

Name: Homework  
Date: \_\_\_\_\_

Isolating Variables  
Gr. 10 Review

1. For each equation, gather all the like terms and solve for 'x'

a)  $3x = 36$

$$\frac{3x}{3} = \frac{36}{3}$$

$$x = 12$$

b)  $-2x = 18$

$$\frac{-2x}{-2} = \frac{18}{-2}$$

$$x = -9$$

c)  $4x + 12 = 72$

$$-12 \quad -12$$

$$\frac{4x}{4} = \frac{60}{4}$$

$$x = 15$$

d)  $-2x - 44 = 90$

$$+44 \quad +44$$

$$\frac{-2x}{-2} = \frac{134}{-2}$$

$$x = -67$$

e)  $4 = -7x - 10$

$$+10 \quad +10$$

$$\frac{14}{-7} = \frac{-7x}{-7}$$

$$-2 = x$$

f)  $-0.5x + 4 = 2.5x - 20$

$$+0.5x \quad +0.5x$$

$$4 = 3x - 20$$

$$+20 \quad +20$$

$$\frac{24}{3} = \frac{3x}{3}$$

$$x = 8$$

g)  $3x + 3 = -2x + 38$

$$+2x \quad +2x$$

$$5x + 3 = 38$$

$$\frac{5x}{5} = \frac{35}{5}$$

$$x = 7$$

h)  $3.5 - 4x = 2x - 8.5$

$$+4x \quad +4x$$

$$3.5 = 6x - 8.5$$

$$+8.5 \quad +8.5$$

$$\frac{12}{6} = \frac{6x}{6}$$

$$2 = x$$

2. Work backward to isolate the variable in the following equations.

a)  $1.25x - 27 = 13$

$$\begin{array}{r} +27 \quad +27 \\ 1.25x = 40 \\ \hline 1.25 \quad 1.25 \\ \hline X = 32 \end{array}$$

b)  $\frac{x}{4} - 15 = 82$

$$\begin{array}{r} +15 \quad +15 \\ 4 \cdot \frac{x}{4} = 97 \cdot 4 \\ \hline X = 388 \end{array}$$

c)  $103 = -0.\bar{6}x + 11$

$$\begin{array}{r} -11 \quad -11 \\ 92 = -0.\bar{6}x \\ \hline -0.\bar{6} \quad -0.\bar{6} \\ \hline -138 = x \end{array}$$

d)  $-11.5x + 173 = 3.25x - 387.5$

$+11.5x$        $+11.5x$

$173 = 14.75x - 387.5$

$+387.5$                        $+387.5$

$560.5 = 14.75x$   
 $\frac{560.5}{14.75} = \frac{14.75x}{14.75}$

$38 = x$

**Word Problems.**

a) With a \$50 bill, you can buy 14 cookies and get \$28.30 in change.  
How much does a cookie cost?

What does 'x' represent? price of cookie

$50 = 14(\text{price of cookie}) + 28.30$

$50 = 14x + 28.30$   
 $-28.30$                        $-28.30$

$21.70 = 14x$   
 $\frac{21.70}{14} = \frac{14x}{14}$

$1.55 = x$

Cookie = \$1.55

**Answer:** A cookie costs \$ \_\_\_\_\_

- b) With a \$20 bill, you can buy 15 muffins and get \$2.75 in change. How much does a muffin cost?

What does 'x' represent? price of muffin

$$20 = 15(\text{price of muffin}) + 2.75$$

$$20 = 15x + 2.75$$

$$\begin{array}{r} 20 \\ -2.75 \\ \hline \end{array} = \begin{array}{r} 15x \\ -2.75 \\ \hline \end{array}$$

$$\begin{array}{r} 17.25 \\ \hline 15 \end{array} = \begin{array}{r} 15x \\ \hline 15 \end{array}$$

$$1.15 = x$$

muffin costs \$1.15

**Answer:** A muffin costs \$ \_\_\_\_\_

- c) You start a bank account with \$55 and deposit \$25 a month every month. How many months will it take you to have \$505 in your account?

What does 'x' represent? # of months

$$25(\text{\# of months}) + 55 = 505$$

$$\begin{array}{r} 25x + 55 = 505 \\ -55 \quad -55 \\ \hline \end{array}$$

$$\begin{array}{r} 25x = 450 \\ \hline 25 \quad 25 \end{array}$$

$$x = 18$$

**Answer:** It will take \_\_\_\_\_ months to have \$505 in the account