

1. True or false - tell whether the given statement is T or F.

- a)  $x = -\frac{3}{2}$  is a solution to  $\frac{2}{3}x = 1$ . F  
 Because  $\frac{2}{3}(-\frac{3}{2}) \neq -1 \neq 1$  T
- b)  $\frac{4}{x-2} = 0$  has no solution. T  
 Because  $\frac{4}{x-2} = 0$  is same as  $4 = 0$  (cross  $\otimes$ )  
 But  $4 \neq 0!$  T
- c)  $r = -2$  is a solution to  $4r + 6 = 3r + 4$ . because  $4r - 3r = -2$   
 $r = -2$  ✓ T
- d)  $x = \frac{-7}{2k-5}$  is a solution to  $2kx + 7 = 5x$ . T  
 $7 = 5x - 2kx$   
 $7 = x(5 - 2k)$   
 $x = \frac{7}{5-2k} = \frac{-7}{2k-5}$  F
- e)  $-3x + 4 = 3x$  has no solution. F  
 $4 = 6x$

2. Solve for the variable in each linear equation  
 (a linear equation is a first-degree equation in one unknown.)

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

b)  $4(x-1) = 2(x+3)$   
 $4x - 4 = 2x + 6$   
 $2x = 10$   
 $x = 5$

c)  $20\left(\frac{2}{5}y + \frac{3}{4}\right) = \left(\frac{6}{5}y - \frac{1}{4}\right) 20$   
 $8y + 15 = 24y - 5$   
 $20 = 16y$

$y = \frac{20}{16} = \frac{5}{4}$

3. Solve for the variable as stated

a)  $2 - k + 5(x - 1) = 3$

for  $k = 5x - 6$

$$2 - k + 5x - 5 = 3$$
$$-k = 6 - 5x$$

b)  $A = P + Prt$

for  $t = \frac{A - P}{Pr}$

$$A - P = Prt$$

$$t = \frac{A - P}{Pr}$$

<sup>1 ea</sup> c)  $S = 3abt + 2ab$

for  $b = \frac{S}{3at + 2a}$

$$S = b(3at + 2a)$$

d)  $x^2 = 4py$

for  $y = \frac{x^2}{4p}$

$$y = \frac{x^2}{4p}$$

e)  $e = \frac{1}{a} + \frac{1}{b}$

for a

$$cab = b + a \rightarrow$$

$$cab = a = b$$

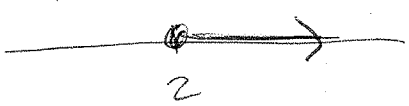
$$a(cb - 1) = b$$

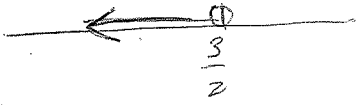
$$a = \frac{b}{cb - 1}$$

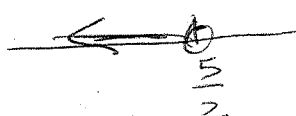
f)  $A = 4lw + 2w^2$  for l

$$\frac{A - 2w^2}{4w} = l$$

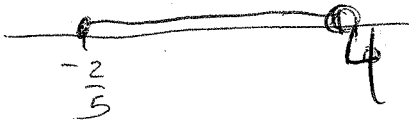
4. Solve the inequality. Show a graph of the solution set and give your answer in interval notation.

a)  $3x - 2 \geq 4$    $[2, \infty)$   
 $x \geq \frac{6}{3} = 2$

b)  $4(2x + 1) < 16$   $8x < 12$    
 $8x + 4 < 16$   $x < \frac{12}{8} = \frac{3}{2}$   $(-\infty, \frac{3}{2})$

c)  $-5 < -2x$    $(-\infty, \frac{5}{2})$   
 $5 > 2x$   $x < \frac{5}{2}$

d)  $-10 \leq 25x < 100$   $[-\frac{2}{5}, 4)$

$-\frac{10}{25} \leq x < \frac{100}{25}$    
 $-\frac{2}{5} \leq x < 4$

5. Convert  $23^\circ\text{F}$  to its equivalent  $^\circ\text{C}$ .

[Formula  $^\circ\text{C} = \frac{5}{9}(\text{F} - 32)$ ]

$C = \frac{5}{9}(23 - 32) = \frac{5}{9}(-9) = \boxed{-5^\circ\text{C}}$

Convert  $25^\circ\text{C}$  to its equivalent  $^\circ\text{F}$ .

$25 = \frac{5}{9}(F - 32)$   $F = 45 + 32$   
 $= \boxed{77^\circ\text{F}}$

6. In an election for president of a local union, Frank received 15 more votes than Tony. If 67 votes were cast, how many votes did each candidate receive?

$F = T + 15$

$T = 26 \text{ votes}$   
 $F = 41 \text{ votes}$

$F + T = 67$

$T + 15 + T = 2T + 15 = 67$

$2T = 52$

7. The length of a rectangle is 2 meters more than 3 times its width. If the perimeter is ~~34~~<sup>36</sup> meters, find the dimensions (l, w) of the rectangle.

$$l = 3w + 2$$

$$l = 18 - w = 3w + 2$$

$$4w = 16$$

$$w = 4$$

$$l = 14$$

$$P = 2(l + w)$$

$$36 = 2(l + w)$$

$$18 = l + w$$

$$l = 18 - w$$

$$l = 3w + 2 \quad 4w = 16$$

$$2 - w = 3w - 4$$

$$6 = 4w$$

$$\frac{6}{4} = w$$

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

$$l = \frac{9}{2} - 4$$

$$=$$

8. "Simple interest" is the interest earned on an investment of a principal amount of money (P) invested at a rate (r) for a period of time (t). The formula is

$$I = Prt$$

Find the rate at which \$500 was invested for 2 yrs to earn \$20 in interest. (Answer as a percent)

$$500r \cdot 2 = 20$$

$$18 \cdot 2$$

$$r = \frac{20}{1000} = \frac{2}{100} = 2\%$$

$$3w + 2 = l \rightarrow 3w + 2 = 18 - w$$

$$36 = 2(l + w)$$

$$18 = l + w$$

$$4w = 16$$

$$w = 4$$

$$l = 14$$