

MULTIPLE CHOICE Choose the one alternative that best completes the statement or answers the question.

Perform the indicated operations

- 1) $22 - 2^2 + (-14) \div 7$ 1) _____
 A) 16 B) $\frac{12}{7}$ C) 86 D) 24

Evaluate the expression, given the variables a , b , and c .

- 2) $b^2 - 4ac$, $a = 4$, $b = -4$, $c = 3$ 2) _____
 A) 32 B) -64 C) -240 D) -32

Perform the operations, removing the parentheses, and collecting like terms.

- 3) $7(2r + 6) - 4(2r + 3)$ 3) _____
 A) $14r + 37$ B) $6r + 30$ C) $6r + 45$ D) $6r + 54$

Solve the equation.


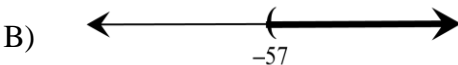
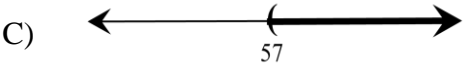

- 4) $8x - (6x - 1) = 2$ 4) _____
 A) $-\frac{3}{2}$ B) $-\frac{1}{2}$ C) $\frac{1}{2}$ D) $\frac{3}{2}$

- 5) $\frac{1}{4}x - 7 = \frac{1}{12}x + 10$ 5) _____
 A) 102 B) $\frac{17}{6}$ C) 51 D) 18

Write an equation to represent the problem. Use the equation to solve the problem.

- 6) Jon works for a vacuum cleaner sales business. He receives \$218 per week in salary plus a commission of 8% of his weekly sales. How much will Jon earn in a week when his sales total \$267? 6) _____
 A) \$2354.00 B) \$218.08 C) \$239.36 D) \$38.80

Solve the inequality. Draw a graph of the solution set.

- 7) $8(9x - 4) - 3x > -5(x - 5) + 75x$ 7) _____
 A)  B) 
 C)  D) 

Solve the inequality.

- 8) $\frac{4}{7}(3a - 7) - \frac{3}{4} < \frac{1}{4}$ 8) _____
 A) $a > \frac{35}{12}$ B) $a < -\frac{7}{24}$ C) $a < \frac{35}{12}$ D) $a < -\frac{7}{24}$

Solve the problem.

- 9) Jon has 1006 points in his math class. He must have 76% of the 1400 points possible by the end of the term to receive credit for the class. What is the minimum number of additional points he must earn by the end of the term to receive credit for the class? 9)_____
- A) 58 points B) 1064 points C) 394 points D) 765 points

Solve the equation for the indicated variable.

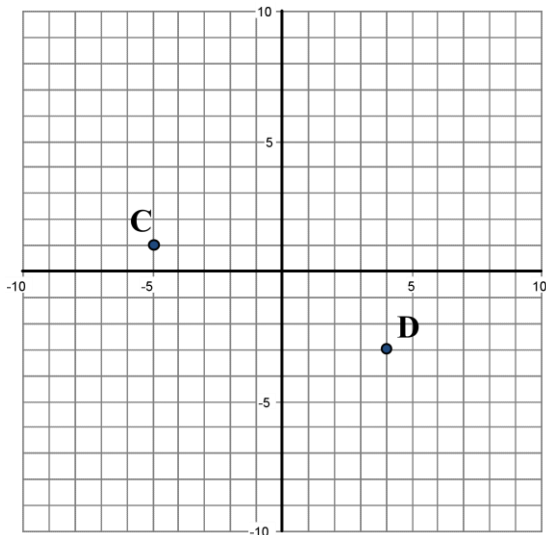
- 10) $3x - y + 13 = 0$ Solve for y . 10)_____
- A) $y = 3x + 13$ B) $y = -3x - 13$ C) $y = 13 - 3x$ D) $y = 3x - 13$

Solve the formula for the indicated variable.

- 11) $A = P + PRT$ Solve for T . 11)_____
- A) $T = \frac{PR}{A - P}$ B) $T = \frac{P - A}{PR}$ C) $T = \frac{A - P}{PR}$ D) $T = \frac{A}{R}$

Give the ordered pairs for the points labeled on the graph.

- 12) 12)_____



- A) C (1, -5); D (-3, 4) B) C (5, 1); D (4, 3)
- C) C (-5, 1); D (4, -3) D) C (1, 5); D (3, 4)

Determine whether the ordered pair satisfies the equation.

- 13) $y = 10 - 4x$; (2, 2) 13)_____
- A) Yes B) No

Determine whether this set of ordered pairs represents a function.

- 14) $\{(-6, 3), (-2, -7), (-1, 2), (-1, -2)\}$ 14)_____
- A) Function B) Not a function

Determine whether this table of values represents a function.

15)

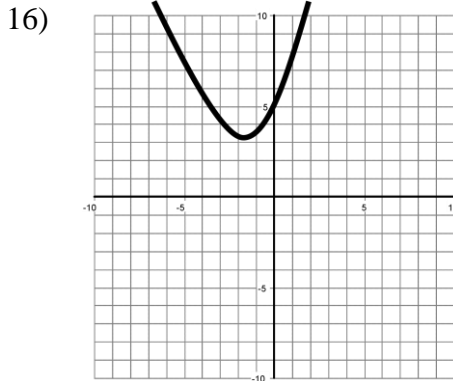
Input	Output
-7	2
-8	2
-9	2
-10	2
-11	2

15)_____

A) Not a Function

B) Function

Determine whether the graphed relation is a function.



16)_____

A) Not a Function

B) Function

Evaluate the function for the given input value.

17) Given $f(x) = x^3 - 2x^2 + 3x + 6$, evaluate $f(-6)$.

17)_____

A) -50

B) -300

C) -156

D) -120

Solve the function for the input, given an output value.

18) Solve the function $f(x) = 21(x - 84)$, given $f(x) = 42$.

18)_____

A) 882

B) 86

C) 82

D) -882

Solve the problem.

19) The function $C(d) = 19d + 30$ describes the total cost of renting a truck, Where C is the total cost and d is the number of days the truck is rented. How many days can the truck be rented for \$163?

19)_____

A) 10 days

B) 19 days

C) 3127 days

D) 7 days

20) Suppose the sales of a particular brand of appliance satisfy the relationship

20)_____

$S(x) = 230x + 3800$, where $S(x)$ represents the number of sales in year x , with $x = 0$ corresponding to 1982. Find the number of sales in 1999.

A) 463570

B) 7940

C) 7710

D) 26570

Find the x- and y-intercepts for the equation. Then graph the equation.

21) $y = -4x + 12$ 21)_____

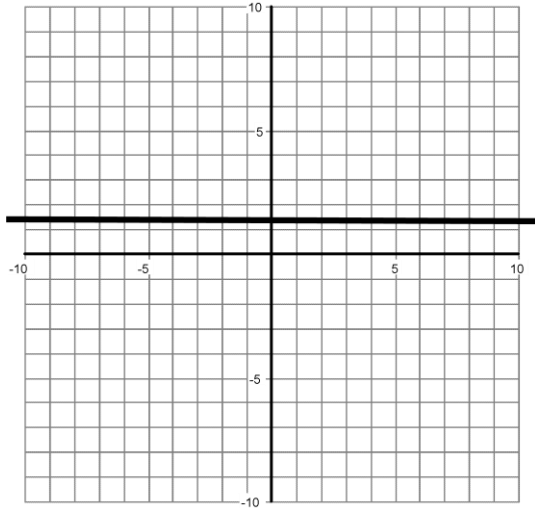
- A) (0, 12), (-3, 0) B) (0, 12), (-4, 0) C) (0, 12), (3, 0) D) (0, 3), (12, 0)

22) $-x + 2y = 4$ 22)_____

- A) (0, -4), (2, 0) B) (0, 2), (-1, 0) C) (0, 2), (-4, 0) D) (0, -2), (-4, 0)

Decide whether the slope is positive, negative, zero, or undefined.

23) 23)_____



- A) Zero B) Positive C) Undefined D) Negative

Find the coordinates for the y-intercept for the given equation.

24) $y = \frac{3}{4}x - 3$ 24)_____

- A) (3, 0) B) (-3, 0) C) (0, -3) D) $\left(0, \frac{3}{4}\right)$

25) $x = -5$ 25)_____

- A) (-5, 0) B) (0, 0) C) (0, -5) D) None

Find the slope of the line.

26) $y = x - 4$ 26)_____

- A) 1 B) -4 C) 4 D) 0

27) $x = -3$ 27)_____

- A) 3 B) 0 C) undefined D) -3

28) $4y - 13x = -3$ 28)_____

- A) 13 B) $-\frac{13}{4}$ C) $\frac{13}{4}$ D) -13

Write the equation of the line with the given slope and y-intercept.

- 29) Slope = 3; y-intercept = (0, -2). 29)_____
- A) $y = 3x + 2$ B) $y = -2x + 3$ C) $y = 3x - 2$ D) $y = 2x + 3$

Solve the problem.

- 30) The numbers of new homes built in a certain city in recent years are given in the table. The set of data can be approximated with a linear function. 30)_____

Year	x = Number of years since 2000	y = Number of new homes (in thousands)
2000	0	2.3
2001	1	2.6
2002	2	2.9

Identify the y-intercept from the table.

- A) (1, 2.6) B) (2.6, 1) C) (2.3, 0) D) (0, 2.3)
- 31) The numbers of new homes built in a certain city in recent years are given in the table. The set of data can be approximated with a linear function. 31)_____

Year	x = Number of years since 2000	y = Number of new homes (in thousands)
2000	0	2.9
2001	1	3.2
2002	2	3.5

Use the slope and the y-intercept from the table to write the equation of the line in slope-intercept form..

- A) $y = 0.3x + 2.9$ B) $y = 3.2x + 2.9$ C) $y = -2.9x + 0.3$ D) $y = -0.3x + 2.9$

Find the equation of the line with the given characteristics.

- 32) Slope = $-\frac{3}{8}$; passing through (4, 2). 32)_____
- A) $y = -\frac{3}{8}x + \frac{1}{2}$ B) $y = -\frac{3}{8}x + \frac{7}{2}$ C) $y = -\frac{3}{8}x + \frac{19}{4}$ D) $y = -\frac{3}{8}x + \frac{13}{4}$
- 33) Slope = 0; passing through (7, -2). 33)_____
- A) $y = 7$ B) $x = 7$ C) $x = -2$ D) $y = -2$

Write the slope-intercept form of the equation for the line passing through the given pair of points.

- 34) (6, 1) and (-9, -3) 34)_____
- A) $y = \frac{2}{3}x - 3$ B) $y = -\frac{4}{15}x + \frac{13}{5}$ C) $y = \frac{4}{15}x - \frac{3}{5}$ D) $y = \frac{15}{4}x - \frac{43}{2}$

Solve.

- 35) $2(x+2) = 2 - 4(x+2)$ 35)_____
- A) -2 B) 1 C) $-\frac{5}{3}$ D) $\frac{1}{3}$

Write the slope-intercept form of the equation for the line passing through the given pair of points.

36) y -intercept 10 and x -intercept -4

36) _____

- A) $y = -\frac{5}{2}x + 10$ B) $y = \frac{2}{5}x + 10$ C) $y = \frac{5}{2}x + 10$ D) $y = -\frac{2}{5}x + 10$

37) The table lists the average annual cost (in dollars) of tuition and fees at a certain 2-year college for selected years, where year 1 represents 1992, year 3 represents 1994, and so on. Use the ordered pairs (3, 1158) and (9, 1301) to find the equation of a line that approximates the data. (If necessary, round the slope to the nearest hundredth and the y -intercept to the nearest whole number.)

37) _____

Year	Cost (in dollars)
1	1056
3	1158
5	1246
7	1265
9	1301

- A) $y = 23.83x + 1087$ B) $y = -23.83x + 1229$
C) $y = 23.83x + 1229$ D) $y = -23.83x + 1515$

Determine whether the ordered pair is a solution to the system.

38) $3x + y = -19$
 $4x + 3y = -27$; $(-6, -1)$

38) _____

- A) Yes B) No

Solve the system.

39) $5x + y = -11$

39) _____

$$6x + 5y = 2$$

- A) (3, 4) B) (4, -3) C) (-3, 4) D) (-2, -1)

Write a system of equations.

40) Mark the electrician charges \$120 for a house call, and then \$35 per hour for labor. Sara the electrician charges \$100 for a house call, and then \$50 per hour for labor. Write a cost equation for each electrician, where y is the total cost of the electrical work, and x is the number of hours of labor.

40) _____

- A) Mark: $y = 35x + 120$
Sara: $y = 50x + 100$
B) Mark: $y = 50x + 100$
Sara: $y = 35x + 120$
C) Mark: $y = 120x + 35$
Sara: $y = 100x + 50$
D) Mark: $y = 100x + 50$
Sara: $y = 120x + 35$

Solve the system.

41) $7x - 6y = 12$

41) _____

$$-5x + 2y = -20$$

- A) (-6, 25) B) (6, -5) C) (6, 5) D) (5, 6)

Choose the ordered pair which is a solution of the inequality.

- 42) $2x + 4y \geq 8$ 42)_____
- A) (3, 2) B) (0, 0) C) (1, 1) D) (1, 0)

Perform the operations. Reduce the fraction to lowest terms. Write improper fractions as mixed numbers.

- 43) $\left(\frac{3}{4} - \frac{9}{16}\right) \div \frac{8}{5}$ 43)_____
- A) $\frac{15}{128}$ B) $7\frac{1}{2}$ C) $8\frac{8}{15}$ D) $\frac{3}{10}$

- 44) $8\frac{1}{5} - 3\frac{1}{3} + 1\frac{1}{10}$ 44)_____
- A) $6\frac{1}{30}$ B) $6\frac{1}{6}$ C) $5\frac{29}{30}$ D) $3\frac{23}{30}$

Simplify the expressions using Properties of Exponents. Assume variables represent nonzero quantities.

- 45) $(-3x^3)^5$ 45)_____
- A) $-3x^8$ B) $-243x^{15}$ C) $3x^8$ D) $243x^{15}$

- 46) $(-4x^6y^2)^3$ 46)_____
- A) $-64x^{18}y^6$ B) $-4x^9y^5$ C) $64x^{18}y^6$ D) $-64x^9y^5$

- 47) $\left(\frac{2n}{5}\right)^4$ 47)_____
- A) $\frac{16n^4}{5}$ B) $\frac{2n^4}{5}$ C) $\frac{16n^4}{625}$ D) $\frac{2n^4}{625}$

- 48) $\frac{22m^6p^2}{2m^9p}$ 48)_____
- A) $11m^3p^2$ B) $\frac{11p}{m^3}$ C) $\frac{11m^3}{p}$ D) $11mp$

Simplify the expressions using Properties of Exponents. Write all answers with positive exponents.

Assume variables represent nonzero quantities.

- 49) $\frac{3x^{-2}}{y^{-5}z^{-4}}$ 49)_____
- A) $\frac{3y^5z^4}{x^2}$ B) $\frac{-3x^2}{y^5z^4}$ C) $\frac{y^5z^4}{3x^2}$ D) $\frac{y^5z^4}{9x^2}$

- 50) $(x^{-2}y^6)^{-3}$ 50)_____
- A) $\frac{1}{x^6y^{18}}$ B) $\frac{x^6}{y^{18}}$ C) $\frac{x^{-5}}{y^3}$ D) $\frac{y^3}{x^5}$

Evaluate the function.

- 51) Given $h(x) = (4x)^{-3}$, find $h(3)$. 51)_____
- A) $\frac{4}{27}$ B) $\frac{1}{1728}$ C) $\frac{1}{108}$ D) $\frac{64}{27}$

Multiply.

- 52) $(-5x^4y^4)(-3x^4y^2)$ 52)_____
- A) $15x^{16}y^8$ B) $15x^8y^6$ C) $-8x^{16}y^8$ D) $-8x^8y^6$
- 53) $(-2x-6)(x+8)$ 53)_____
- A) $-2x^2-22x-22$ B) $-2x^2-24x-48$ C) $-2x^2-48x-22$ D) $-2x^2-22x-48$
- 54) $(2a-11)^2$ 54)_____
- A) $4a^2-44a+121$ B) $4a^2-121$ C) $2a^2-44a+121$ D) $4a^2+121$

Divide. Assume the variables represent nonzero quantities.

- 55) $\frac{6x^7-12x^3}{-2x^7}$ 55)_____
- A) $-3-12x^3$ B) $-3+\frac{6}{x^4}$ C) $6x^7+\frac{6}{x^4}$ D) $-3+6x^4$

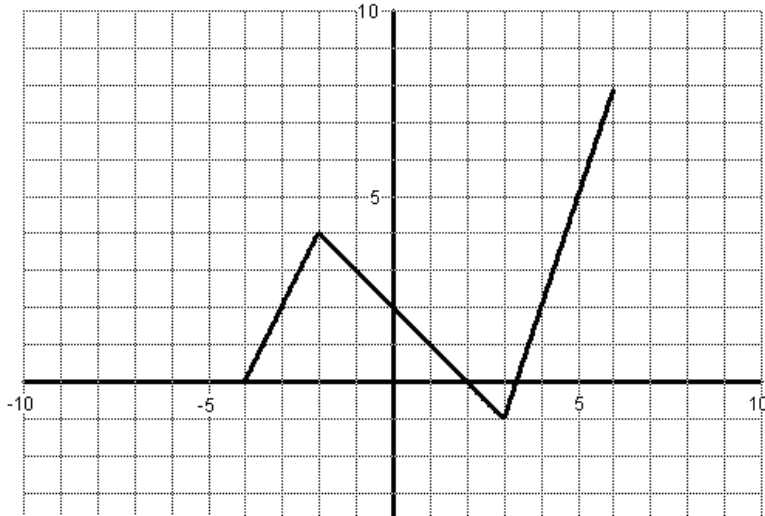
Problems 56 and 57 refer to the table shown below

The amount of waste in a landfill over a 15 year period (in tons) is shown in the table below.

Years t	1	4	6	9	15
Amount of Waste (in tons) $W(t)$	2.5	10	15	22.5	37.5

- 56) Determine $W(15)$. Include units. 56)_____
- A) 6 years B) 6 tons C) 37.5 years D) 37.5 tons
- 57) For what value of t is $W(t) = 15$? Include units in your answer. 57)_____
- A) 6 years B) 6 tons C) 37.5 years D) 37.5 tons

Problems 58 – 60 refer to the graph of $f(x)$ shown below



- 58) Determine the domain of $f(x)$. 58) _____
A) $-10 \leq x \leq 10$ B) $-4 \leq x \leq 6$ C) $-1 \leq x \leq 8$ D) $0 \leq x \leq 2$
- 59) Determine the range of $f(x)$. 59) _____
A) $0 \leq f(x) \leq 4$ B) $-4 \leq f(x) \leq 6$ C) $-1 \leq f(x) \leq 8$ D) $0 \leq f(x) \leq 8$
- 60) Determine $f(4)$. 60) _____
A) -2 B) 0 C) 2 D) 4

