5. If the function f contains the ordered pairs $\{(2,3),(3,3),(4,3),(5,-2),(6,0)\}$, then $f(3)$ is equal to ***.

___ a. 2
___ b. 3
___ c. 4
___ d. 5

6. If $f(x)=\dfrac{x^2+2x}{x-1}$, then $f(1)$ is ***.

___ a. undefined
___ b. 0
___ c. 3
___ d. 1

7. If $f(x)=2x^2-6x$, then $f(1-t)$ is equal to ***.

___ a. $2(1-t^2)-6(1-t)$
___ b. $2(t^2+5t-2)$
___ c. $2(t^2+t-2)$
___ d. $-2(t^2-3t+2)$

8. If $h(x)=\dfrac{1}{2x-1}$, then $h\left(\dfrac{1}{x}\right)$ is equal to ***.

___ a. $2x-1$
___ b. $2\left(\dfrac{1}{x}\right)-1$
___ c. 0
___ d. $\dfrac{1}{\dfrac{2}{x}-1}$

9. If $g(x)=3x^4+2x^2-6$, then $g(-\sqrt{3})$ is ***.

___ a. -3
___ b. 33
___ c. 27
___ d. -39

10. The formula for the area of an equilateral triangle with sides of length s is $A=\frac{s^2\sqrt{3}}{4}$. The one false statement is ***.

___ a. $A(0)=0$
___ b. $A(x+2)=\frac{(x^2+4)\sqrt{3}}{4}$
___ c. $A(2)=\sqrt{3}$
___ d. $A(\sqrt{2})=\frac{\sqrt{3}}{2}$

11. If $f(x)=x^2-5x+2$, the value of $-f(-1)$ is ***.

___ a. -8
___ b. 8
___ c. 2
___ d. -2

12. If $f(x)=7x-1$ and $g(x)=|2x+3|$, then the product $(f\times g)(0)$ is ***.

___ a. 20
___ b. -3
___ c. 3
___ d. -21

13. If $f(x)=x^3+1$ and $g(x)=|2x-1|$ then $f(2)-g(-2)$ is equal to ***.

___ a. 14
___ b. 12
___ c. -4
___ d. 4

14. If $f(a)=2a+1$ and $g(a)=1-a$, then $(f \div g)(-1)$ is ***.

___ a. $-\frac{1}{2}$

___ b. $\frac{1}{2}$

___ c. $1\frac{1}{2}$

___ d. undefined

For questions 15 to 18 use the equations: $f(x) = |x|$
$g(x)=2x-1$
$h(x)=x^2-2x+1$

15. The value of $g(f(-3))$ is ***.

___ a. 21
___ b. -21
___ c. -7
___ d. 5

16. The value of $f(g(-3))$ is ***.

___ a. 21
___ b. -21
___ c. -7
___ d. 7

17. The expression for $g \circ h(x)$ is ***.

___ a. $2x^2-4x+1$
___ b. $(2x-1)^2-2(2x-1)+1$
___ c. $(2x-1)(x^2-2x+1)$
___ d. $2x^2-1$

18. The expression for $g \circ g(x)$ is ***.

___ a. $4x-2$
___ b. $4x-3$
___ c. $4x^2-4x+1$
___ d. 1

19. The volume of a pile of sand in the shape of a cone is $V=\frac{2}{3}\pi r^3$ and the radius is a function of time in hours, $r(t)=t^{\frac{1}{3}}$.

The expression for Volume as a function of time would be given by ***.

___ a. $V \circ r(t)$
___ b. $r \circ V(t)$
___ c. $V(t) \cdot r(t)$
___ d. $V(t) \div r(t)$

20. The equation $f \circ g(x)=3(2x-1)^2-5(2x-1)+7$ is the composition of f and g where f is ***.

___ a. $12x^2-10x+3$
___ b. $12x^2-18x+20$
___ c. $2x-1$
___ d. $3x^2-5x+7$

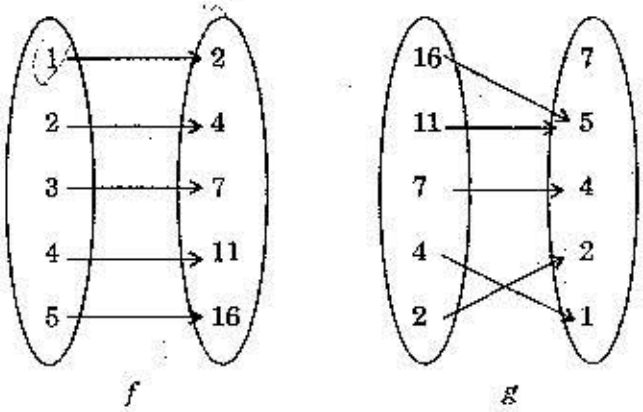
Answer **Part B** and **Part C** in the space provided. Evaluation of your solution to each problem will be based on the following.

- A correct mathematical method for solving the problem is shown.
- The final answer is accurate and a check of the answer is shown where asked for by the question.
- The solution is written in a style that is clear, logical, well-organized, uses proper terms, and states a conclusion.

(5) B. 1. If $f(x)=x^3+3x^2+2x$, find all the values of x so that $f(x)=0$.

(5) 2. If f is as in Question 1, evaluate $3f(-1)+2f(2)$.

(5) 3. The mappings for the relations f and g are given.



State the value of each of the following.

a. $g \circ f(1)$ $g(f(1))$

b. $g \circ f(3)$ $g(f(3))$

c. $g \circ f(5)$ $g(f(5))$

d. $f \circ g(4)$ $f(g(4))$

e. $f \circ f(2)$ $f(f(2))$

(5) 4. The distance in metres travelled by an object is given by the formula

$$d(t) = \frac{t^2}{\sqrt{2t+1}},$$

where t represents the time in minutes.

The velocity of the object is not constant, but its average velocity over a time period from t_1 to t_2 is

$$\frac{\text{distance travelled}}{\text{length of time}} = \frac{d(t_2) - d(t_1)}{t_2 - t_1}.$$

a. Find the average velocity during the first 10 minutes of travel. Round to one decimal place.

b. Find the average velocity during the next 10 minutes of travel. Round to one decimal place.

(5) 5. If $h(x)=\frac{x+2}{4-5x}$, simplify the expression for $h\left(\frac{2}{x}\right)$.

(5) 6. Given $f(x)=\frac{1}{x-1}$ and $g(x)=\frac{2}{1-3x}$, write the simplest expression for $f \circ g(x)$.

(5) 7. Using the equations in Question 6, write the simplest expression for $g \circ f(x)$.

(5) 8. Using the equations in Question 6, write the simplest expression for $(f+g)(x)$.

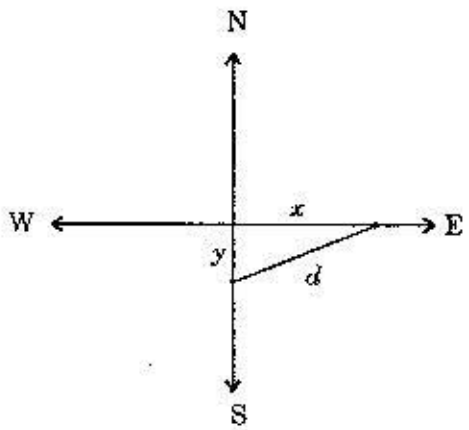
(5) C. 1. A cyclist and a runner start from the same point. The cyclist travels east and his speed at any time t in hours is 20 km/h. The runner heads south at a speed of 7 km/h.

a. How far apart are they after one hour?

b. How far apart are they after 3 hours?

c. Write an expression for distance d as a function of time, $d(t)$, in simplest form.

d. At what rate is the distance d between the two changing?



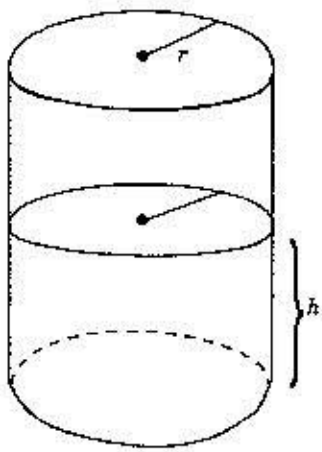
(5) 2. a. Name two functions f and g so that $h(x)=3(x^2+5)^2+7(x^2+5)+2$ is $f \circ g(x)$. (Note: g cannot be the trivial function $g(x) = x$.)

b. Name two non trivial functions f and g so that

$$h(x)=\frac{\sqrt{x+1}}{1+\sqrt{x+1}} \text{ is } f \circ g(x).$$

(5) 3. A barrel of height 7 m and radius 3 m has water to a depth of h m. The volume of the water at any height h is

$$V = \pi r^2 h.$$



If the depth of the water changes according to the formula $h = \frac{7t}{t+1}$, where t is the time in hours,

a. write an expression for $V(t)$,

b. find the volume after 10 hours.

(5) 4. (STUDENT JOURNAL)

Write a well organized summary of the material in this lesson which will be suitable to use for review purposes.

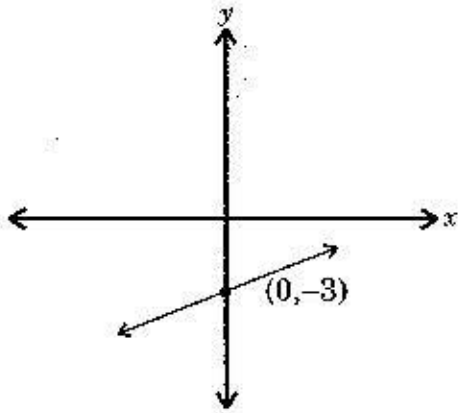
(100)

Assignment 12

Values

(40) A. **Multiple Choice:** Select the correct answer for each of the following and place a check (✓) beside it.

1. The slope of the line is likely to be ***.



___ a. 0
___ b. -3
___ c. $\frac{1}{3}$
___ d. $-\frac{1}{3}$

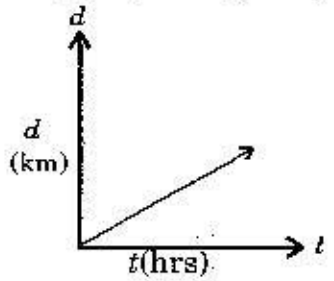
2. The slope of any straight line parallel to the graph of $2y+6x+1=0$ is ***.

___ a. -3
___ b. -6
___ c. 3
___ d. $\frac{1}{3}$

3. The slope of any straight line perpendicular to the graph of $3y-5x-6=0$ is ***.

___ a. $-\frac{5}{3}$
___ b. $\frac{1}{5}$
___ c. $-\frac{1}{5}$
___ d. $-\frac{3}{5}$

4. The relationship between the distance of a car from a starting point and time of travel is linear, as shown in the diagram. If (2, 70) and (5, 175) are coordinates of two points on the line the speed and slope are ***.



___ a. both 35 km/h
___ b. both 70 km/h
___ c. both 100 km/h
___ d. not equal

5. For the graph of $8y + 32x + 10 = 0$ the line ***.

___ a. rises 4 units for each unit increase in x
___ b. falls 4 units for each unit increase in x
___ c. rises 32 units for each unit increase in x
___ d. falls 32 units for each unit increase in x

6. The x and y intercepts of the graph of $y - 4x + 12 = 0$ are ***.

___ a. $(-3, 0), (0, -12)$
___ b. $(0, 3), (-12, 0)$
___ c. $(3, 0), (0, 12)$
___ d. $(3, 0), (0, -12)$

7. The graph with the greatest slope is found in figure ***.

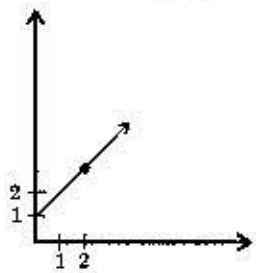


Fig. 1

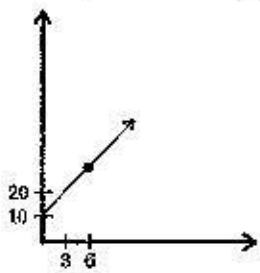


Fig. 2

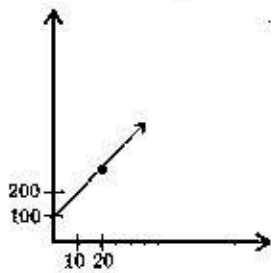


Fig. 3

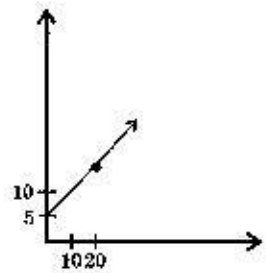


Fig. 4

___ a. 1
___ b. 2
___ c. 3
___ d. 4

8. To graph the line with slope $-\frac{3}{2}$, which passes through $(-1, 4)$ a second point on the line is found by starting at $(-1, 4)$ and going ***.

____ a. 3 units up and 2 units to the right
____ b. 2 units up and 3 units to the left
____ c. 3 units down and 2 units to the right
____ d. 2 units down and 3 units to the right

9. The slope and y-intercept of the graph with equation $2y + 5x - 6 = 0$ are ***.

____ a. $-\frac{5}{2}$, 3
____ b. -5, 6
____ c. 5, -6
____ d. $\frac{5}{2}$, 3

10. To draw the graph of a line passing through (0, 5) which is perpendicular to the graph of $y = 3x - 5$, you first find another point on the line by starting at (0, 5) and going ***.

____ a. 1 unit up and 3 units to the right
____ b. 3 units up and 1 unit to the right
____ c. 3 units to the right and 1 unit up
____ d. 1 unit up and 3 units to the left

11. The equation $y - 5 = \frac{1}{2}(x + 3)$ has slope $\frac{1}{2}$ and passes through the point whose coordinates are ***.

____ a. $(-3, 5)$
____ b. $(5, -3)$
____ c. $(3, -5)$
____ d. $(-5, 3)$

12. The equation of the line with slope $\frac{3}{2}$ and x-intercept 5 is ***.

___ a. $y=\frac{3}{2}x+5$

___ b. $3x-2y-15=0$

___ c. $3x-2y-5=0$

___ d. $y=\frac{3}{2}(x+5)$

13. The equation of the line passing through the points whose coordinates are $(-5, 1), (3, -1)$ is ***.

___ a. $x-4y-7=0$

___ b. $3x-4y-1=0$

___ c. $x+4y+1=0$

___ d. $x+4y-1=0$

14. The equation of the line passing through the points whose coordinates are $(-3, 2)$, $(-3, -2)$ is ***.

___ a. $y=-3x$

___ b. $y=\frac{2}{3}x$

___ c. $x=-3$

___ d. $y=2$

15. The equation of the line passing through (5, 7) with zero slope is ***.

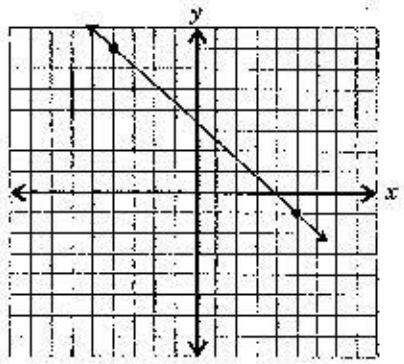
___ a. $y=7$

___ b. $x=5$

___ c. $y=\frac{5}{7}x$

___ d. $y=7x$

16. The y-intercept of the given line is ***.



____ a. 3.222...
____ b. 3.333...
____ c. 3.444...
____ d. 3.555...

17. A van rental company charges a flat rate of \$50 plus 15¢ per kilometre driven. The linear equation that gives the total cost (C) in terms of kilometres driven (x) is ***.

____ a. $C = 0.15x - 50$
____ b. $C = 0.15x$
____ c. $C = 0.15x + 50$
____ d. $C = 15x + 50$

18. You are to buy cheese and meat with \$12. Cheese costs \$1.25 per 100 gm and meat costs 95¢ per 100 gm. The equation that represents the different amounts of each you can buy for \$12 is ***.

____ a. $1.25c + 0.95m = 12$
____ b. $1.25c + 95m = 12$
____ c. $125c + 95m = 12$
____ d. $2.2(c + m) = 12$

19. The equation $0.25y - 0.7x + \frac{7}{10} = 0$ cleared of fractions and decimals is ***.

____ a. $0.25y - 0.7x + 0.7 = 0$
____ b. $2.5 - 7x + 7 = 0$
____ c. $25y - 7x + 7 = 0$
____ d. $5y - 14x + 14 = 0$

20. The equation $\frac{7}{9}x+\frac{4}{5}y-\frac{1}{3}=0$ cleared of fractions is ***.

____ a. $7x+4y-1=0$

____ b. $35x+36y-15=0$

____ c. $35x+36y-45=0$

____ d. $\frac{35}{45}x+\frac{36}{45}y-\frac{15}{45}=0$

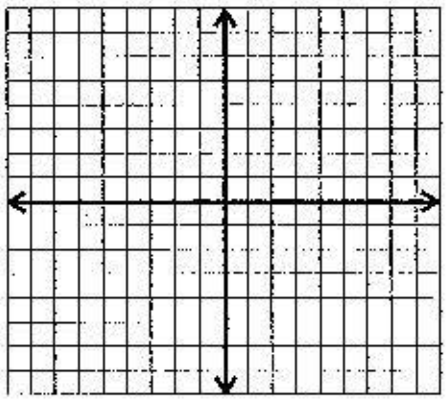
Answer **Part B** and **Part C** in the space provided. Evaluation of your solution to each problem will be based on the following.

- A correct mathematical method for solving the problem is shown.
- The final answer is accurate and a check of the answer is shown where asked for by the question.
- The solution is written in a style that is clear, logical, well organized, uses proper terms, and states a conclusion.

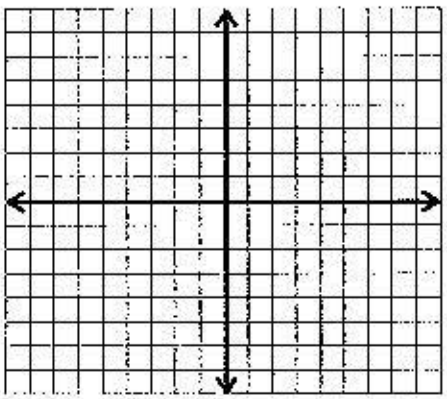
(5) B. 1. A straight line contains the points with coordinates $(-1, 7)$ and $(2, a)$ and has a slope of $-\frac{1}{3}$. Find the unknown ordinate.

(5) 2. Solve for a if the points whose coordinates are $(a, -2), (5, -5), (10, a)$ all lie on the same straight line.

(5) 3. Draw the straight line passing through $(-2, -3)$ with a slope of $-\frac{5}{6}$.

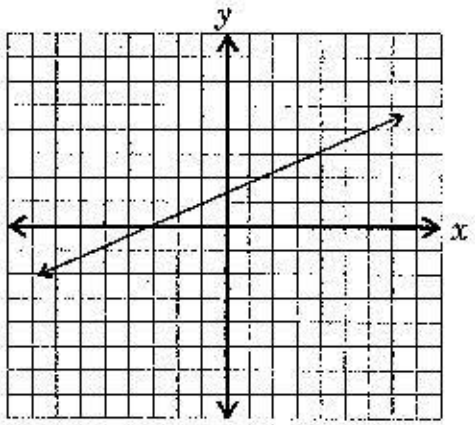


(5) 4. Draw the straight line perpendicular to the graph of $y + 3x - 5 = 0$ and passing through $(2, -1)$.

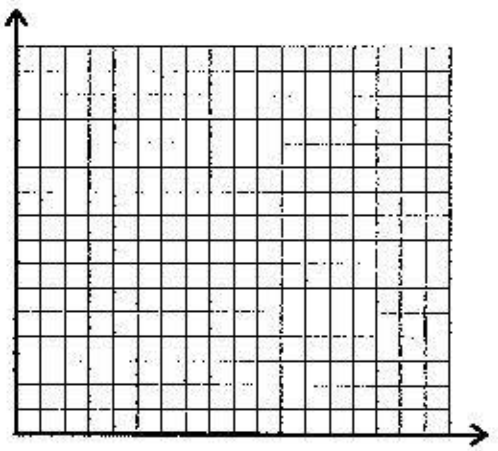


(5) 5. A line passing through $(-1, -3)$ is perpendicular to a line passing through $(0, 2)$, $(3, -5)$. Find its equation and write it in the form $Ax + By + C = 0$ where A, B, and C are integers.

(5) 6. Determine the slope-intercept form of the equation of the given line.

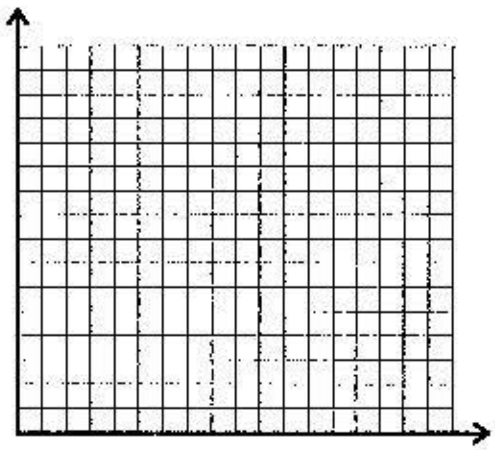


(5) 7. The total cost of driving a rented van 200 km is \$59 and driving 500 km is \$110. There is a basic charge and a cost based on the number of kilometers driven. Plot these points on the graph and determine the basic cost as well as the cost per kilometer.



(5) 8. You have \$160 to spend on hamburger and turkey for a family dinner. Hamburger costs \$6 per kg and turkey costs \$4 per kg. Write the linear equation which represents the different amounts of each that you can buy for \$160. Graph the relation determined by this equation.

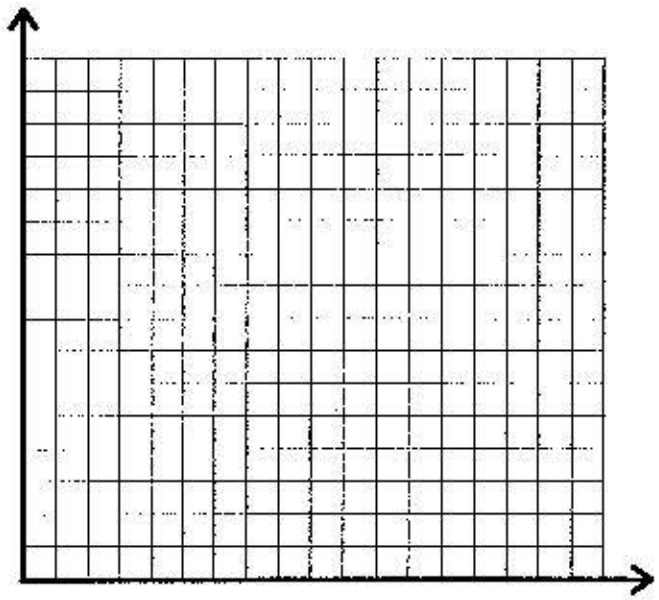
If the amount of hamburger purchased is increased by 1 kg how much less turkey is purchased?



(15) C. 1. In March 1997 the classifieds in a Regina newspaper contained ads with asking prices for a Dodge Caravan SE.

Year	Asking Prices (in dollars)		
1984	\$ 3 900	\$ 3 378	
1985	3 900	3 950	3 700
1986	4 100		
1987	4 600		
1988	4 000		
1989	6 900		
1990	9 500		
1991	11 900		
1992	16 900		
1993	16 250		
1994	16 800	16 500	18 500
1995	17 900		
1996	24 000		

a. Plot the data on the graph paper and draw a straight line which best fits the data.



b. Determine the equation of the straight line using the point slope form.

c. What is the slope of the line of best fit? Approximately how much does a van decrease in value each year?

(5) 2. (STUDENT JOURNAL)

Write a summary of the material in this lesson that would be suitable for review purposes.

(100)

Assignment 13

Values

(40) A. **Multiple Choice:** Select the correct answer for each of the following and place a check (✓) beside it.

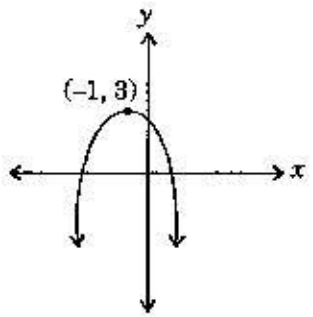
1. If $r(t) = -3.7t^2 - 2.7t + 10$, then $r(0.5)$ is equal to ***.

   ____ a. 12.0725
   ____ b. -7.725
   ____ c. 7.725
   ____ d. 12.275

2. The equation which represents a quadratic function is ***.

   ____ a. $f(x) = \frac{1}{x^2} + 5$
   ____ b. $f(x) = x^3 + x^2 - 1$
   ____ c. $f(x) = -x + 4$
   ____ d. $f(x) = \frac{1}{2}x^2 - 7$

3. The equation of the parabola shown is ***.



   ____ a. $y = -2(x+1)^2 + 3$
   ____ b. $y = 2(x+1)^2 + 3$
   ____ c. $y = -2(x-1)^2 + 3$
   ____ d. $y = 2(x-1)^2 - 3$

4. In $y = a(x-p)^2 + q$, if $a > 0$ then ***.

   ____ a. the curve is above the x-axis
   ____ b. the curve is concave downward
   ____ c. the vertex is a minimum and the curve is concave upward
   ____ d. the vertex is a maximum and the curve is concave downward

5. In $y = a(x-p)^2 + q$, if $q > 0$ then ***.

___ a. the vertex is below the x-axis
___ b. the concavity is upward
___ c. the vertex is above the x-axis and concavity is down
___ d. the vertex is above the x-axis

6. In $y = a(x-p)^2 + q$ if $q < 0$ and $a < 0$, then ***.

___ a. arms are down and the vertex is below the x-axis
___ b. arms are down and the vertex is above the x-axis
___ c. the vertex is below the x-axis and concavity is up
___ d. the vertex is above the x-axis and concavity is up

7. In $y = \frac{1}{2}(x+3)^2 - 1$, the vertex is at ***.

___ a. $(-3, 1)$
___ b. $(-3, -1)$
___ c. $(3, 1)$
___ d. $(3, -1)$

8. If the coefficient of x^2 is factored from the right hand expression of $y = 2x^2 + \frac{1}{2}x$, the equation becomes ***.

___ a. $y = x^2 + \frac{1}{4}x$
___ b. $y = 2\left(x^2 + \frac{1}{2}x\right)$
___ c. $y = 2\left(x^2 + \frac{1}{4}x\right)$
___ d. $y = x^2 + \frac{1}{2}x$

9. The equation $y = x^2 + 8x + 1$ expressed in the form of $y = a(x-p)^2 + q$ is ***.

____ a. $y = (x+4)^2 - 17$
____ b. $y = (x+4)^2 + 1$
____ c. $y = (x+4)^2 - 15$
____ d. $y = (x+4)^2 + 17$

10. The equation $y = 2x^2 + 8x + 1$ expressed in the form $y = a(x-p)^2 + q$ is ***.

____ a. $y = 2(x+2)^2 - 7$
____ b. $y = 2(x+2)^2 + 5$
____ c. $y = 2(x+2)^2 - 3$
____ d. $y = 2(x+4)^2 - 31$

11. The equation $y = -3x^2 + 9x + 1$ has axis of symmetry ***.

____ a. $y = \frac{27}{4}$
____ b. $y = \frac{-27}{4}$
____ c. $x = -\frac{3}{2}$
____ d. $x = \frac{3}{2}$

12. The equation $5y + 4 = \frac{1}{5}(x-1)^2 + \frac{2}{5}$ in standard quadratic form is ***.

____ a. $y = x^2 - 2x + 3$
____ b. $y = \frac{1}{5}x^2 - \frac{2}{5}x + \frac{3}{5}$
____ c. $y = x^2 - 2x - 17$
____ d. $y = \frac{1}{25}x^2 - \frac{2}{25}x - \frac{17}{25}$

13. The equation of a parabola with vertex at (1, 1) and y-intercept $(0, -1)$ is ***.

___ a. $y = -2(x-1)^2 + 1$

___ b. $y = -\frac{1}{2}(x-1)^2 + 1$

___ c. $y = -2(x+1)^2 - 1$

___ d. $y = -\frac{1}{2}(x+1)^2$

14. The equation of a parabola, concave up, with axis of symmetry $x = -5$ could be ***.

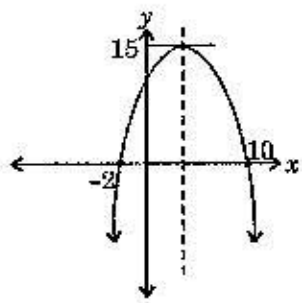
___ a. $y = -4(x+5)^2 + 5$

___ b. $y = 2(x-5)^2 + 2$

___ c. $y = 13(x+5)^2 - 1$

___ d. $y = -2(x-5)^2 - 5$

For Questions 15 to 17 refer to the following graph.



15. The equation of the axis of symmetry is ***.

___ a. $y = 15$

___ b. $x = 4$

___ c. $x = 6$

___ d. $x = 8$

16. The coordinates of the vertex are ***.

___ a. $(-6, 15)$
___ b. $(4, 15)$
___ c. $(0, 15)$
___ d. $(6, 15)$

17. The equation of the curve is ***.

___ a. $y = -\frac{15}{36}(x-4)^2 + 15$
___ b. $y = \frac{15}{36}(x-4)^2 + 15$
___ c. $y = -\frac{15}{36}(x+4)^2 - 15$
___ d. $y = (x-4)^2 + 15$

18. The x-intercepts of the graph of $y = 4(x+5)^2 - 1$ are ***.

___ a. $\left(-5\frac{1}{2}, 0\right)\left(-4\frac{1}{2}, 0\right)$
___ b. $(0, 99)$
___ c. $\left(0, -\frac{5}{2}\right), \left(0, -4\frac{1}{2}\right)$
___ d. $\left(-5\frac{1}{2}, -4\frac{1}{2}\right)$

19. The y-intercept of the graph of $y = 4(x+5)^2 - 1$ is ***.

___ a. $(99, 0)$
___ b. $\left(0, -5\frac{1}{2}\right), \left(0, -4\frac{1}{2}\right)$
___ c. $(0, -1)$
___ d. $(0, 99)$

20. The solution to $x^2 + 4x - 5 = 16$ is $x =$ ***.

___ a. $-5, 1$
___ b. $-1, 5$
___ c. $-3, 7$
___ d. $3, -7$

Answer **Part B** and **Part C** in the space provided. Evaluation of your solution to each problem will be based on the following.

- A correct mathematical method for solving the problem is shown.
- The final answer is accurate and a check of the answer is shown where asked for by the question.
- The solution is written in a style that is clear, logical, well organized, uses proper terms, and states a conclusion.

B. 1. Convert each quadratic equation to the form $y = a(x-p)^2 + q$.

(3) a. $y = x^2 - 9x - 1$

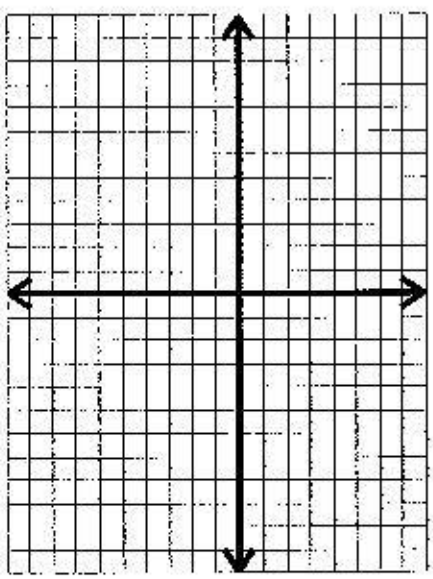
(3) b. $y = 1 - x^2 - \frac{5}{4}x$

(3) c. $y = -3x^2 - 5x + 7$

(3) d. $y=\frac{1}{4}x^2+8x-5$

(3) e. $y-3=\frac{2}{3}x^2-3x+1$

(7) 2. Write the equation $y=x^2+x+1$ in the form $y=a(x-p)^2+q$ and sketch the curve. On the curve label the vertex and y intercept coordinates. On the graph state if the curve is concave up or down.

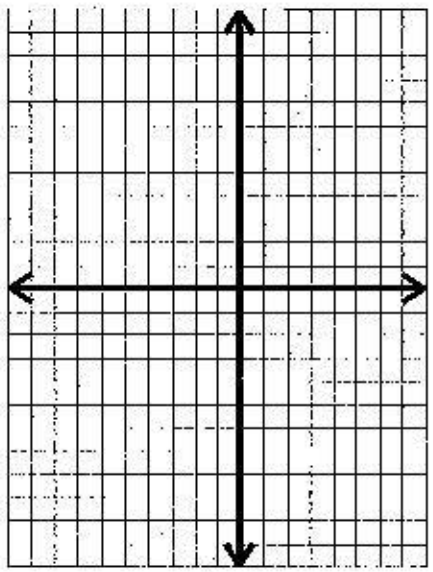


(6) 3. Currently an ice cream store sells 600 cones a week at 95¢ each. Statistics show that a 5¢ per cone increase in price reduces sales by 20 cones per week. Determine the price to be charged to get the maximum revenue.

4. Suppose that the sum of two positive numbers is 100. What are the two numbers whose product is a maximum? Solve this problem by performing the following steps.

(2) a. Identify the variables and write an equation which describes the problem.

(2) b. Sketch a graph of the equation. Use a scale appropriate to the grid which is provided. Show the roots of the equation and the maximum.



(2) c. State the two numbers and the maximum product.

(2) d. If two positive numbers sum to 50, what must those numbers be so that their product is a maximum?

(2) e. State the general rule which answers the question, "If two positive numbers sum to N, what must the numbers be so that their product is a maximum?".

(2) f. Apply this rule to the following problem. A rectangular enclosure is to be made from 200 m of fencing. What must the dimension be to get maximum area?

(3) C. 1. a. By completing the square, show that the x-coordinate of the vertex for the parabola whose equation is $y = ax^2 + bx + c$ is $-\frac{b}{2a}$.

2) b. Using the method in part a, find the vertex coordinates of the parabola given by $y = \frac{4}{3}x^2 + 5x - \frac{1}{4}$.

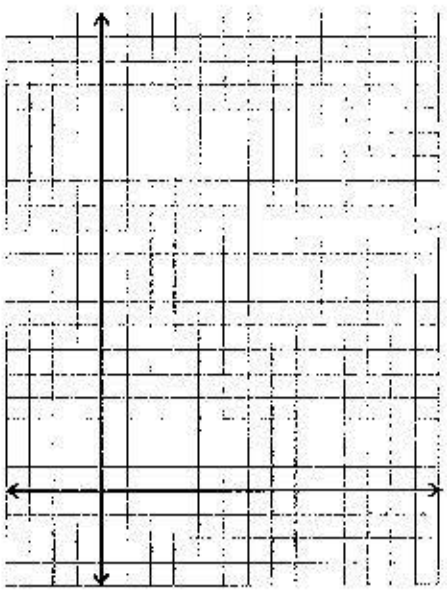
2. A rectangular pasture is to be made from 100 m of fencing material. One side of the rectangle is a river and no fencing is required. The other three sides require fencing. What dimensions would give the maximum area. Complete this question by answering the following questions.

(2) a. Draw a diagram with the sides labelled.

(2) b. Write an equation for the total length of fencing.

(2) c. Express the area as a function of only one variable.

(2) d. Sketch the area function in c.



(2) e. Write the solution to the question.

(5) 3. Write a summary of the material in this lesson which would be suitable for review or study purposes.

(100)

Assignment 14

Values

(40) A. **Multiple Choice:** Select the correct answer for each of the following and place a check (✓) beside it.

1. The domain of $y = \frac{1}{x}$ is ***.

   ____ a. $x \geq 0 \quad x \in R$
   ____ b. $x > 0, \quad x \in R$
   ____ c. $x \in R$
   ____ d. $|x| > 0, \quad x \in R$

2. The equation which does not express an inverse variation between the variables is ***.

   ____ a. $y = \frac{k}{x^4}$
   ____ b. $a_1 b_1 = a_2 b_2$
   ____ c. $\frac{a_1}{a_2} = \frac{b_2}{b_1}$
   ____ d. $\frac{a_1}{b_1} = \frac{a_2}{b_2}$

3. If $x \propto \frac{1}{y}$ and x is 3 when y is 13, then the constant of proportionality is ***.

   ____ a. 39
   ____ b. 1
   ____ c. $\frac{1}{39}$
   ____ d. $\frac{1}{13}$

4. If $a \propto \frac{1}{d^3}$ and a is 3 when d is 2, the constant of proportionality is ***.

___ a. 6
___ b. 1
___ c. 24
___ d. $\frac{1}{8}$

5. If distance travelled is inversely proportional to the square root of the time taken, and distance is 13 m, after 9 sec, then the constant of proportionality is ***.

___ a. 39
___ b. 117
___ c. $9\sqrt{13}$
___ d. $\frac{1}{3}$

6. If the strength of a beam is inversely proportional to its length, and a beam 5 m long can support at most 100 kg, the number of kg an 8 m long beam can support is ***.

___ a. 500
___ b. 62.5
___ c. 160
___ d. 50

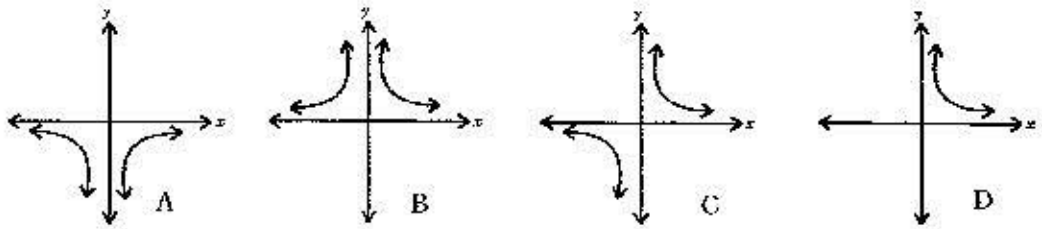
7. The statement "The amount of current I flowing through a circuit is inversely proportional to the amount of resistance R is the circuit." is written in symbols as ***.

___ a. $I = \frac{K}{R}$
___ b. $I = KR$
___ c. $\frac{I}{R} = K$
___ d. $I_1 R_2 = I_2 R_1$

8. If the area of a rectangle is to remain constant then ***.

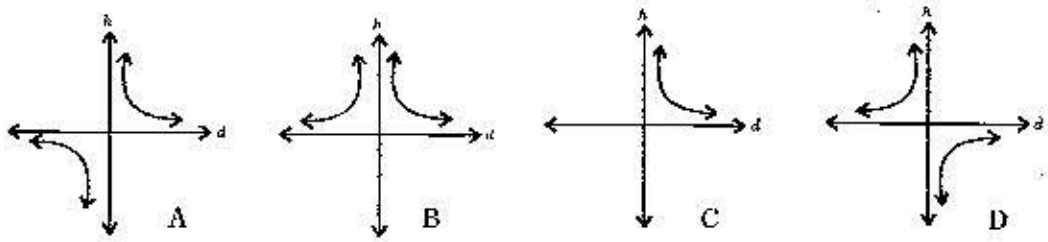
___ a. the area remains unchanged if the length is increased by 1 and the width is decreased by 1
___ b. the area increases as the length increases
___ c. the length is inversely proportional to the width
___ d. the length is directly proportional to the width

9. The most likely graph of the inverse variation $y \propto \frac{1}{x^2}$ is ***.



___ a. A
___ b. B
___ c. C
___ d. D

10. The graph that best describes the variation statement, "The height of a tree is inversely proportional to the cube of the diameter." is ***.



___ a. A
___ b. B
___ c. C
___ d. D

11. A 3 m bar is used to lift a stone as shown in the diagram. A 90 kg person exerts all his weight to one end of the bar which is $2\frac{1}{2}$ m from the fulcrum and balances the stone. The weight of the stone is approximately ***.

___ a. 500 kg
___ b. 450 kg
___ c. 400 kg
___ d. 45 kg

For each of the questions from 12 to 17 determine the correct ratio of y to x.

12. $\frac{7}{3}y = \frac{5}{4}x$

___ a. $\frac{15}{28}$
___ b. $\frac{28}{15}$
___ c. $\frac{5}{4}$
___ d. $\frac{7}{3}$

13. $\frac{5}{7y} = \frac{10}{21x}$

___ a. $\frac{2}{3}$
___ b. $\frac{3}{5}$
___ c. $\frac{5}{3}$
___ d. $\frac{3}{2}$

14. $\frac{3x+2y}{5y}=\frac{2}{3}$

___ a. $\frac{9}{16}$

___ b. $\frac{16}{9}$

___ c. $\frac{9}{4}$

___ d. $\frac{4}{9}$

15. $\frac{7y+15}{3}=\frac{5x+10}{2}$

___ a. $\frac{14}{15}$

___ b. $\frac{45}{44}$

___ c. $\frac{44}{45}$

___ d. $\frac{15}{14}$

16. $\frac{3x-y}{3y-x}=-9$

___ a. $\frac{3}{13}$

___ b. $\frac{1}{3}$

___ c. 3

___ d. $\frac{13}{3}$

17. $\dfrac{12y}{5-4y} = \dfrac{9x}{2-3x}$

___ a. $\dfrac{3}{8}$

___ b. $\dfrac{8}{15}$

___ c. $\dfrac{15}{8}$

___ d. $\dfrac{3}{5}$

18. An equation which is not equivalent to $a_1 b_1 = a_2 b_2$ is ***.

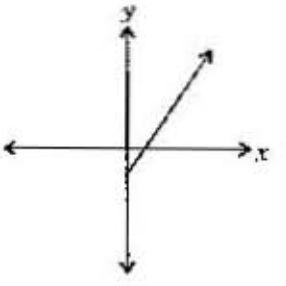
___ a. $\dfrac{a_1}{a_2} = \dfrac{b_2}{b_1}$

___ b. $\dfrac{a_1}{b_2} = \dfrac{a_2}{b_1}$

___ c. $\dfrac{a_1}{a_2} = \dfrac{b_1}{b_2}$

___ d. $a_2 b_2 = b_1 a_1$

19. The given graph is that of a ***.



___ a. direct variation
___ b. partial variation
___ c. inverse variation
___ d. infinite variation

20. If distance (d) is directly proportional to time (t) and $d = 15$ km after $2\frac{1}{2}$ hrs, then after 3 hrs more, d is ***.

____ a. 18 km
____ b. 45 km
____ c. 37.5 km
____ d. 33 km

Answer **Part B** and **Part C** in the space provided. Evaluation of your solution to each problem will be based on the following.

- A correct mathematical method for solving the problem is shown.
- The final answer is accurate and a check of the answer is shown where asked for by the question.
- The solution is written in a style that is clear, logical, well organized, uses proper terms, and states a conclusion.

(5) B. 1. If 6 men do a job in 12 days, how long would 18 men take, working at the same rate?

(5) 2. If y varies inversely as $3x + 2$ and $y = 24$ when $x = 1$, find x when y is 15.

(5) 3. If v varies inversely as the cube of t, and $V = 297$ when $t = 2$, what is V when $t = 3$?

(5) 4. The weight of a body at or above the earth's surface varies inversely as the square of the distance from the earth's center. What does a 450 kg object weigh 500 km away from the earth's surface? A 450 kg object weighs 4 410 Newtons at the surface of the earth. Newton is a unit of measure for weight. Use 6 500 km as the radius of the earth in your calculations.

(5) 5. If a uniform bar is to balance on a fulcrum, the ratio of the larger weight to the smaller weight must equal the ratio of the smaller distance to the larger distance.

If an 8 kg weight is 7.2 m from the fulcrum, how far from the fulcrum is a 9 kg weight which balances it?

(5) 6. If the illumination of a book 9 m from a lamp is 150 lumens/m^2 find the illumination of the book 3 m closer to the lamp.

(5) 7. A 12 cm diameter pulley runs at 240 rpm and runs an 8 cm diameter pulley. How fast does the 8 cm pulley rotate?

(5) 8. A gear with 48 teeth makes 5 rpm and webs with a gear having 20 teeth which in turn webs with a gear having 16 teeth. What is the speed of the smallest gear?

(10) C. 1. A study was conducted which measures the appearance of sunburn on skin after exposure for a fixed length of time to solar radiation of different wave lengths. The data recorded is given below where the wavelength is in nanometers (nm) and the sunburn appearance is measured on a scale from zero to one.

The data suggests that there is an inverse relationship between the variables since, as the wavelengths increase, the appearance of sunburn decreases. The problem is to determine the variation equation; i.e., is it $y = \frac{k}{x}, y = \frac{k}{x^2}, y = \frac{k}{\sqrt{x}}$, or some other relation?

Do your investigation by showing your calculations in the table. From your calculations write a conclusion at the end of the table. If you need assistance call your teacher at Technology Supported Learning toll-free at 1-800-667-7166.

w Wave length	x $w-300$	Sunburn appearance (y)					
306	6	1.00					
310	10	0.77					
315	15	0.60					
320	20	0.55					
325		0.49					
330		0.40					
340		0.37					
360		0.30					
370		0.28					

Conclusion:

(5) 2. Attach the completed Activity 14.1 to the assignment.

(5) 3. (STUDENT JOURNAL)

Write a brief summary of this lesson which would be suitable for review or study purposes.

(100)

Assignment 15

Values

(40) A. **Multiple choice:** Select the correct answer for each of the following and place a check (✓) beside it.

1. The ordered pair (3, 0) is a solution to the system ***.

___ a. $x+y=1$
$x-1=1$

___ b. $x+2y=3$
$x=y+3$

___ c. $2x+y=1$
$x+2y=5$

___ d. $x+2y=5$
$2x+3y=7$

2. The x and y intercepts of the graph of the equation $3x-4y=16$ are ***.

___ a. $(0,0),\left(-4,5\frac{1}{3}\right)$

___ b. $(-4,0),\left(0,5\frac{1}{3}\right)$

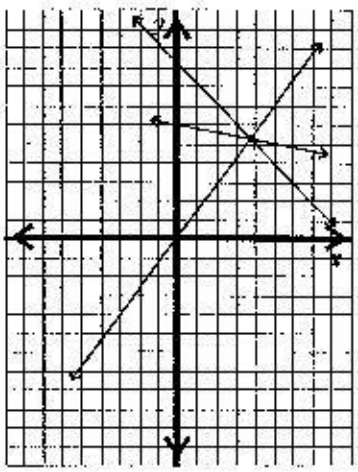
___ c. $(0,4),\left(5\frac{1}{3},0\right)$

___ d. $(0,-4),\left(5\frac{1}{3},0\right)$

3. The ordered pair which is a solution to the system $y=2x+1$, $y=-5x+1$ is ***.

___ a. $(0, 1)$
___ b. $(1, 0)$
___ c. $(2,-5)$
___ d. $(0,-1)$

4. The best approximate solution to the system of three equations whose graphs are shown is ***.



___ a. $(-5,-4)$
___ b. 0, 6, 10
___ c. (4, 5)
___ d. (5, 4)

5. If a system of equations has no solution then ***.

___ a. at least one of the graphs is a vertical line
___ b. the graphs intersect at (0, 0)
___ c. the graphs are different parallel lines
___ d. the graphs intersect at infinently many points

6. When x is expressed in terms of y, the linear equation $3x+4y=1$ becomes ***.

___ a. $x=\frac{1}{3}-\frac{4}{3}y$
___ b. $3x=1-4y$
___ c. $x=\frac{1}{3}-4y$
___ d. $y=\frac{1}{4}-\frac{3}{4}x$

7. When $x=3y-8$ is substituted for x in the equation $2y-3x=3$, the result is ***.

___ a. $x=1$
___ b. $y=-21$
___ c. $y=\frac{-27}{7}$
___ d. $y=3$

8. The system of equations $x+y+1=0$ $2x+2y+1=0$ has ***.

____ a. solution (0, 0)
____ b. no solution
____ c. an infinite number of solutions
____ d. 4 solutions which are the x and y intercepts

9. An equation which is equivalent to the equation $4x+y-1=0$ is ***.

____ a. $16x+4y-1=0$
____ b. $x+\frac{1}{4}y=1$
____ c. $12x+3y=3$
____ d. $-4x-y-1=0$

10. An equation which is equivalent to the equation $y=\frac{2}{3}x+\frac{5}{4}$ is ***.

____ a. $y-1=\frac{2}{3}x+\frac{1}{4}$
____ b. $3y=2x+5$
____ c. $y+\frac{5}{4}=\frac{2}{3}x$
____ d. $y-1=-\frac{1}{3}x+\frac{5}{4}$

11. The equation which is **not** equivalent to $\frac{3}{2}x-\frac{1}{3}y-2=0$ is ***.

____ a. $3x-\frac{2}{3}y-4=0$
____ b. $\frac{9}{2}x-y-6=0$
____ c. $9x-2y-12=0$
____ d. $3x-y-4=0$

12. If one equation is equivalent to another equation then ***.

___ a. the graphs are not the same but are parallel
___ b. both equations have the same graph
___ c. the graphs intersect at a point
___ d. the coefficients must be the same

13. In the system $3x+y=1$ ①
$5x+2y=0$ ②

to eliminate the variable y ***.

___ a. subtract equation ① from equation ②

___ b. multiply equation ① by 2 and add

___ c. multiply equation ① by -2 and add

___ d. multiply equation ① by -1 and add

14. In the system $3x+5y=1$ ①
$2x+3y=0$ ②

to eliminate a variable ***.

___ a. multiply ① by -2 and ② by 3 and add

___ b. multiply ① by 2 and ② by -3 and add

___ c. multiply ① by 3 and ② by -5 and add

___ d. any one of a, b, or c

15. One equation equivalent to $\frac{1}{3}x+\frac{3}{5}y-\frac{1}{2}=0$ is ***.

___ a. $x+3y=1$
___ b. $x+3y=15$
___ c. $10x+18y=15$
___ d. $5x+9y=7$

16. The equivalent equation to $5x-3y-4=0$ with x in terms of y is ***.

____ a. $x=\frac{3}{5}y+\frac{4}{5}$

____ b. $x=\frac{3}{5}y+4$

____ c. $y=\frac{5}{3}x-\frac{4}{3}$

____ d. $y=\frac{5}{3}x-4$

17. The equivalent equation to $\frac{3}{4}x-\frac{7}{8}y-3=0$ is ***.

____ a. $x=\frac{7}{8}y+3$

____ b. $x=\frac{7}{6}y+3$

____ c. $y=\frac{6}{7}x-\frac{24}{7}$

____ d. $y=\frac{21}{32}x-\frac{21}{8}$

18. If the solution to

$$ax+3y=1$$
$$-x+y=2$$

is $\left(-\frac{1}{2},1\frac{1}{2}\right)$ then a is ***.

____ a. 7
____ b. -1
____ c. -7
____ d. 1

19. A line with zero slope passing through (8, 17) intersects with a line with no slope passing through $(-3, 7)$ at the point ***.

___ a. $(7, 8)$
___ b. $(-3, 8)$
___ c. $(8, 7)$
___ d. $(-3, 17)$

20. The system $y = 2x + 5$ has solution ***.
$y = -6x + 5$

___ a. $(0, 5)$
___ b. $(5, 0)$
___ c. $(1, 5)$
___ d. $(0, 0)$

Answer **Part B** and **Part C** in the space provided. Evaluation of your solution to each problem will be based on the following.

- A correct mathematical method for solving the problem is shown.
- The final answer is accurate and a check of the answer is shown where asked for by the question.
- The solution is written in a style that is clear, logical, well organized, uses proper terms, and states a conclusion.

(5) B. 1. $x + 3y = 8$
$5x + y = -2$

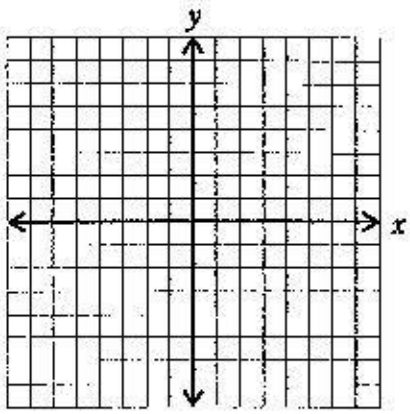
Solve by substitution.

(5) 2. $4x + 5y = 9$
$5x + 4y = 0$

Solve by elimination.

(5) 3. $2x = 3y - 5$
$8 = x + 2y$

Solve by graphing.



(5) 4. $3x + 2y = 570$
$4x + 5y = 970$

Solve by elimination.

(5) 5. Solve $\frac{1}{5}x+\frac{3}{4}y=\frac{1}{15}$

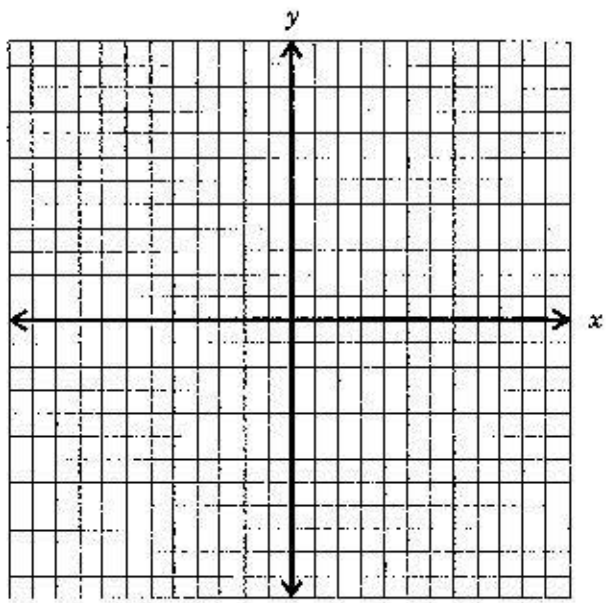
$x+\frac{5}{8}y=\frac{1}{3}$

(5) 6. Solve $7x+8y=9$

$10x+11y=12$

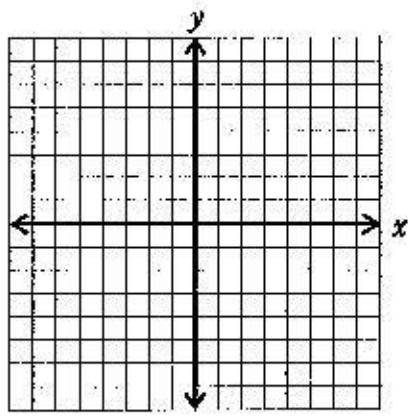
(5) 7. $2x + y = -8$
$2x + 3y = 6$

Solve algebraically and check by graphing.



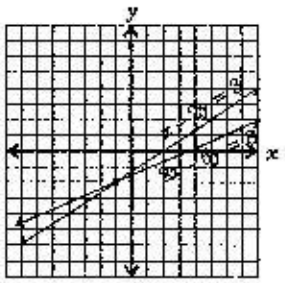
(5) 8. $2x - 3y = 9$
$-4x + 6y = -18$

Solve algebraically and check by graphing.



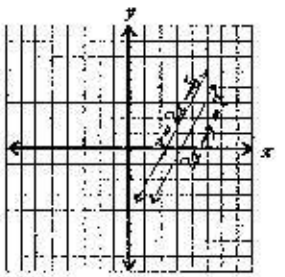
(20) C. 1. A system of two linear equations can have either one solution, no solution, or an infinity of solutions. For each case the system has a special name.

i)



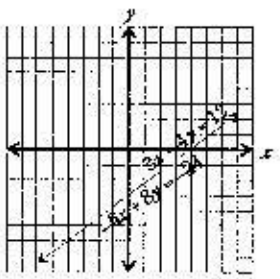
A system with at least one solution is called **consistent.**

ii)



A system with no solution is called **inconsistent.**

iii)



A system with an infinity of solutions (both equations represent the same line) is called **dependent.**

Note that a dependent system is also consistent.

(2) a. For each system shown above, write the six equations in the form $y = mx + b$.

(2) b. Without algebraically solving a system and without graphing a system, but by simply observing the system where each equation is in the form , $y = mx + b$, describe how you can recognize if a system is consistent, inconsistent, or dependent.

(2) c. Given the equation $5x - 3y = 15$, write a second equation in standard form so that the two equations produce.

i. an inconsistent system
ii. a dependent system

(2) 2. a. Solve the system $x + 2y = 3$
$4x + 5y = 6$

(2) b. Describe the similarity of the above system to that of Question B.6.

(5) c. What value of n makes the following system the same as that in 2a? Answer: _____

$$nx+(n+1)y=(n+2) \quad (1)$$
$$(n+3)x+(n+4)y=(n+5) \quad (2)$$

Observing the pattern seen in B. 6. and C.2a. suggest the solution to the above system of equations.

Answer: $(x, y) = (\quad , \quad)$

Show a check to your suggested solution.

(5) 3. (STUDENT JOURNAL)

Three different methods of solving systems of equations were studied in this lesson. Give an example which is best solved by a certain method. Do this for each of the methods.

(100)

Assignment 16

Values

A. Rewrite each of the following as an algebraic equation in two unknowns. Let x and y represent the two unknown quantities. Define what x and y represent.

(2) 1. The sum of one number and twice another number is 29.

(2) 2. The difference between two numbers is seven.

(2) 3. When twice one number is decreased by two-thirds of another number, the result is 5.

(2) 4. Lou has 25 tickets, some are red and the rest are green.

(2) 5. Kim paid $3.95 for a notebook in dimes and quarters.

(2) 6. A storekeeper wishes to mix tea worth \$15/kg with tea worth \$19/kg to make a mixture valued at \$17.20/kg.

(2) 7. Mr. Bean mixes gumdrops worth \$5/kg with jelly beans worth \$9/kg to get a mixture worth \$8/kg.

(2) 8. Mark invested \$1 500; part at 5% interest and part at 7% interest.

(2) 9. Mark earned \$504 interest on an investment at 5% and another at 7%.

(2) 10. Chuck paddles his canoe 27 km downstream for 3 hours.

B. For each word problem be sure to identify the variables and write a concluding statement. The main part of the solution should be carried out as much as possible in the manner shown in the examples. All work must be shown for full marks. (This includes a check!)

(8) 1. Three times a number plus twice a second number is 41. Also, four times the first plus five times the second is 71. Find the numbers.

(8) 2. A sum of money amounting to \$4.15 consists of dimes and quarters. If there are 19 coins in all, how many quarters are there?

(8) 3. A jet plane makes a 4 800 km trip to Europe in 5 hours, but takes 6 hours for the return trip. If the speed of wind is constant and throughout the trip, what is the speed of the wind and what is the speed of the plane in still air?

(8) 4. Candy invested $2 500; part in a 5% investment and part in a 7% investment. If the interest on the investment is $160, how much was invested at each rate?

(8) 5. A square and an equilateral triangle have the same perimeter. Each side of the triangle is 8 cm less than twice the length of each side of the square. How long is each side of the square?

(8) 6. In one week a gas station sold 50 000 L of gas and the net value of the sales was $29 000.00. The prices during that week were 61.9¢/L and then a gas war forced the price down to 54.9¢/L. How many L were sold at each price?

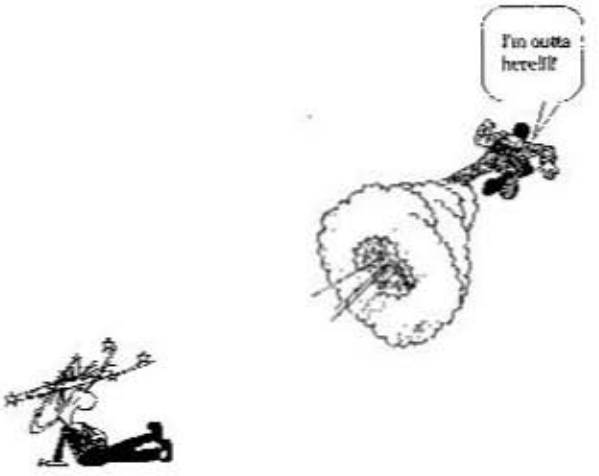
(8) 7. A 60% antifreeze solution is to be mixed with a 10% antifreeze solution. In what ratio $\left(\frac{x}{y}\right)$ must they be mixed to obtain a 40% antifreeze solution? (Hint: Let N be the number of litres of the 40% solution)

(8) 8. Tickets for a community supper sold for \$7 for adults and \$5 for children. If 450 were sold and \$2 850 were collected, how many of each kind of ticket was sold?

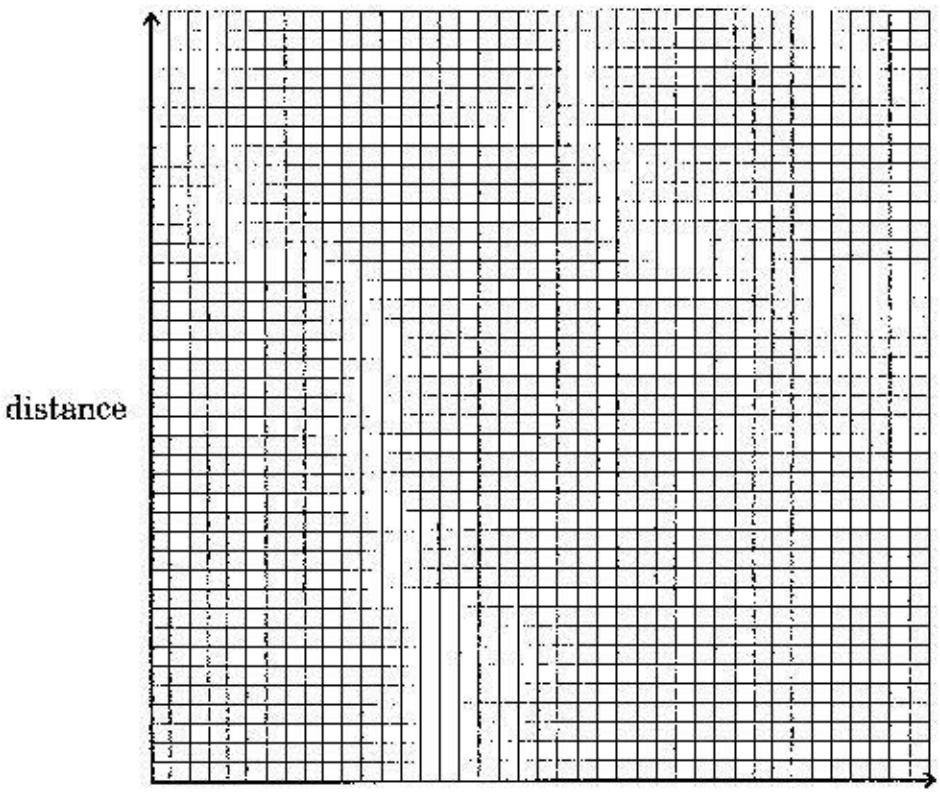
(8) 9. A 6 000 m relay race is run by two male runners in 18.5 minutes. The first runner averaged 300 m/min and the second 350 m/min. For how many minutes did each hold the baton?

(8) 10. At the sound of an explosion Eleanor ran east at 250 metres per minute. Rudy regained consciousness 4 minutes later and began to run after Eleanor at 300 metres per minute.

a. Write the distance verses time equation for each of the runners.



b. Draw the graph of each of the equations and from the graph estimate the time that it took Rudy to catch up to Eleanor.

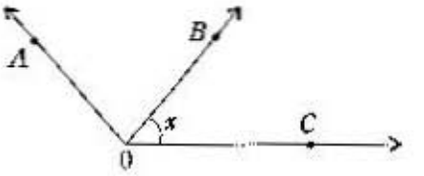


(100)

Assignment 17

(40) A. **Multiple Choice:** Select the correct answer for each of the following and place a check (✓) beside it.

1. The correct symbol for angle x is ***.



___ a. $\angle O$
___ b. $\angle BC$
___ c. $\angle BCO$
___ d. $\angle BOC$

2. An angle with a measure of 190° is called a *** angle.

___ a. right angle
___ b. reflex angle
___ c. obtuse angle
___ d. straight angle

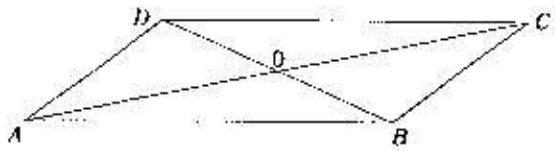
3. The always true statement about two angles, $\angle A$ and $\angle B$, whose measure add up to 180 degrees is ***.

___ a. $\angle A$ and $\angle B$ form a linear pair
___ b. $\angle A$ and $\angle B$ are supplementary
___ c. $\angle A$ and $\angle B$ are complementary
___ d. $\angle A$ and $\angle B$ are obtuse

4. If two angles form a linear pair and have equal measures, then ***.

___ a. each $\angle$ is acute
___ b. each $\angle$ is obtuse
___ c. each $\angle$ is a right angle
___ d. each $\angle$ has a measure of 45°

5. A pair of vertically opposite angles in the diagram is ***.



____ a. $\angle DOC$ and $\angle AOB$
____ b. $\angle DAO$ and $\angle BCO$
____ c. $\angle DOC$ and $\angle COB$
____ d. $\angle ADC$ and $\angle ABC$

6. An angle in standard position with a measure of 90° is ***.

____ a. in the first quadrant
____ b. in the second quadrant
____ c. in the third quadrant
____ d. a quadrantal angle

7. An angle of measure 370° in standard position is ***.

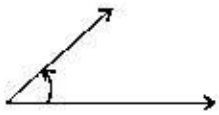
____ a. in the first quadrant
____ b. in the second quadrant
____ c. in the third quadrant
____ d. a quadrantal angle

8. The one pair which is the measure of the same angle is ***.

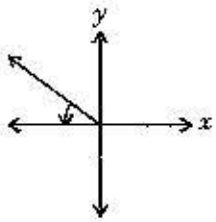
____ a. $90°, \frac{\pi}{4}$
____ b. $1°, \frac{180}{\pi}$
____ c. $60°, \frac{\pi}{3}$
____ d. $180°, 2\pi$

9. The one angle that is in standard position is ***.

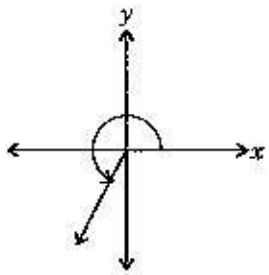
___ a.



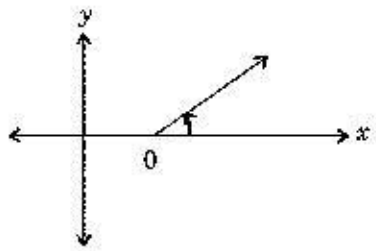
___ b.



___ c.



___ d.



10. The two units for measurement of angles are ***.

___ a. ruler and protractor
___ b. degrees, radians
___ c. degrees, minutes
___ d. cm, inches

11. The distance from the origin to the point (11, −13) is ***.

___ a. 4.9 units
___ b. 11 units
___ c. 13 units
___ d. 17 units

12. The distance between $P_1(-1,-2)$ and $P_2(3,9)$ is ***.

___ a. $\sqrt{137}$
___ b. $\sqrt{53}$
___ c. 15
___ d. 9

13. The coordinate of the midpoint of the line segment joining $A(-6,7)$, and $B(2,-3)$ are ***.

___ a. $\left(-4\frac{1}{2}, 5\right)$
___ b. $(-2,2)$
___ c. $(-4,5)$
___ d. $(4,2)$

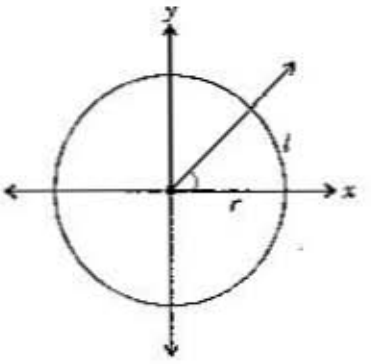
14. The midpoint of a line segment $\overline{AB}$ is $(7,-5)$ and the point A has coordinates (0, 0). The coordinates of B are ***.

___ a. $(14,-10)$
___ b. $\left(3\frac{1}{2}, -2\frac{1}{2}\right)$
___ c. $(-7,5)$
___ d. $\left(-3\frac{1}{2}, 2\frac{1}{2}\right)$

15. The measure of an angle in radians is ***.

___ a. its measure in degrees
___ b. 2π times its measure in degrees
___ c. $\frac{\pi}{180}$ times its measure in degrees
___ d. $\frac{180}{\pi}$ times its measure in degrees

16. The measure of an angle in radians is the same as the length l of the arc subtended by the angle if ***.



___ a. the angle is in standard position
___ b. the angle is acute
___ c. $r \angle 1$
___ d. $r = 1$

17. For an angle to be standard position, the only requirement is ***.

___ a. the vertex must be at the origin
___ b. the initial ray must be part of the x-axis
___ c. the initial ray must be the non-negative part of the x-axis
___ d. the angle must be drawn on the $x - y$ coordinate plane

18. The three vertex angles of a triangle form what may best be called ***.

___ a. a linear triple
___ b. a linear pair
___ c. complementary angles
___ d. vertical angles

19. If two angles of a triangle are complementary, the triangle is ***.

___ a. a right triangle
___ b. an isosceles triangle
___ c. an obtuse angle
___ d. an equiangular triangle

20. A bicycle wheel which made 6 complete revolutions has rotated through ***.

___ a. 6π
___ b. 2 160 radian
___ c. 2π
___ d. 12π

Answer **Part B** and **Part C** in the space provided. Evaluation of your solution to each problem will be based on the following.

- A correct mathematical method for solving the problem is shown.
- The final answer is accurate and a check of the answer is shown where asked for by the question.
- The solution is written in a style that is clear, logical, well organized, uses proper terms, and states a conclusion.

(6) B. 1. If two complementary angles have measures $2x - 15$ and $x + 30$, find the measure of the smallest acute angle.

(6) 2. Two parallel lines $y = -2x + 2$ and $y = -2x - 3$ are intersected by a transversal with slope $\frac{1}{2}$ which crosses the y-axis at 2. What is the distance between the two points where the transversal intersects the parallel lines.

(6) 3. Use the ideas of problem 2 to find the distance to two decimal places between the two lines whose equations are $y = 4x + 5$.

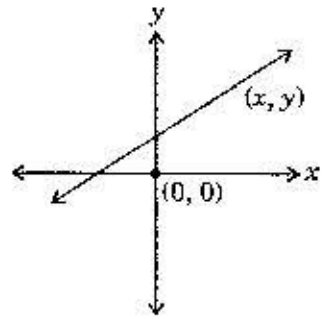
$y = 4x - 1$

(Hint: Use a transversal which passes through the origin.)

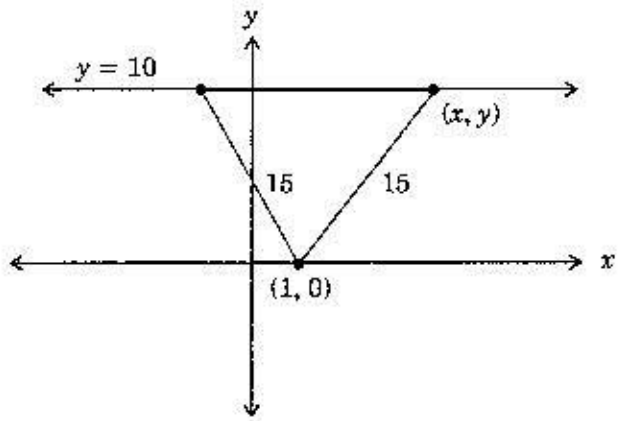
(6) 4. Find the area of the triangle with vertices at $(-3,5),(-3,-5),(5,1)$.

(6) 5. Find the distance to two decimal places from the point (10, 10) to the midpoint of the line segment from $A(-3,7)$ to $B(-4,-5)$.

(7) C. 1. Find the coordinates of a point (x, y) on the line $y = x + 4$ which is $\sqrt{106}$ units away from $(0, 0)$.



(8) 2. Find the points on the line whose equation is $y = 10$ which are 15 units away from (1, 0).



(10) 3. Find the equation of the line joining the midpoints of $\overline{AB}$, $A(0, 0), B(-1, 5)$ and $\overline{CD}$, $C(10, 2)$, $D(12, -8)$.

(5) 4. (STUDENT JOURNAL)

Write a summary of the material in this lesson which would be suitable for review purposes.

(100)

Assignment 18

Values

(40) A. **Multiple Choice:** Select the correct answer for each of the following and place a check (✔) beside it.

1. The one figure which shows an angle not in standard position is ***.

Figure 1

Figure 2

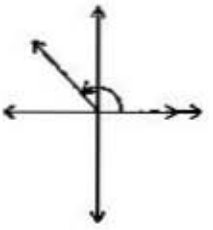


Figure 3

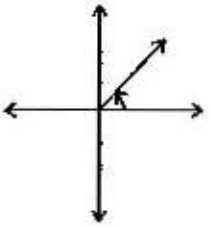
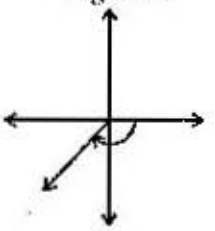


Figure 4



____ a. 1
____ b. 2
____ c. 3
____ d. 4

2. The terminal arm of a negative angle in standard position has a measure of $-290°$ lies in quadrant ***.

____ a. 1
____ b. 2
____ c. 3
____ d. 4

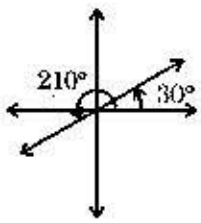
3. The measure of the angle in standard position coterminal with an angle whose measure is $-200°$, is ***.

___ a. $-160°$
___ b. $20°$
___ c. $560°$
___ d. $520°$

4. The measures of all the angles in standard position which are coterminal with an angle whose measure is $400°$ are given by the expression ***.

___ a. $400° + 360°$
___ b. $40°$
___ c. $40° + n360°,\ n \varepsilon I$
___ d. $40° + n180°,\ n \varepsilon I$

5. The measures of all the angles in standard position which are coterminal with either one of the angles shown in the diagram are given by the expression.



___ a. $30°, 210°$
___ b. $30° + n180°,\ n \varepsilon I$
___ c. $30° + n360°,\ n \varepsilon I$
___ d. $210° + n360°,\ n \varepsilon I$

6. If an angle of measure $757°$ is one of the angles described by $\theta + n360°, n \varepsilon I$, then θ is ***.

___ a. $37°$
___ b. $217°$
___ c. $127°$
___ d. $397°$

7. The simplified form of $\dfrac{\csc \theta}{\sec \theta}$ is ***.

___ a. 1
___ b. $\sin\theta \cos\theta$
___ c. $\tan \theta$
___ d. $\cot \theta$

8. The simplified form of $\frac{\tan \theta}{\cot \theta}$ is ***.

____ a. 1
____ b. $(\tan \theta)^2$
____ c. $(\cot \theta)^2$
____ d. $(\sin \theta)(\cos \theta)^2$

9. If $\csc \theta$ is 10.2593, then $\sin \theta$ is ***.

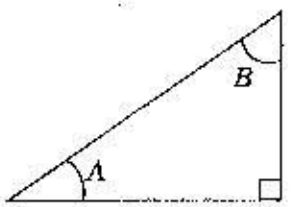
____ a. 0.0975
____ b. 0.0974
____ c. 0.0973
____ d. 0.0972

10. By using the trigonometric table of values, if $\sec \theta = 5.7587$, then θ is ***.

____ a. 10°
____ b. 11°
____ c. 79°
____ d. 80°

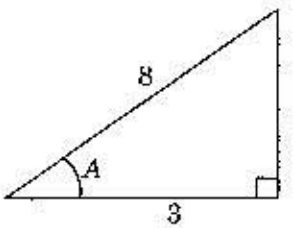
11. Sin A has the same value as ***.

____ a. $\sin B$
____ b. $\cot C$
____ c. $\cos B$
____ d. $\cos A$



12. The value of $\tan A$ is ***.

____ a. $\frac{\sqrt{55}}{3}$
____ b. $\frac{3}{\sqrt{55}}$
____ c. $\frac{\sqrt{73}}{3}$
____ d. $\frac{3}{\sqrt{33}}$



13. If B is an angle in standard position and (3, 5) are the coordinates of a point on the terminal arm of B, then cos B is ***.

____ a. $\frac{5}{\sqrt{34}}$

____ b. $\frac{3}{\sqrt{34}}$

____ c. $\frac{5}{6}$

____ d. $\frac{1}{2}$

14. If $(-1, 3)$ are the coordinates of a point on the terminal arm of angle B in standard position, then tan B is ***.

____ a. $-\frac{1}{3}$

____ b. $\frac{1}{3}$

____ c. 3

____ d. -3

15. If the terminal arm of an angle B in standard position coincides with the negative y-axis then sin B is ***.

____ a. 0

____ b. 1

____ c. -1

____ d. undefined

16. The reference angle of an angle in standard position whose measure is 905° is ***.

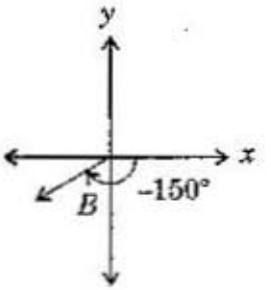
____ a. 180°

____ b. 5°

____ c. $-5°$

____ d. 185°

17. The measures of a pair of angles whose reference angles are the same as the reference angle of $\angle B$ is ***.



___ a. 150°, −330°
___ b. −60°, 60°
___ c. 150°, −120°
___ d. 120°, 150°

18. The reference angle of all the coterminal angles given by $280° + n360°$, $n \varepsilon I$ is ***.

___ a. 280°
___ b. 100°
___ c. 80°
___ d. 10°

19. If $\tan\theta < 0$, then θ is an angle whose terminal arm is in quadrant(s) ***.

___ a. 1 or 3
___ b. 2 or 4
___ c. 3 or 4
___ d. 4 or 1

20. If $\sin 0 < 0$ and $\cos\theta > 0$, then θ is an angle whose terminal arm is in quadrant ***.

___ a. 1
___ b. 2
___ c. 3
___ d. 4

Answer **Part B** and **Part C** in the space provided. Evaluation of your solution to each problem will be based on the following.

- A correct mathematical method for solving the problem is shown.
- The final answer is accurate and a check of the answer is shown where asked for by the question.
- The solution is written in a style that is clear, logical, well organized, uses proper terms, and states a conclusion.

B. 1. Express each of the following as a trigonometric function of the reference angle, with the appropriate plus or minus sign and then give the value to 4 decimal places.

(2) a. $\cos(-67°)$

(2) b. $\sin 115°$

(2) c. $\tan 160°$

(2) d. $\cos 190°$

(2) e. $\cot(-135°)$

(2) f. $\sec(-260°)$

(2) g. $\csc 200°$

(2) h. $\sin 271°$

(2) i. $\csc 175°$

(2) j. $\sin(-269°)$

2. Determine the exact values of the required trigonometric ratios.

(3) a. Find $\sin A$ and $\cos A$ if $\tan A = \frac{5}{3}$ and $\cos A < 0$.

(3) b. Find $\sin B$ and $\cot B$ if $\cos B = -\frac{1}{4}$ and $\tan B > 0$.

(3) c. Find $\sec C$ and $\sin C$ if $\tan C = -1$ and $\cos C > 0$.

(3) d. Find $\cos D$ and $\tan D$ if $\sin D = \frac{\sqrt{3}}{2}$.

(3) e. Find $\sin E$ and $\csc E$ if $\tan E = 5$.

(5) 3. On the grids provided draw all possible principal angles in standard position based on the information given.

a. $\tan A = \frac{1}{2}$

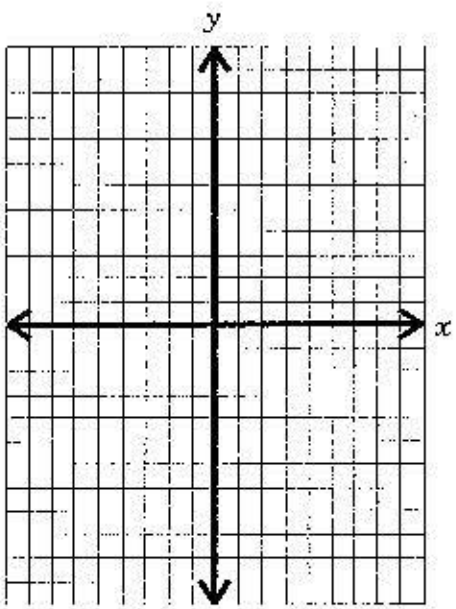
b. $\cos B = \frac{4}{5}$

c. $\sin C = -\frac{9}{15}$

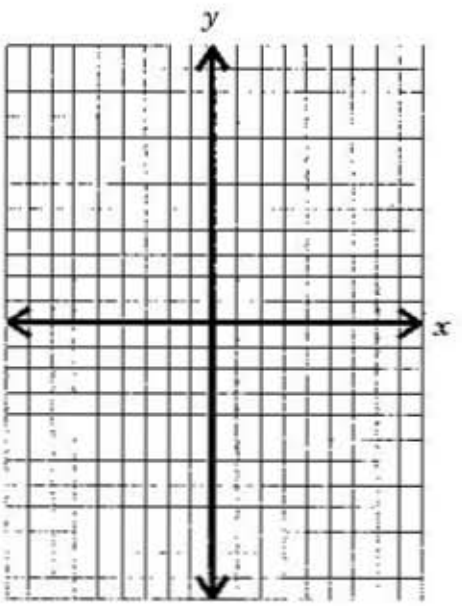
d. $\sec D = -\frac{15}{12}$

e. $\sin E = 1$

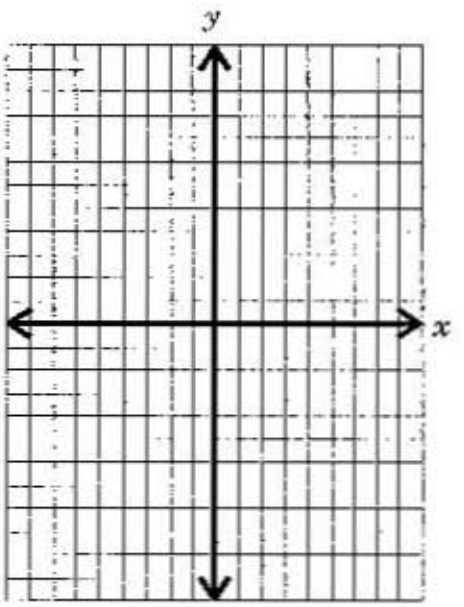
a.



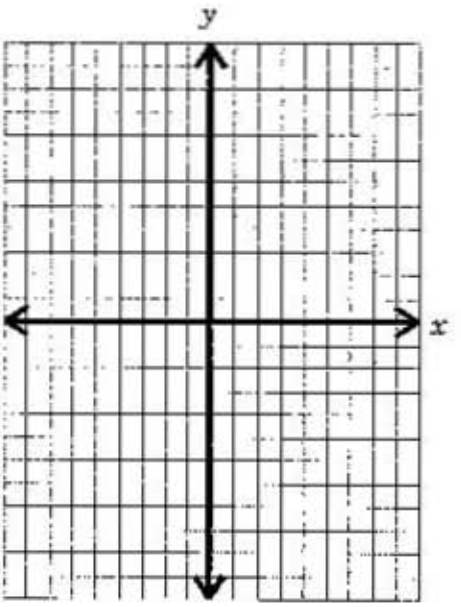
b.



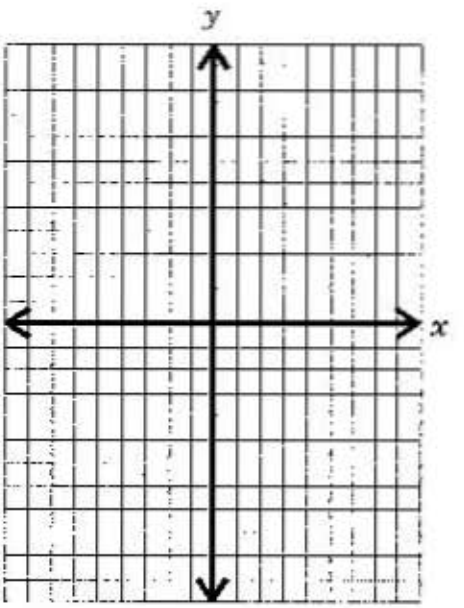
c.



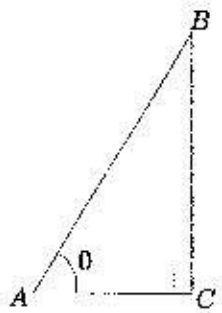
d.



e.



(10) C. 1. a. Since the measures of the angles of any triangle add up to 180°, the measure of $\angle B$, in terms of θ, in the right triangle ABC is _____.



b. In the first column of blanks, enter the definition of the trigonometric ratio in terms of the sides of the triangle, using A, B, C.

In the second column of blanks, enter the appropriate angle using θ.

$\sin\theta$ = _____ = $\cos$ _____,

$\cos\theta$ = _____ = $\sin$ _____,

$\tan\theta$ = _____ = $\cot$ _____,

$\cot\theta$ = _____ = $\tan$ _____,

$\sec\theta$ = _____ = $\csc$ _____,

$\csc\theta$ = _____ = $\sec$ _____.

c. Write a general statement about your observations in part b.

d. Refer to the table of trigonometric values in the lesson and show a test of your statement in c.

e. If the observation in c is true, explain why trigonometric tables may be reduced in size to angles from 0° to 45° only.

(10) 2. (STUDENT JOURNAL)

Write a summary of the material in this lesson which is no longer than one page.

(100)

Assignment 19

Values

(40) A. **Multiple Choice:** Select the correct answer for each of the following and place a check (✓) beside it.

1. The one expression which is not equal to 0.6428 is ***.

   ____ a. $\cos 50°$
   ____ b. $\cos -50°$
   ____ c. $\sin -140°$
   ____ d. $\sin -220°$

2. If $\cos A = 0.3420$, then the principal values of A to the nearest degree are ***.

   ____ a. $70°, -70°$
   ____ b. $70°, 290°$
   ____ c. $70°, 110°$
   ____ d. $70°, 250°$

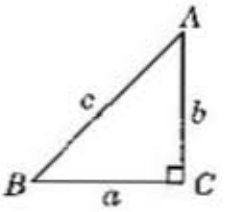
3. If $\sin A = -0.8660$ and $\tan A = -1.7321$, then A could be ***.

   ____ a. $600°$
   ____ b. $840°$
   ____ c. $1000°$
   ____ d. $1020°$

4. The principal solutions to $\tan^{-1} 1$ are ***.

   ____ a. $45°, 225°$
   ____ b. $45°, -225°$
   ____ c. $\frac{1}{45°}, \frac{1}{225°}$
   ____ d. $45°, -45°$

5. $\text{Cos}^{-1}\dfrac{b}{c}$ is identical to ***.



____ a. A
____ b. B
____ c. $\dfrac{c}{b}$
____ d. $\dfrac{a}{c}$

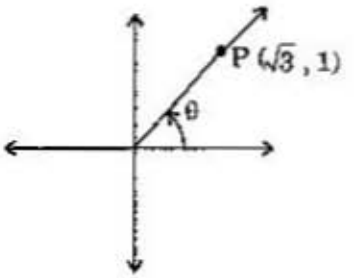
6. The equation $\sec A = x$ is equivalent to the equation ***.

____ a. $A = \cos x$
____ b. $A = \dfrac{1}{\cos x}$
____ c. $A = \dfrac{1}{\sec x}$
____ d. $A = \sec^{-1} x$

7. The particular solutions to the nearest degree for the equation $\csc A = \sqrt{2}$ are ***.

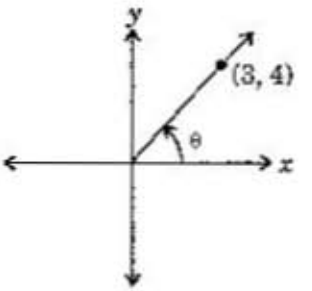
____ a. 30°, 330°
____ b. 30°, 150°
____ c. 45°, 135°
____ d. $\dfrac{1}{45°}, \dfrac{1}{135°}$

8. The value of $\sin\theta$ is ***.



____ a. $\sqrt{3}$
____ b. $\dfrac{\sqrt{3}}{3}$
____ c. $\dfrac{1}{2}$
____ d. $\dfrac{\sqrt{3}}{2}$

9. The value of $\cos(180 + \theta)$ is ***.



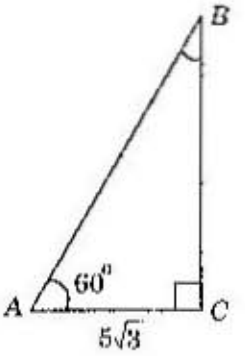
____ a. $-\frac{3}{5}$

____ b. $-\frac{4}{5}$

____ c. $\frac{3}{5}$

____ d. $\frac{4}{5}$

10. The length of BC is ***.



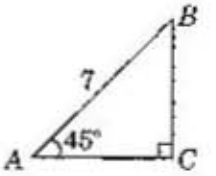
____ a. $10\sqrt{3}$

____ b. 45

____ c. $\sqrt{3}$

____ d. 15

11. The length of BC is ***.



____ a. 5

____ b. $\frac{7\sqrt{2}}{2}$

____ c. $7\sqrt{2}$

____ d. $\frac{7}{2}$

12. $\text{Sec}^2 45°$ is the same as ***.

____ a. sec (45 × 45)

____ b. 2 sec 45

____ c. (sec 45) (sec 45)

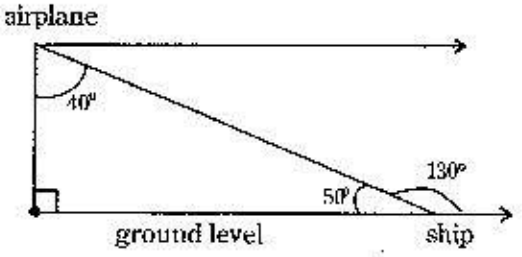
____ d. sec 90

13. The expression $\cot 30° + 2 \csc 30°$ has the value ***.

___ a. $\frac{1}{\sqrt{3}} + 1$
___ b. $\frac{4}{3}\sqrt{3}$
___ c. $4 + \sqrt{3}$
___ d. 1

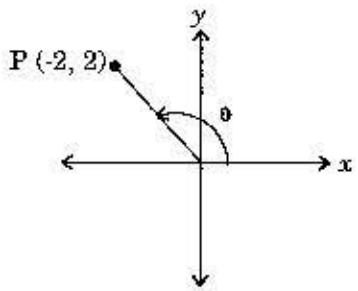
14. In the diagram, the angle of depression is ***.

___ a. 50°
___ b. 40°
___ c. 90°
___ d. 130°



15. The value of $\cos \theta$ is ***.

___ a. $-\sqrt{2}$
___ b. 1
___ c. $-\frac{\sqrt{2}}{2}$
___ d. $\frac{\sqrt{2}}{2}$



16. Cos 30° is equal to ***.

___ a. sin 60°
___ b. sec 60°
___ c. csc 60°
___ d. sec 30°

17. Sec 495° expressed in terms of the reference angle is ***.

____ a. sec 135°
____ b. sec 45°
____ c. −sec 135°
____ d. −sec 45°

18. Csc 180° is ***.

____ a. 0
____ b. 1
____ c. −1
____ d. undefined

19. Cot $\frac{7}{3}\pi$, where $\frac{7}{3}\pi$ is radian measure, has the value ***.

____ a. $\frac{1}{\sqrt{3}}$
____ b. $-\frac{1}{\sqrt{3}}$
____ c. $\frac{1}{2}$
____ d. 2

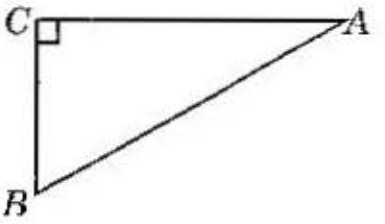
20. The value of cos 3π , where 3π is radian measure, is ***.

____ a. 0
____ b. 1
____ c. −1
____ d. undefined

Answer **Part B** and **Part C** in the space provided. Evaluation of your solution to each problem will be based on the following.

- A correct mathematical method for solving the problem is shown.
- The final answer is accurate and a check of the answer is shown where asked for by the question.
- The solution is written in a style that is clear, logical, well organized, uses proper terms, and states a conclusion.

(8) B. 1. Solve the triangle if $\angle B$ is 18.2° and c is 43.1 m. Give lengths to one decimal place and angles to the nearest tenth of a degree.

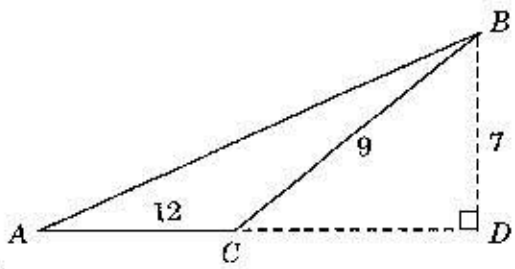


(8) 2. One end of 30.4 m long cable is attached to the top of a 22 m tall vertical pole. The cable is extended as far as possible from the base of the pole and is attached to the ground.

a) What angle, to the nearest degree, does the cable make with the ground?

b) How high up the pole is the cable a horizontal distance of one meter from the pole?

(8) 3. Solve triangle ABC giving angles to the nearest tenth of a degree and lengths to one decimal place.

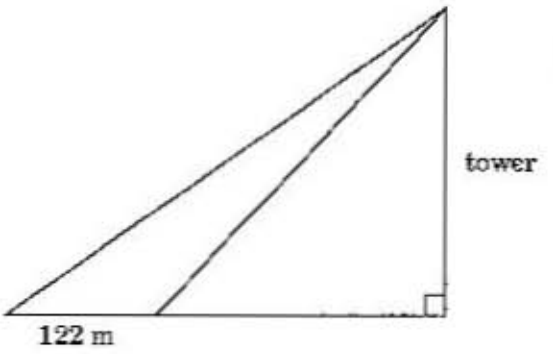


(8) 4. From the top of a 500 m tall building the angle of depression to the top of another smaller building is 40° and to the base of the smaller building is 50°.

a) Find the horizontal distance between the buildings.

b) Find the height of the smaller building.

(8) 5. At a certain distance away from the base of a tower, the angle of elevation to the top is 32° and 122 m further away from the base the angle of elevation is 22°. Find the height of the tower.



(15) C. 1. For a to g, verify that each statement is true by evaluating the terms on both sides of the equal sign and showing that the values are equal. (Use exact values. No calculators.)

a. $\sin^2 60° + \cos^2 60° = \sin^2 45° + \cos^2 45°$

b. $1 - 2\sin^2 30° = \cos 60°$

c. $2\cos^2 30° - 1 = \cos 60°$

d. $\sin 45° = \sqrt{\dfrac{1 - \cos 90°}{2}}$

e. $\cos 90° = \sqrt{\dfrac{1 + \cos 180°}{2}}$

f. $\dfrac{\tan 60° - \tan 30°}{1 + \tan 60° \tan 30°} = \tan 30°$

g. $\dfrac{1 + \cot 30° \cot 60°}{\cot 30° - \cot 60°} = \cot 30°$

h. Evaluate $\sin 390° + \cos(-45°) - \sin(-225°)$.

i. Evaluate $\sin 0° + \cos 180° - \sin 270°$.

j. Evaluate $\sin^2 \dfrac{\pi}{3} + \cos^2 \dfrac{\pi}{6} - \sin^2 \dfrac{5\pi}{3}$.

(5) 2. (STUDENT JOURNAL)

Write a summary of the material in this lesson which will be useful for study and review.

100

Review of Lessons 1 to 19

Introduction

This lesson completes Module 2 of the course. It contains no new material to be studied and is intended as a review. The assignment consists of fifty multiple choice questions selected from the topics covered in Mathematics A30. The lesson as well as the section of the material relevant to the question is found to the left of each question.

Example:

(3.3) 8. ------

This shows that the material relevant to Question 8 can be found in Lesson 3, Section 3.

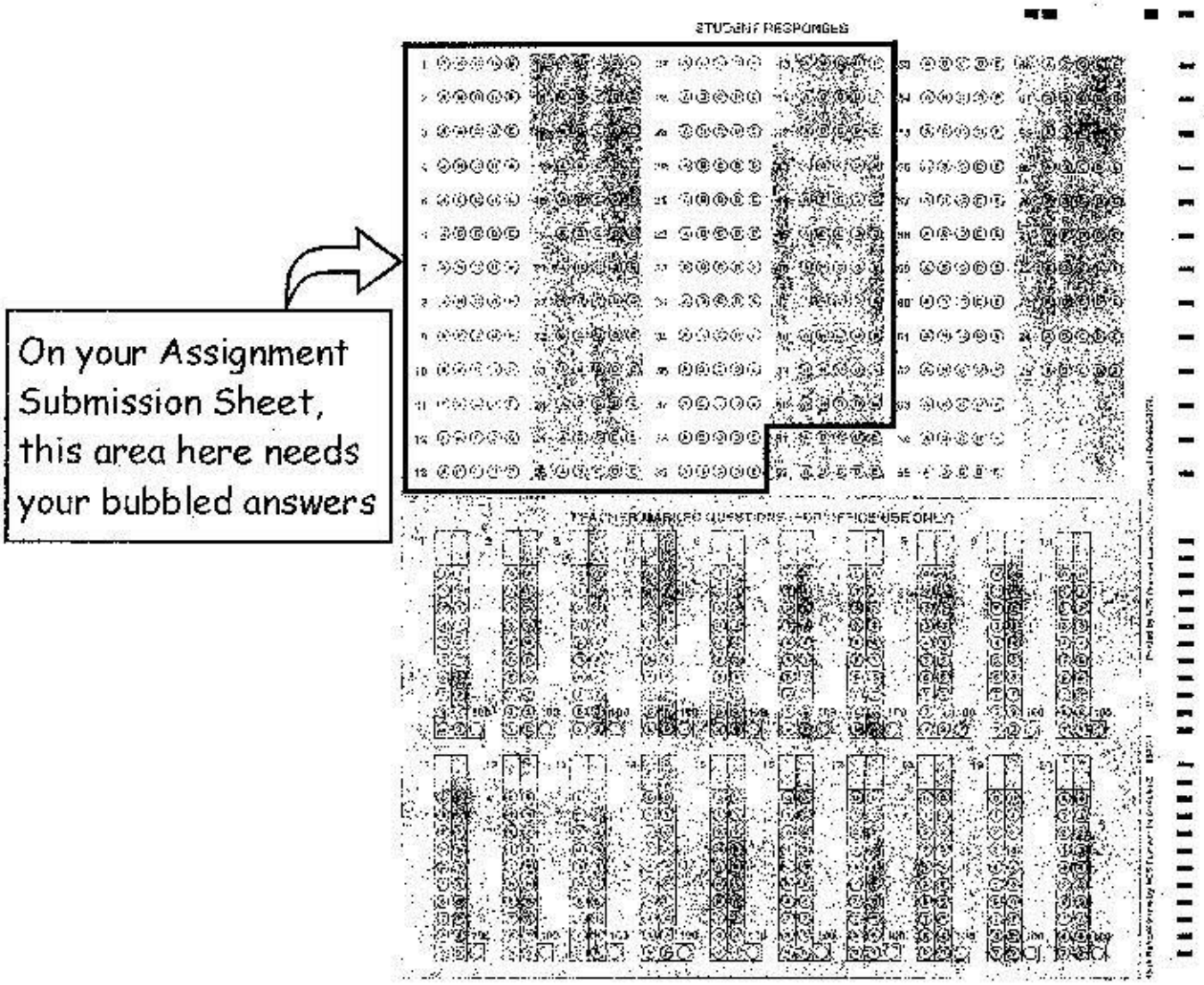
The same format will be followed as was for the review in Lesson 10. It should be noted that the review lesson is all multiple choice and is just like the format for the departmental examination. The final examination will consist of 50 multiple choice questions as well.

For the assignments of each of the eighteen previous lessons (Lesson 10 was a review!) you were asked to make a summary for study purposes. This is a good time to use the summaries, add to them, and improve on them as you review the lesson.

The assignment for this lesson will be computer scored. Please enter your responses to the multiple choice questions on to the bubble sheet. The bubble sheet is found on the reverse side of the Assignment Submission Sheet. This is the only sheet that is submitted to Technology Supported Learning for grading.

- **Do not** submit the questions.
- However, remember to circle your responses in the assignment so that you have a record of the choices you made.
- A letter will be sent to you giving your results and indicating which questions were answered correctly.
- If you have any questions, please call your Technology Supported Learning teacher!

Reminder: Since assignment #20 is computer scored, you need to complete the back side of your green and pink Assignment #20 Submission Sheet by bubbling in the appropriate response for questions 1 - 50. You need to only mail your completed Assignment Submission Sheet for Assignment #20 to your teacher.



Assignment 20

A. **Multiple Choice:** Select the correct answer for each of the following and enter your answer on the computer scored sheet.

(8.1) 1. For the same price you can order a basic pizza and add any two extra toppings from a choice of six different toppings. If a double of one topping is allowed, the number of different pizzas with two toppings is ***.

A. 36
B. 30
C. 12
D. 6

(8.1) 2. The number of 5 and 6 letter words, with no repetitions allowed, that can be formed from the letters in N U M B E R is ***.

A. 30
B. 36
C. 720
D. 1440

(9.1) 3. The number of distinct ways the letters A B C D E F G H I can be arranged in a circle is ***.

A. $8!$
B. $\frac{9!}{3!2!}$
C. $\frac{8!}{3!2!}$
D. $\frac{8!}{3!}$

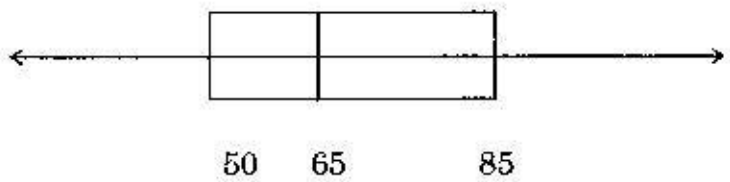
(9.3) 4. The solution to $2 \times {}_nP_2 + 50 = {}_{2n}P_2$ is ***.

A. 3
B. 4
C. 5
D. 6

(1.3) 5. Two hundred and seventy students wrote an exam in which 35 students got a mark higher than Paula and eight got the same mark as Paula, which is 83%. Her percentile rank in the class is ***.

A. 85
B. 86
C. 83
D. 84

(1.4) 6. The box-and-whisker plot represents test scores.



If Derrick made a mark of 64%, then ***.

A. more than half the students made a higher mark
B. more than 64% of the students made a higher score
C. less than 35% of the students made a higher score
D. less than 65% of the students made a lower score

(2.1) 7. One of the factors of $27x^2 - 125a^6x^5$ is ***.
(2.4)

A. $3x - 5a^2x$
B. $9 - 15a^2x$
C. $3 + 5a^2x$
D. $3 - 5a^2x$

(3.3) 8. The remainder when $f(x) = -2x^4 + x^2 - 5x + 1$ is divided by $x + 1$ is ***.

A. $-2x^3 + 2x^2 - x - 4$
B. $-2x^3 - 2x^2 - x - 6$
C. 5
D. -5

(4.1) 9. The simplified form of $\frac{x^2-2x-8}{x-3} \div \frac{x+2}{x-3} \times \frac{x}{x-4}$ is ***.

A. 1
B. x
C. $x+2$
D. $x-3$

(4.2) 10. The simplified form of $\frac{x+5}{5-x} - \frac{3}{x^2-25}$ is ***.

A. $\frac{-x^2-10x-28}{x^2-25}$
B. $\frac{x^2+10x+22}{x^2-25}$
C. $\frac{x+2}{x^2-25}$
D. $\frac{3x-15}{x^2-25}$

(4.3) 11. The solution to $\frac{x}{x+2} - 2 = \frac{-9}{2x-3}$ is $x =$ ***.

A. $-2, \frac{3}{2}$
B. $-2, \frac{2}{3}$
C. $5, -3$
D. $-5, 3$

(5.1) 12. If $a = -1$ and $b = 2$, then $\sqrt{\frac{80a^4b}{5b}}$ is equal to ***.

A. ± 4
B. ± 16
C. 4
D. 16

(5.3) 13. The expression $\left(2a^2b^2\right)^{-3} \div \left(4a^{-2}b^{-1}\right)^{-2}$ is equal to ***.

A. $\dfrac{2}{a^2b^4}$

B. $\dfrac{a^4b^3}{8}$

C. $\dfrac{1}{a^2b^4 2^7}$

D. $\dfrac{2}{a^{10}b^8}$

(6.2) 14. The expression $\dfrac{2\sqrt{3}-\sqrt{6}}{3\sqrt{2}-\sqrt{3}}$ with the denominator rationalized is ***.

A. $\dfrac{2\sqrt{6}+2-2\sqrt{3}-\sqrt{2}}{5}$

B. $\dfrac{2\sqrt{6}+2-2\sqrt{3}-\sqrt{2}}{15}$

C. $3\sqrt{2}+\sqrt{3}$

D. $2\sqrt{6}+2-2\sqrt{3}-\sqrt{2}$

(6.3) 15. The solution to $\sqrt{x+1}+\sqrt{x+2}=1$ is contained in the interval***.

A. $x < -1$

B. $-1 \leq x \leq 1$

C. $1 < x < 2$

D. $x \geq 2$

(7.2) 16. To complete the square in $-2\left(x^2-6x+A\right)=-3+B$ the values for A and B respectively are ***.

A. 9, 9

B. 18, −36

C. 9, −18

D. 9, 18

(7.3) 17. The solution for x in $\frac{1}{2x} - \frac{x}{x+1} = -2$ is ***.

A. $0, \ -1$

B. $\frac{-5 \pm \sqrt{17}}{4}$

C. $-\frac{9}{4}, \ -2$

D. $-\frac{9}{4}, \ -\frac{1}{4}$

(7.4) 18. To solve $|3x+1| = x-3$, you must solve ***.

A. $3x+1=0$

B. $3x+1=x-3$ and $3x+1=3-x$

C. $3x+1=x-3$

D. $x-1=0$ and $3x+1=0$

(11.2) 19. If $f(x)=x^2-2x+5$, and $g(x)=\frac{1}{1-\frac{1}{x}}$, then $f(-1)+g(-1)$ is equal to ***.

A. $8\frac{1}{2}$

B. 8

C. $4\frac{1}{2}$

D. 4

(11.3) 20. The simplest form of $(f-g)(x)$, given that $f(x)=\frac{1-x}{2+x}$, $g(x)=\frac{2x-3}{x-2}$, is ***.

A. $\frac{x-2}{x}$

B. $\frac{-3x^2+4x-8}{x^2-4}$

C. $\frac{-3x^2+2x+2}{4-x^2}$

D. $\frac{3x^2-2x-4}{4-x^2}$

(11.4) 21. If $f(x)=\frac{1}{2}x+1$ and $g(x)=2x-2$, then $f(g(-n))$ is ***.

A. $\frac{1}{2}n$

B. $-n$

C. $n+2$

D. $-2n-2$

(11.4) 22. If $f(x)=|x^2-10x+1|$, then $f\circ f(-3)$ is ***.

A. 40

B. 1600

C. 1201

D. 265

(12.1) 23. The equation $d=7t+30$ represents the distance in km a person is from a given location at any time t in hours. The speed of the person in km/h is ***.

A. 7

B. 30

C. 14

D. $4\frac{1}{2}$

(12.3) 24. To graph a straight line passing through $(5, -3)$ with slope -3, a second point is found on the line by starting at $(5, -3)$ and going ***.

A. 5 units up and 3 units to the left
B. 3 units up and 1 unit to the right
C. 3 units down and 3 units to the left
D. 3 units down and 1 unit to the right

(12.3) 25. The equation of the line passing through $(3, -4)$ and $(6, 7)$ is ***.

A. $y = \frac{11}{3}x - 15$
B. $y = 11x - 45$
C. $y = -11x - 45$
D. $y = \frac{11}{3}x - 45$

(13.3) 26. The equation, $y = 3x^2 - 2x - 7$ written in the form $y = a(x - p)^2 + q$ is ***.

A. $y = 3(x-1)^2 - 8$
B. $y = (x-1)^2 - 6$
C. $y = 3\left(x - \frac{1}{3}\right)^2 - \frac{20}{3}$
D. $y = 3\left(x - \frac{1}{3}\right)^2 - \frac{22}{3}$

(13.3) 27. The graph of $y = \frac{1}{3}(x+5)^2 - 10$ has ***.

A. vertex $(5, -10)$, range $y \geq -10$
B. vertex $(-5, -10)$, range $y \geq -10$
C. vertex $(-5, -10)$, range $y \leq -10$
D. vertex $(-5, 10)$, range $y \geq 10$

(13.3) 28. The number of units, n, of a commodity sold at price p is given by $n = -0.2p + 50$. The revenue is the product of the selling price and the number of units sold. The maximum revenue for this commodity is ***.

A. 125
B. 250
C. 3 125
D. 15 625

The following information will be used to answer questions 29 – 31.

The attraction (A) between a magnet and a bar of iron varies inversely as the square of the distance (d) between the magnet and the bar of iron. The attraction between the two is 2 newtons when the distance is 3 cm.

(14.2) 29. The variation statement for this real world problem is ***.

A. $A \propto d$
B. $d \propto \frac{1}{A}$
C. $A \propto \frac{1}{d^2}$
D. $A \propto d^2$

(14.1) 30. The constant of variation, k, is ***.

A. 18
B. 6
C. 12
D. 5

(14.2) 31. The measure of the attraction when the distance is 0.5 cm is ***.

A. 36 N
B. 3 N
C. 48 N
D. 72 N

(14.1) 32. An electrical current (c) varies inversely as the resistance (r) of the circuit.
$c_1 = 6$ amps $\quad c_2 = ? \quad r_1 = 115$ ohms $\quad r_2 = 70$ ohms
The missing proportion is ***.

A. 3.7 amps
B. 9.9 amps
C. 12 amps
D. 8 amps

(15) 33. The system $\begin{matrix} y = 3x + 5 \\ 3y - 9x + 1 = 0 \end{matrix}$ is ***.

A. dependent
B. consistent
C. inconsistent
D. equivalent

(15.3) 34. The system $\begin{matrix} \frac{3}{4}x - \frac{1}{5}y + 3 = 0 \\ 5x + y - 1 = 0 \end{matrix}$ is equivalent to ***.

A. $\begin{matrix} 15x - 4y + 60 = 0 \\ -15x + 3y - 3 = 0 \end{matrix}$

B. $\begin{matrix} 15x - 4y + 60 = 0 \\ 15x + 3y - 3 = 0 \end{matrix}$

C. $\begin{matrix} 15x - y + 15 = 0 \\ -15x - 3y - 3 = 0 \end{matrix}$

D. $\begin{matrix} 15x - 4y + 60 = 20 \\ 15x + 3y - 3 = 3 \end{matrix}$

(15) 35. If (x, y) is the solution set to the system $\begin{matrix} 2x - y = -4 \\ 5x + 9y = 13 \end{matrix}$, then ***.

A. $-3 < x < 0$ and $-5 < y < 0$
B. $0 < x < 4$ and $-5 < y < 0$
C. $-3 < x < 0$ and $0 < y < 5$
D. $0 < x < 4$ and $0 < y < 5$

(15) 36. The solution to the following system of equations is ***.

$$12x - 7y = 27$$
$$4x - 3y = 11$$

A. $\left(-3, \frac{1}{2}\right)$
B. $\left(\frac{1}{2}, -3\right)$
C. $\left(3, -\frac{1}{2}\right)$
D. $\left(-\frac{1}{2}, 3\right)$

(16.2) 37. Two metal alloys, one containing 26% copper and the other containing 54% copper are to be mixed together to get 210 oz of an alloy that is 30% copper. How much of the alloy containing 26% copper should be used?

A. 30 oz
B. 180 oz
C. 210 oz
D. 95 oz

(16.3) 38. Two trucks haul 126 m^3 of sand each taking 7 loads. They can move 138 m^3 if one truck takes 11 loads and the other truck takes 5 loads. Find the capacity of each truck.

A. 8 m^3, 10 m^3
B. 4 m^3, 14 m^3
C. 6 m^3, 12 m^3
D. 5 m^3, 13 m^3

(16.3) 39. On a trip of 800 km, Charlie drove at two different speeds. In one province he drove at 100 km/h and in another at 110 km/h. If the entire trip took seven and one-half hours, the distance travelled at the 110 km/h speed is ***.

A. 250 km
B. 300 km
C. 475 km
D. 550 km

(17.1) 40. The pair of measures which is for the same angle is ***.

A. 35° 0.8017 radians
B. 90° 1.5707 radians
C. 120° 3.0943 radians
D. 17° 53.4071 radians

(17.3) 41. The length of the line segment joining $A(-7, -5)$ and $B(-1, 5)$ is ***.

A. 11.662
B. 8.000
C. 10.335
D. 12.351

(17.3) 42. The length of the line segment joining $X\left(\sqrt{45}, 2\sqrt{18}\right)$ to the midpoint of $Y\left(7\sqrt{5}, -3\sqrt{2}\right)$ and $Z\left(\sqrt{5}, -\sqrt{2}\right)$ is ***.

A. $7\sqrt{19}$
B. $\sqrt{133}$
C. $\sqrt{373}$
D. $\sqrt{261}$

(18.1) 43. If the measure of angle A in standard position is $-210°$, then the principal angle is ***.

A. $150°$
B. $-150°$
C. $-30°$
D. $30°$

(18.2) 44. If $\cos A > 0$ and $\tan A < 0$, then A is an angle in quadrant ***.

A. I
B. II
C. III
D. IV

(18.3) 45. The one false statement is ***.

A. the sine of an angle in the second quadrant is the sine of the reference angle
B. the cosine of an angle in the third quadrant is the negative of the cosine of the reference angle
C. the tangent of an angle in the second quadrant is the tangent of the reference angle
D. the secant of an angle in the fourth quadrant is the secant of the reference angle

(18.4) 46. Given that $\cos A = -\frac{3}{8}$, the one true statement is ***.

A. $\tan A = \frac{\sqrt{55}}{3}$, only

B. $\sin A = \pm\frac{\sqrt{55}}{8}$

C. $\sin A = \pm\frac{3\sqrt{2}}{4}$

D. $\sec A = \pm\frac{8}{3}$

(19.1) 47. The general solution for $\tan\theta = -\sqrt{3}$ is ***.

A. $\pm 60° + n360°, \quad n \varepsilon I$

B. $120°, \quad 300°$

C. $120° + n360°$ and $300° + n360°, \quad n \varepsilon I$

D. $150° + n360°$ and $330° + n360°, \quad n \varepsilon I$

(19.2) 48. From an airplane flying at an altitude of 1000 m, the angle of depression to a ship is $60°$. The distance from the ship to a point directly below the plane is *** m.

A. $\frac{1000\sqrt{3}}{3}$

B. $1000\sqrt{3}$

C. 500

D. $1000\sqrt{2}$

(19.2) 49. In ΔPQR, $m\angle Q = 90°$, $PQ = 1$, and $QR = 3$. The value for $\sec \angle R$ is ***.

A. $\frac{\sqrt{3}}{10}$

B. $\frac{3}{\sqrt{10}}$

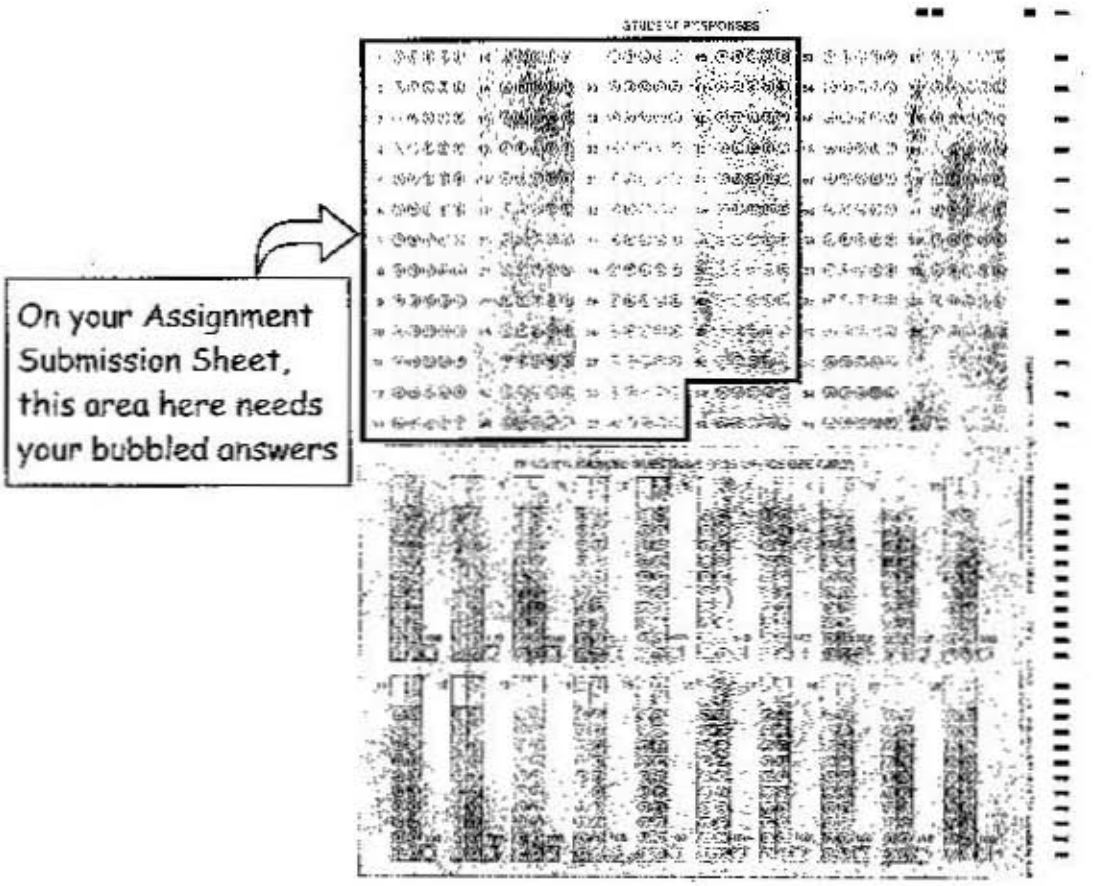
C. $\frac{\sqrt{10}}{3}$

D. 2

(19.2) 50. A wire is attached to the top of a 6 metre tall pole and forms a 45° angle with the ground. The wire is exactly *** m long.

A. $5\sqrt{2}$
B. $6\sqrt{3}$
C. $5\sqrt{3}$
D. $6\sqrt{2}$

Reminder: Since assignment 20 is computer scoreable, you need to complete the back side of the green and pink assignment #20 submission sheet by bubbling in the appropriate response for questions #1 - #50. You only need to mail us this completed page for Assignment 20.

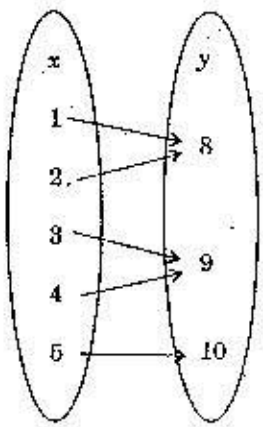


Assignment 11

Values

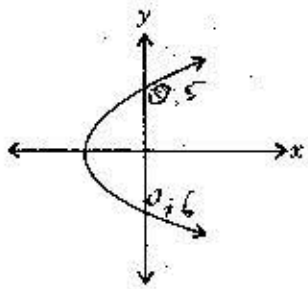
(40) A. **Multiple Choice:** Select the correct answer for each of the following and place a check (✓) beside it.

1. The mapping of x to y is an example of ***.



___ a. a one-to-one function
___ b. a one-to-many relation
___ c. a relation that is not a function
✓ d. a many-to-one function

2. The graph represents a relation that is ***.



___ a. one-to-many
___ b. a function
___ c. one-to-one
___ d. a many-to-one function

3. The equation $y = -3x + 5$ represents a relation that is ***.

___ a. many-to-one but not a function
___ b. a many-to-one function
___ c. a one-to-one function
___ d. one-to-one, but not a function

4. Which one of the following is true for the graph of a many-to-one relation?

___ a. Every vertical line crosses the graph in at most one point.
___ b. At least one vertical line crosses the graph at more than one point.
___ c. Every vertical or horizontal line crosses the graph in at most one point.
___ d. Every horizontal line crosses the graph in at most one point.