

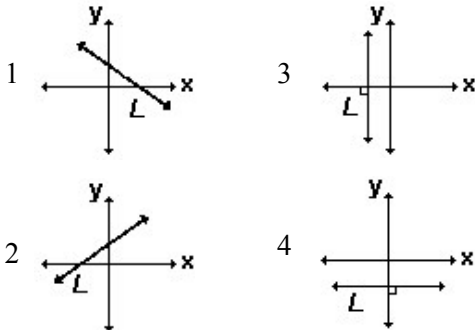
Name: _____

Assignment: SP 2020 MM ALGEBRA ASSIGNMENT 1

1 Factor: $y^2 - 100$

- 1 $(y - 10)^2$
- 2 $(y - 10)(y - 10)$
- 3 $(y + 10)(y + 10)$
- 4 $(y + 10)(y - 10)$

2 In which graph does line L have a negative slope?



3 Kelsey scored the following points in her first six basketball games: 22, 14, 19, 22, 8, and 17. What is the relationship between the measures of central tendency of these data?

- 1 mode > median > mean
- 2 median > mode > mean
- 3 mean > median > mode
- 4 mode > mean > median

Class/Period: _____

Teacher: Villegas

4 Isaiah collects data from two different companies, each with four employees. The results of the study, based on each worker's age and salary, are listed in the tables below.

Company 1		Company 2	
Worker's Age in Years	Salary in Dollars	Worker's Age in Years	Salary in Dollars
25	30,000	25	29,000
27	32,000	28	35,500
28	35,000	29	37,000
33	38,000	31	65,000

Which statement is true about these data?

- 1 The median salaries in both companies are greater than \$37,000.
- 2 The mean salary in company 1 is greater than the mean salary in company 2.
- 3 The salary range in company 2 is greater than the salary range in company 1.
- 4 The mean age of workers at company 1 is greater than the mean age of workers at company 2.

5 Which expression represents "5 less than twice x "?

- 1 $2x - 5$
- 2 $5 - 2x$
- 3 $2(5 - x)$
- 4 $2(x - 5)$

6 Express $x^2 - 5x - 24$ as the product of two binomials.

- 1 $(x - 8)(x + 3)$
- 2 $(x + 8)(x - 3)$
- 3 $(x + 6)(x + 4)$
- 4 $(x - 6)(x - 4)$

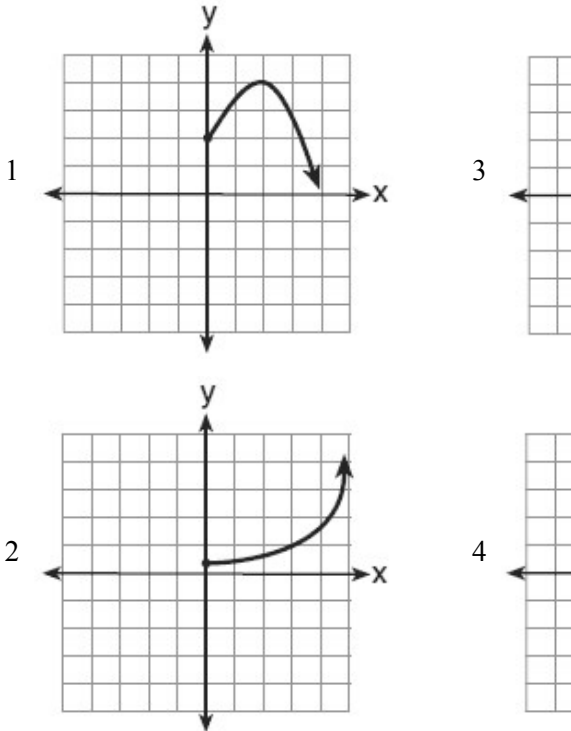
7 Solve for x : $6(x - 2) - 4x = 16$

- 1 2
- 2 7
- 3 12
- 4 14

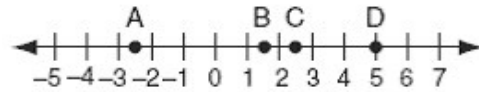
8 What is the value of the expression $2x^2 - 5x + 6$ when $x = -2$?

- 1 32
- 2 -24
- 3 24
- 4 4

9 Which graph represents the exponential decay of a radioactive element?



10 Which point on the accompanying number line best represents the position of $\sqrt{5}$?

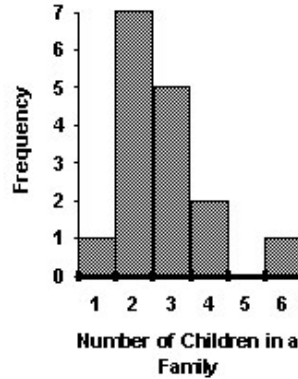


- 1 A
- 2 B
- 3 C
- 4 D

11 The value of a car purchased for \$20,000 decreases at a rate of 12% per year. What will be the value of the car after 3 years?

- 1 \$12,800.00
- 2 \$13,629.44
- 3 \$17,600.00
- 4 \$28,098.56

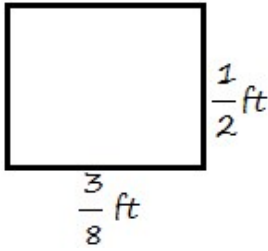
12 The histogram shows the distribution of the number of children in the families of the students in a ninth-grade class.



The mode of the set of data in the histogram is

- 1 5
- 2 2
- 3 3
- 4 7

- 13 Lucia wants to put sand on a tray, represented by the rectangle shown below:



What is the area she needs to cover?

- 1 $\frac{5}{8}$ ft²
- 2 $\frac{7}{8}$ ft²
- 3 $\frac{12}{16}$ ft²
- 4 $\frac{3}{16}$ ft²

- 14 If this pattern continues, what value will represent the number of stars in fifth figure in the pattern?

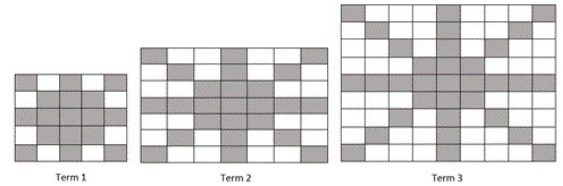


- 1 1
- 2 25
- 3 243
- 4 3,125

- 15 The Booster Club raised \$30,000 for a sports fund. No more money will be placed into the fund. Each year the fund will decrease by 5%. Determine the amount of money, to the *nearest dollar*, that will be left in the sports fund after 4 years.

- 1 \$27,550
- 2 \$22,641
- 3 \$24,435
- 4 \$24,436

- 16 The diagram below represents the first three terms in a sequence.



Assuming the pattern continues, which formula determine a_n the number of shaded rectangles in the n th term?

- 1 $a_n = 8n + 9$
- 2 $a_n = 8n + 1$
- 3 $a_n = 10n + 3$
- 4 $a_n = 9n - 1$

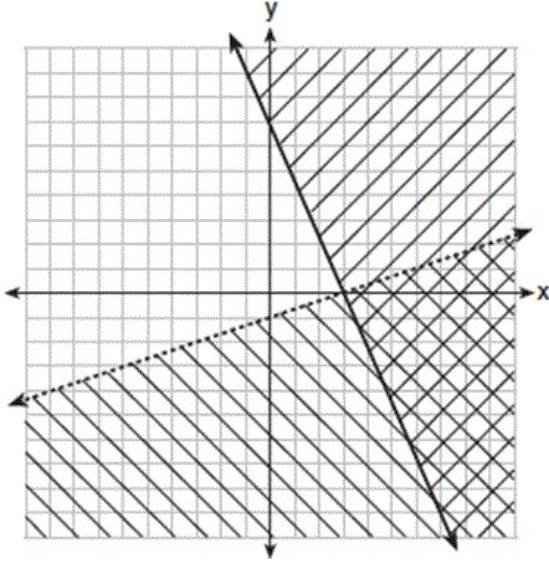
- 17 Solve for x : $8x + 9 = 5x + 6$

- 1 -1
- 2 1
- 3 5
- 4 $-\frac{3}{13}$

18 The value in dollars, $v(x)$, of a certain car after x years is represented by the equation $v(x) = 25,000(0.86)^x$. To the *nearest dollar*, how much more is the car worth after 2 years than after 3 years?

- 1 \$2,589
- 2 \$6,510
- 3 \$15,901
- 4 \$18,490

19 What is one point that lies in the solution set of the system of inequalities graphed below?



- 1 (7,0)
- 2 (3,0)
- 3 (0,7)
- 4 (-3,5)

20 Sheba opened a retirement account with \$36,500. Her account grew at a rate of 7% per year compounded annually. She made no deposits or withdrawals on the account. At the end of 20 years, what was the account worth, to the *nearest dollar*?

- 1 \$87,600
- 2 \$130,786
- 3 \$141,243
- 4 \$1,483,444,463

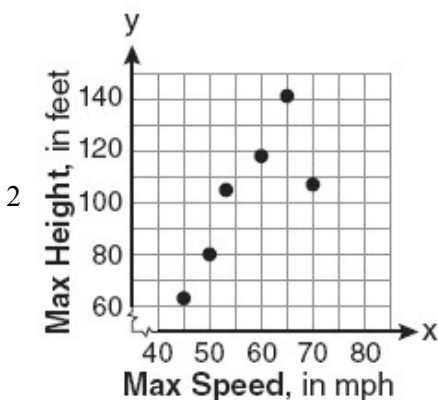
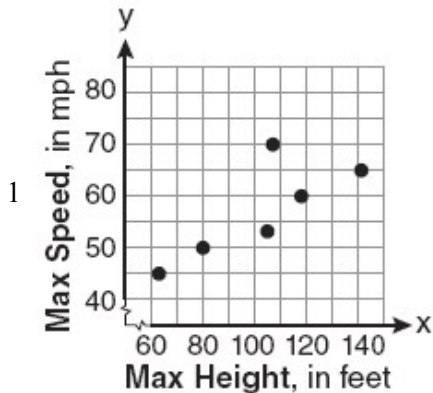
21 A car depreciates (loses value) at a rate of 4.5% annually. Greg purchased a car for \$12,500. Which equation can be used to determine the value of the car, V , after 5 years?

- 1 $V = 12,500(0.55)^5$
- 2 $V = 12,500(0.955)^5$
- 3 $V = 12,500(1.045)^5$
- 4 $V = 12,500(1.45)^5$

- 22 The maximum height and speed of various roller coasters in North America are shown in the table below.

Maximum Speed, in mph, (x)	45	50	54	60	65	70
Maximum Height, in feet, (y)	63	80	105	118	141	107

Which graph represents a correct scatter plot of the data?



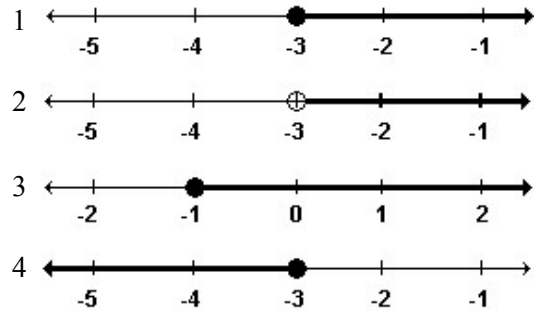
3

4

- 23 Is the equation $A = 21000(1 - 0.12)^t$ a model of exponential growth or exponential decay, and what is the rate (percent) of change per time period?

- 1 exponential growth and 12%
- 2 exponential growth and 88%
- 3 exponential decay and 12%
- 4 exponential decay and 88%

- 24 Which graph represents the solution set of the inequality $2(x + 4) > 2$?



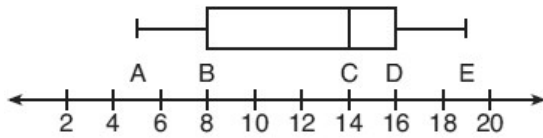
- 25 When solving for the value of x in the equation $4(x - 1) + 3 = 18$, Aaron wrote the following lines on the board:

[Line 1] $4(x - 1) + 3 = 18$
 [Line 2] $4(x - 1) = 15$
 [Line 3] $4x - 1 = 15$
 [Line 4] $4x = 16$
 [Line 5] $x = 4$

Which property was used *incorrectly* when going from line 2 to line 3?

- 1 distributive
- 2 commutative
- 3 associative
- 4 multiplicative inverse

- 26 The box-and-whisker plot shown below represents the number of magazine subscriptions sold by members of a club.



Which statistical measures do points B , D , and E represent, respectively?

- 1 minimum, median, maximum
 - 2 first quartile, median, third quartile
 - 3 first quartile, third quartile, maximum
 - 4 median, third quartile, maximum
- 27 What are the zeros of the function $f(x) = x^2 - 13x - 30$?

- 1 -10 and 3
- 2 10 and -3
- 3 -15 and 2
- 4 15 and -2

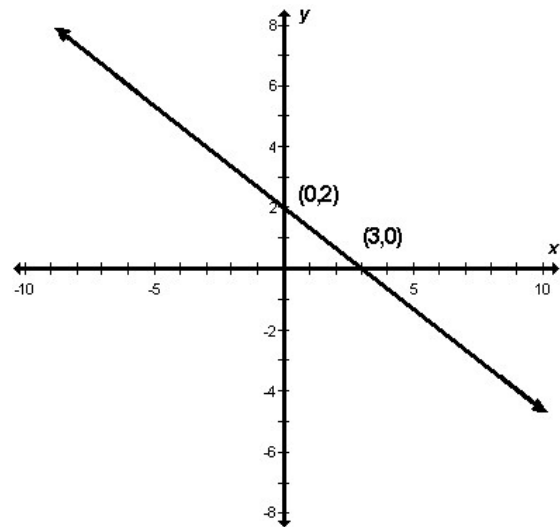
- 28 A laboratory technician studied the population growth of a colony of bacteria. He recorded the number of bacteria every other day, as shown in the partial table below.

t (time, in days)	0	2	4
$f(t)$ (bacteria)	25	15,625	9,765,625

Which function would accurately model the technician's data?

- 1 $f(t) = 25^t$
- 2 $f(t) = 25^t + 1$
- 3 $f(t) = 25t$
- 4 $f(t) = 25(t + 1)$

- 29 What is the equation of the line in the following graph?



- 1 $y = -x + 2$
- 2 $y = -\frac{2}{3}x + 3$
- 3 $y = -\frac{2}{3}x + 2$
- 4 $y = \frac{2}{3}x + 2$

- 30 Which number is irrational?

- 1 $\sqrt{9}$
- 2 $\sqrt{8}$
- 3 0.3333
- 4 $\frac{2}{3}$

- 31 Find the value of $a^2 - b$ if $a = 3$ and $b = -5$.

- 1 14
- 2 4
- 3 2
- 4 11

- 32 The expression $15 - 3[2 + 6(-3)]$ simplifies to

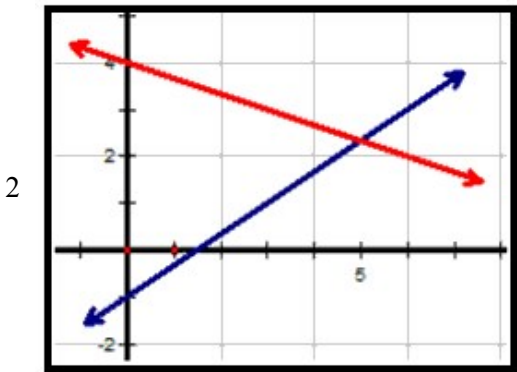
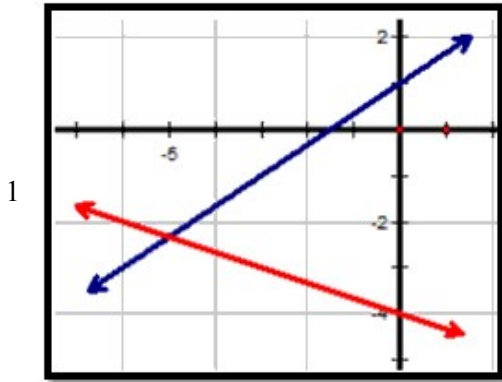
- 1 -45
- 2 -33
- 3 63
- 4 192

33 The current student population of the Brentwood Student Center is 2,000. The enrollment at the center increases at a rate of 4% each year. To the *nearest whole number*, what will the student population be closest to in 3 years?

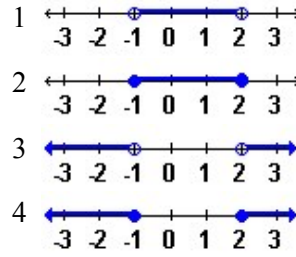
- 1 2,240
- 2 2,250
- 3 5,488
- 4 6,240

34 Which graph shows the solution to the system of equations

$$\begin{cases} 2x - 3y = 3 \\ x + 3y = -12 \end{cases} ?$$



35 Which graph represents $-1 < x < 2$?



36 The current population of a town is 10,000. If the population, P , increases by 20% each year, which equation could be used to find the population after t years?

- 1 $P = 10,000(0.2)^t$
- 2 $P = 10,000(0.8)^t$
- 3 $P = 10,000(1.2)^t$
- 4 $P = 10,000(1.8)^t$

- 37 A satellite television company charges a one-time installation fee and a monthly service charge. The total cost is modeled by the function $y = 40 + 90x$. Which statement represents the meaning of each part of the function?
- 1 y is the total cost, x is the number of months of service, \$90 is the installation fee, and \$40 is the service charge per month.
 - 2 y is the total cost, x is the number of months of service, \$40 is the installation fee, and \$90 is the service charge per month.
 - 3 x is the total cost, y is the number of months of service, \$40 is the installation fee, and \$90 is the service charge per month.
 - 4 x is the total cost, y is the number of months of service, \$90 is the installation fee, and \$40 is the service charge per month.

38 Solve the following system of equations for x :

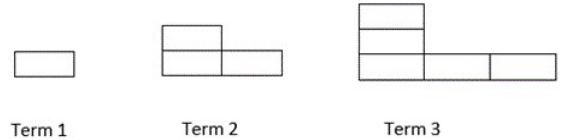
- $5x + y = 19$
- $2x + y = 1$

- 1 -11
- 2 6
- 3 3
- 4 18

- 39 Some banks charge a fee on savings accounts that are left inactive for an extended period of time. The equation $y = 5000(0.98)^x$ represents the value, y , of one account that was left inactive for a period of x years. What is the y -intercept of this equation and what does it represent?

- 1 0.98, the percent of money in the account initially
- 2 0.98, the percent of money in the account after x years
- 3 5000, the amount of money in the account initially
- 4 5000, the amount of money in the account after x years

- 40 The diagram below represents the first three terms in a sequence.



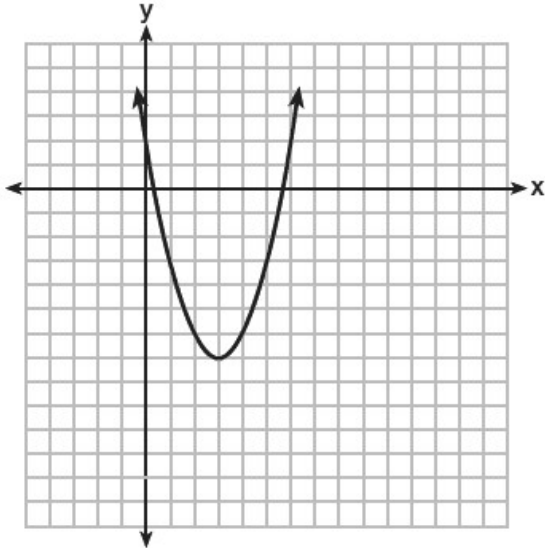
Assuming the pattern continues, which formula determines a_n the number of rectangles in the n th term?

- 1 $a_n = n + 1$
- 2 $a_n = \frac{1}{2}n + 1$
- 3 $a_n = 2n + 1$
- 4 $a_n = 2n - 1$

- 41 Mr. Smith invested \$2,500 in a savings account that earns 3% interest compounded annually. He made no additional deposits or withdrawals. Which expression can be used to determine the number of dollars in this account at the end of 4 years?

- 1 $2500(1 + 0.03)^4$
- 2 $2500(1 + 0.3)^4$
- 3 $2500(1 + 0.04)^3$
- 4 $2500(1 + 0.4)^3$

- 42 The graph representing a function is shown below.



Which function has a minimum that is *less* than the one shown in the graph?

- 1 $y = x^2 - 6x + 7$
- 2 $y = |x + 3| - 6$
- 3 $y = x^2 - 2x - 10$
- 4 $y = |x - 8| + 2$

- 43 Which of the following are expressions, not equations?

a) $6x^2 + 3x - 10$

b) $\frac{4x}{3} + 10y$

c) $2x = 3y$

d) $y = 7x - 12$

e) $3y(2x + 1)$

f) $(x - 2)(x + 3) = 10$

- 1 a and b, only
- 2 c, d and f, only
- 3 a, b and e, only
- 4 All of the choices are expressions.

- 44 Krystal was given \$3000 when she turned 2 years old. Her parents invested it at a 2% interest rate compounded annually. No deposits or withdrawals were made. Which expression can be used to determine how much money Krystal had in the account when she turned 18?

- 1 $3000(1 + 0.02)^{16}$
- 2 $3000(1 - 0.02)^{16}$
- 3 $3000(1 + 0.02)^{18}$
- 4 $3000(1 - 0.02)^{18}$

- 45 The formula $C = \frac{5}{9}(F - 32)$ can be used to find the Celsius temperature (C) for a given Fahrenheit temperature (F). What Celsius temperature is equal to a Fahrenheit temperature of 77° ?

- 1 8°
- 2 25°
- 3 45°
- 4 171°

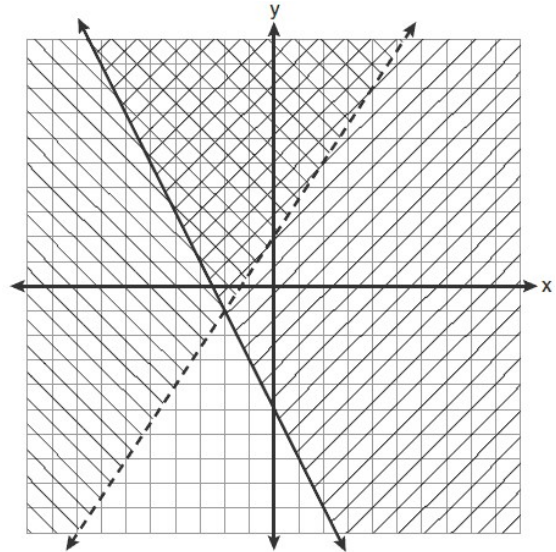
- 46 Which equation has an x -intercept of 2 and a y -intercept of 3?

- 1 $2x - y = -3$
- 2 $3x + 2y = 6$
- 3 $3x - y = 2$
- 4 $2x + 3y = 9$

- 47 The value of the x -intercept for the graph of $4x - 5y = 40$ is

- 1 10
- 2 $\frac{4}{5}$
- 3 $-\frac{4}{5}$
- 4 -8

- 48 Which ordered pair is in the solution set of the system of inequalities shown in the graph below?



- 1 $(-2, -1)$
- 2 $(-2, 2)$
- 3 $(-2, -4)$
- 4 $(2, -2)$

- 49 What is the result when $6x^2 - 13x + 12$ is subtracted from $-3x^2 + 6x + 7$?

- 1 $3x^2 - 7x + 19$
- 2 $9x^2 - 19x + 5$
- 3 $9x^2 - 7x + 19$
- 4 $-9x^2 + 19x - 5$

- 50 A population, $p(x)$, of wild turkeys in a certain area is represented by the function $p(x) = 17(1.15)^{2x}$, where x is the number of years since 2010. How many more turkeys will be in the population for the year 2015 than 2010?

- 1 46
- 2 49
- 3 51
- 4 68

