

1. Solve each of the following equations for the variable present:
  - a)  $2x + 7 = 13$
  - b)  $\frac{x}{3} - \frac{x}{6} = 3 - \frac{x}{12}$
  - c)  $2(x - 1) = 3(3 - x)$
  - d)  $3x - 7 = 3(x - 7)$
  - e)  $y - 3(4 - 2y) = 4(y - 3) + 3y$
  - f)  $.9(2x + 8) = 20 - (x + 5)$
  - g)  $\frac{5}{16}y + \frac{3}{8}y = 2 + \frac{1}{4}y$
  - h)  $3y - 4(2 - y) = 2(3y - 4)$
  
2. Find the value of the variable not given in each of the following:
  - a)  $P = 2L + 2W$ ;  $L = 5$ ,  $W = 3$
  - b)  $A = \frac{1}{2}(b - 3c)$ ;  $b = 2$ ,  $A = 7$
  
3. Solve each of the following literal equations for the specified variable.
  - a)  $A = p + prt$  for  $t$
  - b)  $F = \frac{9}{5}C + 32$  for  $C$
  - c)  $A = \frac{h}{2}(B + b)$  for  $B$
  
4. Find the perimeter and area of a rectangle whose width is 3 inches and whose length is 8 inches.
  
5. The diameter of a circular garden is 8 feet. Find the circumference and area of the garden.
  
6. The perimeter of a rectangle is 34 feet. The width of the rectangle is 7 feet less than the length. Find the area of the rectangle.
  
7. Change to percent:  $0.83 = \underline{\hspace{2cm}}$      $1.1 = \underline{\hspace{2cm}}$      $\frac{1}{4} = \underline{\hspace{2cm}}$
  
8. 13 is what percent of 91?
  
9. What percent of 55 is 22?
  
10. John said “I got an 18 percent discount on my new car and only had to pay \$17,630!” What was the original price of the car?
  
11. Bill bought some building supplies at Builder’s Depot for \$31.50. This included a 5% sales tax. What was the cost of the supplies before taxes?

12. Amy invested a total of \$10,000 in a money-market account that pays an annual rate of 5% and a savings account that pays an annual rate of 3%. If she earned a total of \$440 after one year, how much did she invest in each account?
13. Jack has a bag that contains nickels dimes and quarters. There are four times as many quarters as nickels in the bag and the number of dimes in the bag are two more than six times the number of nickels in the bag. If the total value of the coins in the bag is \$8.45, how many nickels, dimes and quarters are in the bag?
14. Express each of the following inequalities in interval notation and then sketch them on the number line:
- a)  $x \leq -2$     b)  $-2 < x \leq 5$     c)  $x > 5$     d)  $-2 \geq x > -5$     e)  $-5 \leq x \leq 0$
15. Solve each of the following linear inequalities:
- a)  $2x + 4 > 7x - 5$   
b)  $4 - (5 - 2x) \leq 5(3x + 2) - 9$   
c)  $11 \leq 2 - 3(1 + x) < 23$
16. Suppose that your exam scores were 92, 84, 97, and 82. What should your score on the fifth exam be so that your exam average is at least 90?
17. Plot each of the given points and then state where the point lies (either specify the quadrant or the coordinate axes:
- a)  $(3, -2)$     b)  $(-1, 4)$     c)  $(0, 0)$     d)  $(0, -2)$     e)  $(-2, -1)$     f)  $(1, 0)$     g)  $(1, 3)$
18. Find the  $x$ -intercept and  $y$ -intercept of the graphs of each of the following linear equations in  $x$  and  $y$ :
- i)  $3x - 2y = 6$   
j)  $y = 4x - 3$   
k)  $\frac{x}{3} + \frac{y}{4} = 1$   
l)  $2x - 3y + 12 = 0$
19. Determine whether the given ordered pair is a solution of the equation for each of the following:
- a)  $4x - 5y = 2$ ;  $(3, 2)$   
b)  $3x - 4y + 3 = 0$ ;  $(5, 3)$

20. Sketch the graphs of each of the following equations in the Cartesian Coordinate plane:

a)  $x - 2y = 6$

b)  $y = 2$

c)  $\frac{x}{2} - \frac{y}{5} = 1$

d)  $x = -3$

e)  $x + 4y = 0$

**Answers**

1. a)  $x = 3$     b)  $x = 12$     c)  $x = \frac{11}{5} = 2\frac{1}{5}$     d) Contradiction    e) Identity  
f)  $x = \frac{39}{14} = 2\frac{11}{14}$     g)  $y = \frac{32}{7} = 4\frac{4}{7}$     h)  $y = 0$
2. a)  $P = 16$     b)  $c = -4$
3. a)  $t = \frac{A - p}{pr}$     b)  $C = \frac{5}{9}(F - 32)$  or  $C = \frac{5F - 160}{9}$     c)  $B = \frac{2A - bh}{h}$  or  $B = \frac{2A}{h} - b$
4. Perimeter = 22 inches. Area = 24 square inches
5. Circumference =  $8\pi$  feet  $\approx$  25.12 feet. Area =  $16\pi$  square feet  $\approx$  50.24 square feet
6. Area = 60 square feet
7. 83%, 110%, 25%
8. Approximately 14.29%
9. 40%
10. \$21,500
11. \$30.00
12. \$7,000 in the money-market account and \$3,000 in the savings account
13. 5 nickels, 32 dimes and 20 quarters
14. a)  $(-\infty, -2]$  A horizontal number line with a thick black segment starting from a bracketed point at -2 and extending to the left with an arrowhead. The number -2 is written below the line.
- b)  $(-2, 5]$  A horizontal number line with a thick black segment starting from an open parenthesis at -2 and ending at a bracketed point at 5. The numbers -2 and 5 are written below the line.
- c)  $(5, \infty)$  A horizontal number line with a thick black segment starting from an open parenthesis at 5 and extending to the right with an arrowhead. The number 5 is written below the line.
- d)  $(-5, -2]$  A horizontal number line with a thick black segment starting from an open parenthesis at -5 and ending at a bracketed point at -2. The numbers -5 and -2 are written below the line.
- e)  $[-5, 0]$  A horizontal number line with a thick black segment starting from a bracketed point at -5 and ending at a bracketed point at 0. The numbers -5 and 0 are written below the line.

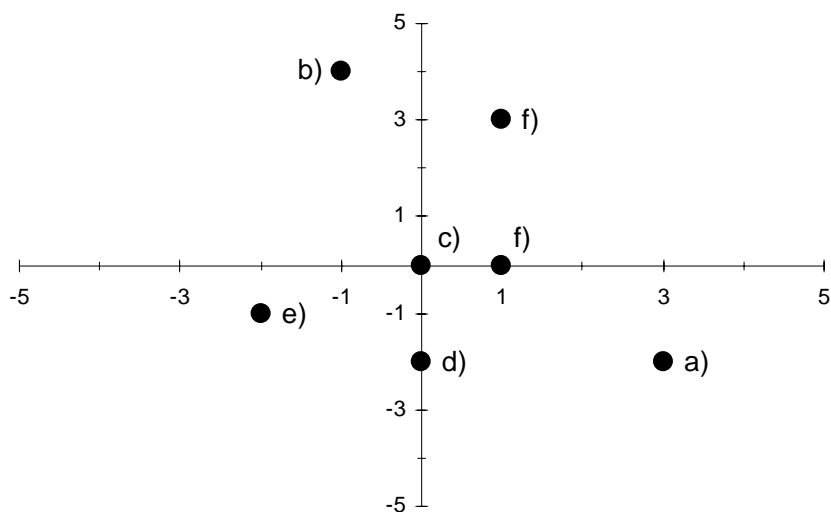
15. a)  $\left\{x \mid x < \frac{9}{5}\right\}$

b)  $\left\{x \mid x \geq -\frac{2}{13}\right\}$

c)  $\{x \mid -8 < x \leq -4\}$

16. Fifth exam score  $\geq 95$

17. a) QIV    b) QII    c) Origin (on both axes)    d) y-axis    e) QIII    f) x-axis    g) QI



18. a)  $x$ -intercept is 2 and  $y$ -intercept is  $-3$   
b)  $x$ -intercept is  $\frac{3}{4}$  and  $y$ -intercept is  $-3$   
c)  $x$ -intercept is 3 and  $y$ -intercept is 4  
d)  $x$ -intercept is  $-6$  and  $y$ -intercept is 4

19. a) Yes    b) No

20.

