array}{c} \# \text{ of} \\ \text{gallons} \end{array} \right)$$

$$\frac{75}{.25} = \frac{.25g}{.25}$$

$$g = 300$$

You will need to purchase 300 gallons to justify buying the discount card.