Name: _____

1) Which equation illustrates the Commutative Property of Multiplication?

A) $(15x)(yz) = 15(xy)z$
C) $15(x - y) = (x - y)15$
B) $y(x - z) = yx - yz$
D) $2xy + 6 = 2(xy + 3)$

2) $(-\frac{1}{2}) \cdot (-2) = 1$ illustrates what property of real numbers?

Answer: _____

3) Find the product of $\sqrt{40}$ and $\sqrt{5}$.

Show your work.

Answer: _____

4) The expression $4x^2y^3$ represents the rate at which a car is traveling. If the time for which the vehicle travels is represented by the expression $8x^4y^2$, write an expression to represent the total distance traveled. [*Express your answer in simplest form.*]

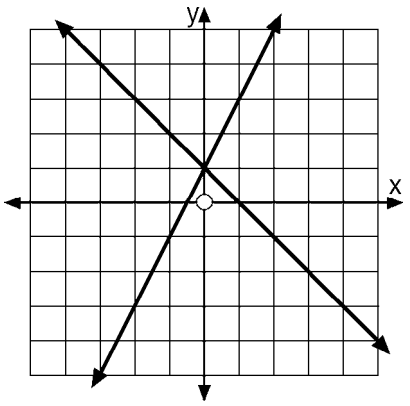
Show your work.

Answer: _____

5) If $2x + 5$ is one factor of $4x^2 + 20x + 25$, what is the other factor?

A) $x + 5$
C) $2x - 5$
B) $4x + 1$
D) $2x + 5$

6) Write a system of linear equations represented by the accompanying graph.



Equations: _____ and _____

7) Given the ceiling function, $f(x) = \lceil x \rceil$. What is the domain and range of function f.

Domain: _____

Range: _____

8) The value (V) of a savings account in which interest is compounded annually can be determined by the explicit formula $V(t) = C(1 + r)^t$, where C represents the amount of the initial deposit, r is the rate of interest, and t is the number of years for which the balance has been accruing interest. If $1,500 was deposited at 5% in 2001, find the value of the account (to the nearest dollar) after 15 years. [*Assume that only interest is added to the account.*]

Show your work.

Answer: $_____

9) Complete the accompanying table to find the mean absolute deviation (to the nearest tenth) of the given data.

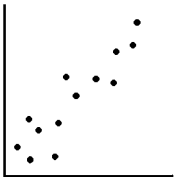
x_i	f_i	$(x_i)(f_i)$	$\overline{X} - x_i$	$\lvert\overline{X} - x_i\rvert$	$f_i \lvert\overline{X} - x_i\rvert$
9	2				
12	3				
15	6				
18	2				
20	3				

Answer: _____

10) Which of the following statements shows a causal relationship and *not* just a correlated one?

A) An individual's decision to work in construction and his diagnosis of skin cancer.
B) As a child's weight increases so does her vocabulary.
C) A decrease in temperature and the increase in attendance at an ice skating rink.
D) The number of minutes spent exercising and the amount of calories burned.

11) For which one of the following scatter plots might $r = -0.98$?

A) 

C) 

B) 

D) 

12) A quadratic equation with rational coefficients has a discriminant equal in value to 36. Explain why the equation must have two unequal rational roots.

_____

_____

_____

13) Write a definition for "*equivalent functions*".

_____

_____

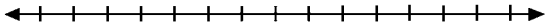
_____

14) Use the data shown below to answer the following questions.

DATA: 34, 30, 41, 40, 29, 31, 42, 36

Part A

Construct a box-and-whisker plot for this data set.



Part B

Compute the mean and the median for this data set.

Show your work.

Mean: _____

Median: _____

Part C

Which measure of central tendency best represents the typical data value?

Answer: _____

Justify your response on the lines below.

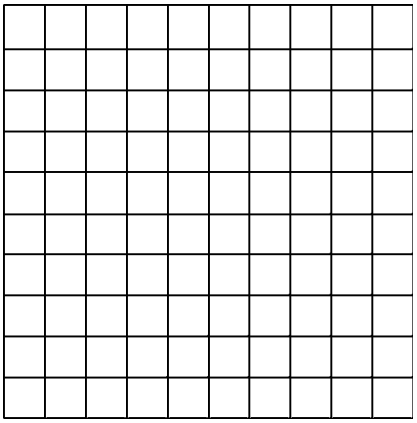
_____

_____

_____

15) The table below shows the relationship between the length L (cm) of a hanging spring and a weight w (grams) attached to the spring.

L	8	12	16	20	24
w	10.86	13.92	15.12	16.03	19.82



Part A

On the grid provided, construct a scatter plot where w is the independent variable.

Part B

Use a graphing calculator to find an equation for the line of best fit in the form $L = b + aw$, with a and b rounded to the nearest hundredth. Sketch this line on the scatter plot.

Answer: _____

Part C

Use the equation from Part B to predict the length of the spring (to the nearest tenth) if a weight of 20 grams is attached. ***Show your work.***

Answer: _____ cm

Part D

Calculate the residual for a weight of 20 grams and a actual length of 16.03 cm. Indicate this value graphically by using a vertical line on the graph. ***Show your work.***

Answer: _____ cm