Algebra 1 End-of-Course Assessment Practice Test

For Multiple Choice Items, circle the correct response. For Fill-in Response Items, write your answer in the box provided, placing one digit in each box and no spaces between digits.

MA.912.A.2.3, MA.912.A.2.13

1. Anton joined a golf club two years ago. He pays an annual membership fee of $895 and a greens fee of $30 each time he plays a game of golf. The function below can be used to calculate the total yearly golfing fee, $f(g)$, in dollars.

$f(g) = 895 + 30g,$

where g represents the number of times he played golf during the year.
Last year he paid $2,065 as a total golfing fee. For how many games did he pay a greens fee?

MA.912.A.2.3

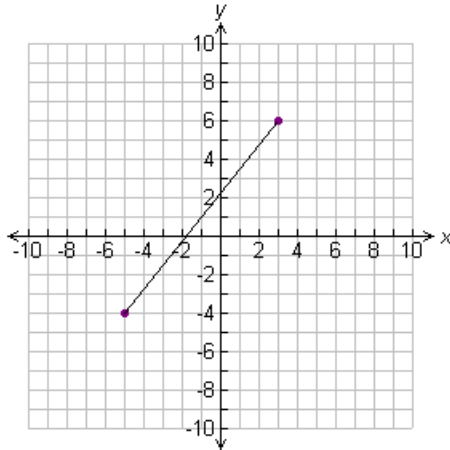**2.** For the function $f(x) = 3x + 2,$ find x such that $f(x) = 14$.

MA.912.A.2.4

3. Find the domain of the function represented in the graph.

A. The domain consists of input values from -5 to 3.
B. The domain consists of input values from -4 to 6.
C. The domain consists of input values from -5 to 6.
D. The domain consists of input values from -4 to 3.

MA.912.A.2.13

4. Gregory teaches martial arts. He charges a one-time processing fee of $5.00 and the cost of the classes is shown below. Let x represent the number of classes and y represent the cost of classes. Based on this information, what will it cost to take 10 classes?

Cost of classes (not including processing fee)

Number of Classes, x	1	2	3	4
Cost of Classes, y	$15.00	$27.00	$39.00	$51.00

A. $123.00
B. $125.00
C. $128.00
D. $130.00

MA.912.A.3.1

5. Solve the equation. $-4(x + 10) - 6 = -3(x - 2)$

MA.912.A.3.1

6. A bookstore sold 18,000 paperbacks one month. This was 10% less than the number of paperbacks the store sold the previous month. The following equation represents this situation, where x represents the number of paperbacks sold the previous month.
$x - 0.1x = 18,000$
How many paperbacks did the store sell in both the months combined?

   A. 20,000

   B. 35,990

   C. 38,000

   D. 180,000

MA.912.A.3.1

7. Shades R Us charges $20 per day to rent a lounge chair and $15 per day to rent an umbrella. Dan and Lisa paid a total of $245 to rent a lounge chair and an umbrella each during their vacation. Lisa rented the chair and umbrella for 1 day less than Dan. The following equation represents this situation, where x represents the number of days Dan rented the lounge chair and umbrella.

$20x + 15x + 20(x - 1) + 15(x - 1) = 245$

What is the total amount Dan paid to rent the lounge chair and umbrella during his vacation?

   A. $80

   B. $105

   C. $140

   D. $17

MA.912.A.3.2

8. Which property would be used first to simplify the expression $2(x+5y+1)-4(3x-y-2)$?

A. Distributive
B. Identity
C. Inverse
D. Commutative

MA.912.A.3.2

9. Your daily workout plan involves a total of 40 minutes of running and swimming. You burn 20 calories per minute running and 10 calories per minute swimming. Let r be the number of minutes you run. How many calories will you burn in your 40 minute workout if you run for 20 minutes?

MA.912.A.3.3

10. Which mathematical sentence represents the solution for d in the equation $6e = ef + 3d$?

A. $d = \dfrac{6e - ef}{3}$

B. $d = \dfrac{6e + ef}{3}$

C. $d = \dfrac{2e - ef}{3}$

D. $d = \dfrac{2e + ef}{3}$

MA.912.A.3.3

11. The formula for the perimeter P of a rectangle with length l and width w is $P = 2l + 2w$. Which of the following is a formula for the length of a rectangle in terms of the perimeter and width?

A. $l = \dfrac{P - w}{2}$

B. $l = \dfrac{P + w}{2}$
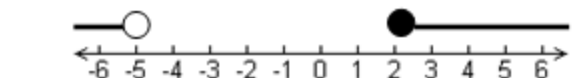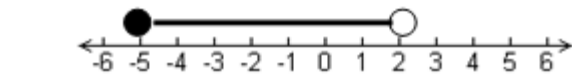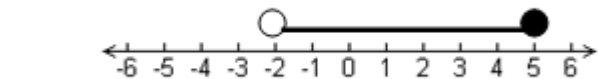
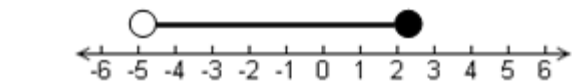C. $l = \dfrac{P - 2w}{2}$

D. $l = \dfrac{P + 2w}{2}$

MA.912.A.3.4

12. Which of the following is the solution for $4x - 4 > 12$?

A. $x \geq 4$
B. $x \leq 4$
C. $x > 4$
D. $x < 4$

MA.912.A.3.4

13. Which graph represents the solution set for the compound inequality $-3 \leq -2x + 1 < 11$?

A.

B.

C.

D.

MA.912.A.3.5

14. Trini's car breaks down on a highway. Trini estimates that she is 20 to 30 miles from the nearest car repair shop. She calls a towing company that charges a fee of $80 plus $3 per mile to tow a car. If Trini uses this towing company, which is the best estimate for the amount of money, *m,* she will pay for the company to tow her car?

A. $103 \leq m \leq 113$
B. $140 \leq m \leq 150$
C. $140 \leq m \leq 170$
D. $160 \leq m \leq 170$

MA.912.A.3.5

15. Mia is a sales associate at an art gallery. Each week she earns $300 plus a 4% commission of all her sales. This week she earned $327. How much were Mia's art sales this week?

MA.912.A.3.7

16. Which of the following represents the linear equation $3x = 12 - 2y$ in standard form?

A. $y = -\dfrac{3}{2}x + 6$

B. $y = \dfrac{3}{2}x - 6$

C. $3x - 2y = 12$

D. $3x + 2y = 12$

MA.912.A.3.7

17. Which of the following represents the linear equation $2x = y + 3$ in slope-intercept form?
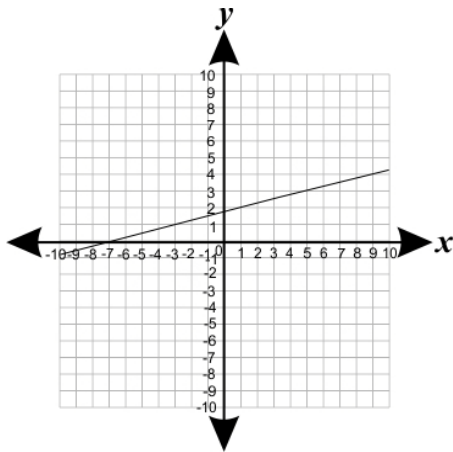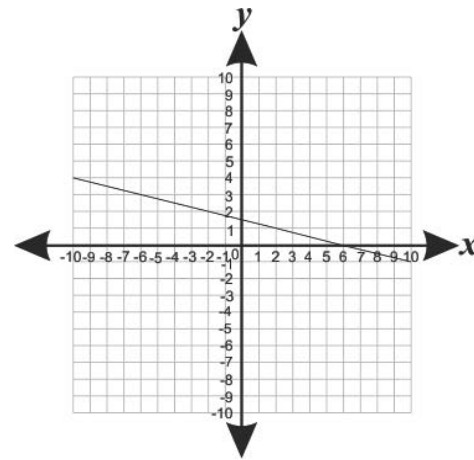
A. $2x + y = 3$
B. $2x - y = 3$
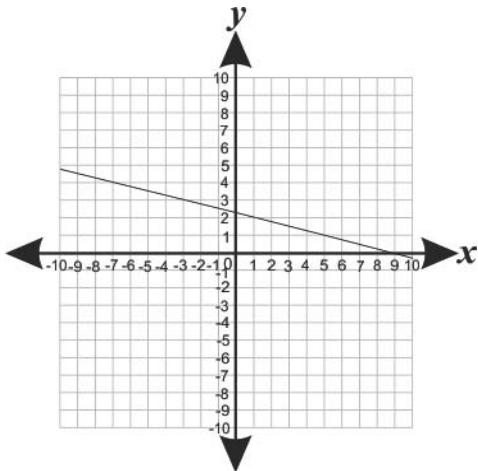C. $y = 2x - 3$
D. $y = 2x + 3$

MA.912.A.3.8

18. The travel path of a ferry heading from a mainland harbor toward an island jetty is graphed on a coordinate grid. The graph is a straight line with a slope of – ¼. If the mainland harbor is located at point (2, 1), which graph represents the travel path of the ferry?
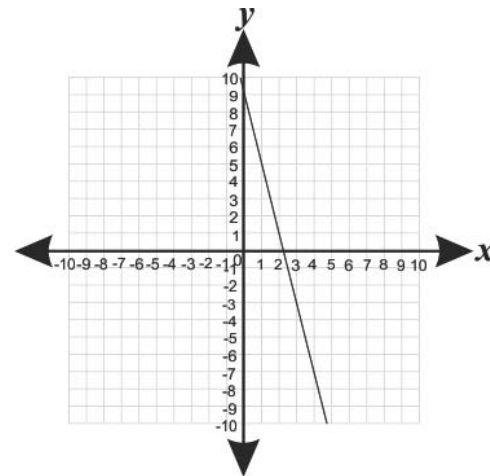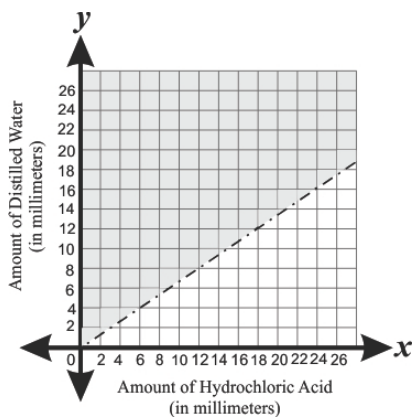
A.

C.

B.

D.

MA.912.A.3.8

19. For a science experiment Corrine is adding hydrochloric acid to distilled water. The relationship between the amount of hydrochloric acid, *x*, and the amount of distilled water, *y*, is graphed below.

Which inequality best represents this graph?

A. $2y - 3x < 0$

B. $3y - 2x < 0$

C. $2y - 3x > 0$

D. $3y - 2x > 0$

MA.912.A.3.9

20. What is the y-coordinate of the *y*-intercept of the line that passes through the points (–4, –4) and (4, 8)?

MA.912.A.3.10

21. Which equation represents the line passing through the points (3, 2) and (–9, 6)?

A. $x - 3y = 9$
B. $x + 3y = 9$
C. $3x - y = -9$
D. $3x + y = 9$

MA.912.A.3.10

22. Which equation represents the line passing through the point (4, –16) and is perpendicular to the line $y = -\dfrac{2}{3}x + 8$?

A. $y = \dfrac{2}{3}x - 22$

B. $y = -\dfrac{2}{3}x - 22$

C. $y = -\dfrac{3}{2}x - 22$

D. $y = \dfrac{3}{2}x - 22$

MA.912.A.3.11, MA.912.A.2.13

23. A company builds computers. It costs $6,700 to build 10 computers and $12,200 to build 20 computers. Which equation models the cost, C(x), as a linear function of the number of computers built, x?

A. C(x) = 550x -1200
B. C(x) = 550x + 1200
C. C(x) = 1200x - 550
D. C(x) = 1200x + 550

MA.912.A.3.11

24. The graph below shows the revenue earned by a company in its first 4 quarters of operation. A line of best fit has been drawn on the graph.
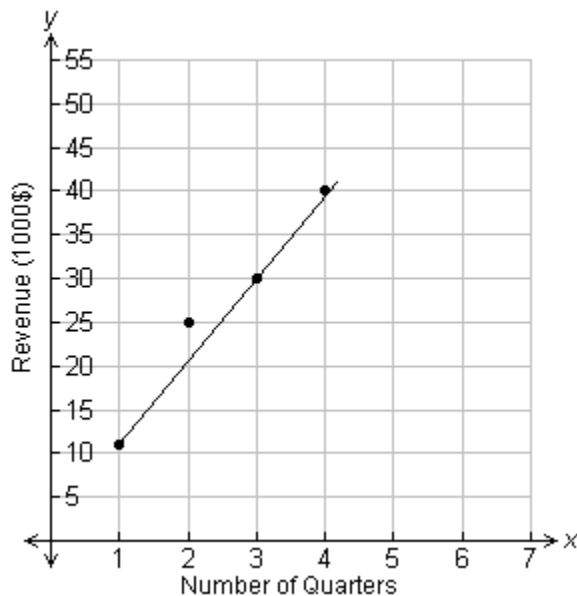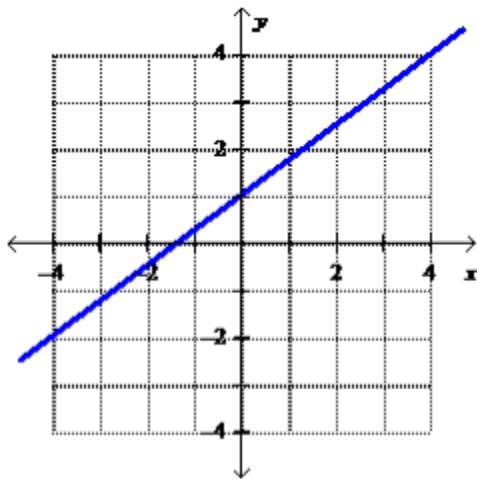

Based on the linear model, how much revenue, in thousands of dollars, should the company earn in its 5th quarter of operation?

MA.912.A.3.12

25. Which equation represents the graph of the line shown below?

A. $y = -\dfrac{3}{4}x + 1$

B. $y = \dfrac{3}{4}x + 1$

C. $y = \dfrac{3}{4}x - 1$

D. $y = -\dfrac{3}{4}x - 1$

MA.912.A.3.13

26. Determine the number of solutions based on the graph for the following system of equations.

$2x + 5y = 7$
$10y = -4x + 14$

A. Exactly one solution

B. No solutions

C. Infinitely many solutions

D. Exactly two solutions

MA.912.A.3.13

27. Which point lies in the solution set for the following system of inequalities?

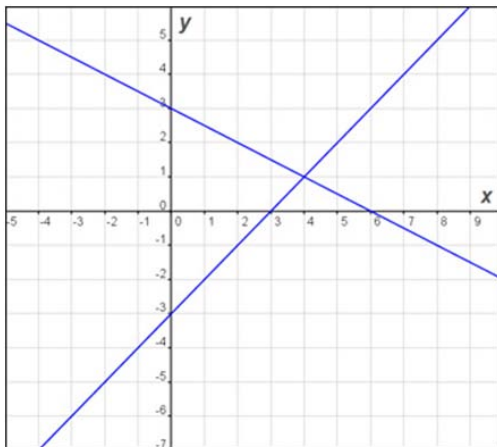$x - y > 3$
$x + 2y < 6$

A. (7, 1)

B. (3, 4)

C. (-2, 2)

D. (4, -2)

M.A.912.A.3.14

28. Which system of equations is represented by the following graph?

A. $x - 2y = 6$
   $x + y = 3$

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

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

D. $x + 2y = 6$
   $x - y = 3$

M.A.912.A.3.14

29. Determine the value of y for the system of equations.

$x - 3y = 4$
$2x + y = 8$

MA.912.A.3.14, MA.912.A.3.15

30. An auditorium earned $25,000 in sold-out concert ticket sales. Front section tickets cost $75 per seat and back section tickets cost $50 per seat. The number of front section seats is twice the number of back section seats. How many seats are in the front section?

MA.912.A.3.14, MA.912.A.3.15:

31. Sam has a total of 58 DVD's and CD's. If the number of CD's is two more than three times the number of DVD's, how many CD's does he have?

A. 42
B. 14
C. 44
D. 12

MA.912.A.4.1

32. The length of each side of a square wooden box, in inches, is represented by the expression $8m^2$. The volume of the box, in cubic inches, is $(8m^2)^3$.

Which simplified expression represents the volume of the box?

A. $8m^6$

B. $24m^5$

C. $512m^5$

D. $512m^6$

MA.912.A.4.1; MA.912.A.4.2:

33. Easton simplified the following expression:

$(x^2y^6z^5)(x^4y^5z^3)$

If he writes his answer in the form of $x^ay^bz^c$, what is the value of b, the exponent on y?

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MA.912.A.4.1

34. A film set designer is using white and colored tiles in a pattern to create paths of different lengths. If x is the length of the path in feet, the number of colored tiles needed to make it is calculated using the rule $(3xy)(7xy^2)$, where y represents the number of white tiles.

Which simplified expression represents the number of colored tiles used for a path of length x feet?

A. $21xy^2$

B. $21xy^3$

C. $21x^2y^2$

D. $21x^2y^3$

MA.912.A.4.2

35. A concert hall is in the shape of a rectangle. Its floor has a length of $(x + 6)$ meters and a width of $(2x - 3)$ meters. The expression below represents the area of the floor of the hall in square meters.
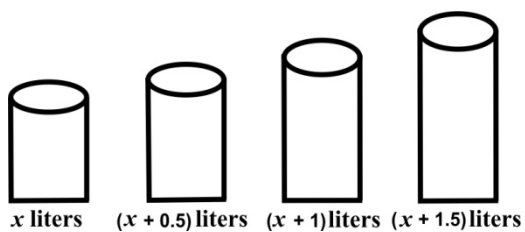
$(x + 6)(2x - 3)$

Which of the following simplified expressions represents the area of the floor of the concert hall, in square meters?

A. $2x^2 + 9x - 18$

B. $2x^2 + 15x - 18$

C. $x^2 + 15x - 18$

D. $x^2 + 9x + 18$

MA.912.A.4.2

36. In a kitchen there are four containers that can hold different quantities of water, as shown in the figure below.

x liters   (*x* + 0.5) liters   (*x* + 1) liters (*x* + 1.5) liters

How many liters of water can the four containers hold in all?

A. 3

B. $x + 3$

C. $4x + 3$

D. $x^4 + 3$

MA.912.A.4.2

37. A greenhouse that specializes in growing bell peppers is divided into sections. The number of plants in each section depends on the number of sprinklers in that section.

In a section with x sprinklers, there are $3x(x + 3)$ Red bell pepper plants and $(x + 4)^2$ Yellow bell pepper plants.

Which simplified expression represents the total number of Red and Yellow bell pepper plants in a section with x sprinklers?

A. $3x^2 + 17x + 16$

B. $4x^2 + 17x + 16$

C. $3x^4 + 17x^2 + 16$

D. $4x^4 + 17x^2 + 16$

MA.912.A.4.3

38. Which of the following is equivalent to $16a^2 - 49$?

A. $(4a - 7)\,(4a - 7)$
B. $(4a + 7)\,(4a - 7)$
C. $(7 - 4a)\,(7 - 4a)$
D. $(7 + 4a)\,(7 - 4a)$

MA.912.A.4.3

39. Which of the following is equivalent to $48xy^2 + 24xy^4 - 12x^2y^4$?

A. $12xy^2(4 + 2y^2 - xy^2)$
B. $12xy^2(4 - 2y^2 + xy^2)$
C. $12xy^2(3 + 2y^2 - xy^2)$
D. $12xy^2(4 - 3y^2 - xy^2)$

MA.912.A.4.4

40. Assuming $x \neq 0$ and $y \neq 0$, what is the quotient of $\dfrac{12x^6 y^2 + 8x^4 y^3 + 4x^2 y^4}{4x^2 y}$?

A. $3x^1 \ y^2 + 2x^8 y^3 + x^4 y^4$

B. $3x^8 y^3 + 2x^6 y^4 + x^4 y^5$

C. $3x^4 y + 2x^2 y^2 + y^3$

D. $3x^3 y^2 + 2x^2 y^3 + xy^4$

MA.912.A.4.4

41. A wooden garden tray with a base area of xy square inches is filled with soil up to a certain height. The tray contains $(x^2 y + 10xy^2 + 12xy)$ cubic inches of soil. The height of the tray is represented by the expression

$$\dfrac{x^2 y + 10xy^2 + 12xy}{xy}$$

Which expression below is the correct simplified form of the height of the tray?

A. $11xy + 12$

B. $x + 10y + 12$

C. $x + 10xy^2 + 12xy$

D. $x^2 y + 10xy^2 + 12$

MA.912.A.4.3, MA.912.A.5.1

42. If $x \neq 3$, which of the following represents $\dfrac{x^2 - 9}{x^2 - 3x}$ in simplified form?
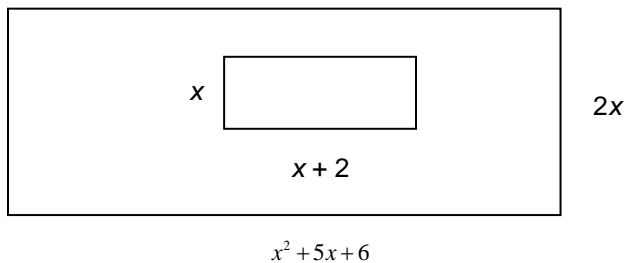
A. $1 - \dfrac{3}{x}$

B. $1 + 3x$

C. $\dfrac{x-3}{x}$

D. $\dfrac{x+3}{x}$

MA.912.A.4.3, MA.912.A.5.1

43. Which ratio represents the area of the smaller rectangle compared to the area of the larger rectangle? (Figure not drawn to scale).

$$x$$ $$2x$$

$$x + 2$$

$$x^2 + 5x + 6$$

A. $\dfrac{x}{x+3}$

B. $\dfrac{1}{2(x+3)}$

C. $\dfrac{x+2}{x^2+5x+6}$

D. $2x(x+3)$

MA.912.A.5.4

44. What is the value for x in the proportion $\dfrac{x+8}{5x-2} = \dfrac{3}{8}$?

MA.912.A.5.4

45. For what value(s) of x is $\dfrac{2x+3}{5x+3} = \dfrac{2}{5}$?

A. $x = 1$
B. $x = 3$
C. no real numbers
D. all real numbers

MA.912.A.6.1, MA.912.A.6.2

46. Assuming $x > 0$, which of these expressions is equivalent to $11\sqrt{245x^3} + 9\sqrt{45x^3}$?

A. $5x\sqrt{104x}$

B. $20\sqrt{290x^6}$
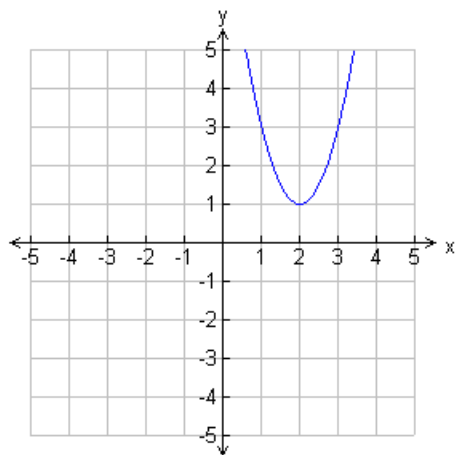
C. $20x\sqrt{290x}$

D. $104x\sqrt{5x}$

MA.912.A.6.2

47. Assuming $x > 0$, what is the simplified fraction form for $\dfrac{5x\sqrt{3}}{\sqrt{48x^2}}$?
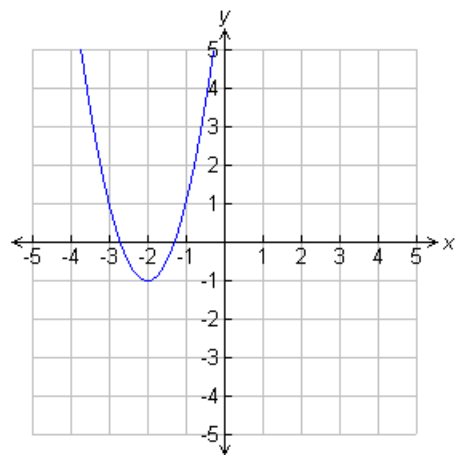
MA.912.A.7.1

48. Which of these graphs show the quadratic function $y = 2x^2 + 8x + 7$?

A.

C.

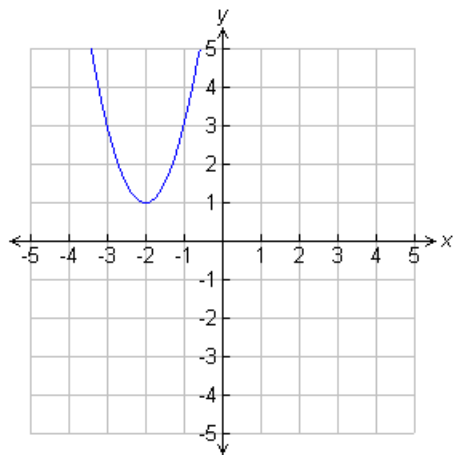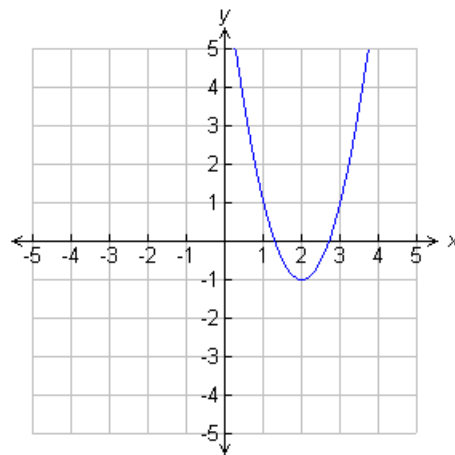B.

D.

MA.912.A.7.1

49. Based on the graph of $y = x^2 - 2x - 3$, what is the positive x- intercept?

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MA.912.A.7.2

50. One solution of the equation $3x^2 - 16x + 5 = 0$ is $\dfrac{1}{3}$. What is the other solution?

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MA.912.A.1.8, MA.912.A.7.2

51. What are the solutions to $6x^2 = 18x$?

A. x = 6, x = 3

B. x = 6, x = -3

C. x = 0, x = -3

D. x = 0, x = 3

MA.912.A.7.8

52. The height in meters of a projectile can be modeled by $h = -4.9t^2 + vt + s$ where t is the time (in seconds) the object has been in the air, v is the initial velocity (in meters per seconds) and s is the initial height (in meters). A soccer ball is kicked upward from the ground and flies through the air with an initial vertical velocity of 4.9 meters per second. Approximately, after how many seconds does it land?

MA.912.A.7.8

53. A batter hits a baseball upward with an initial speed of 96 feet per second. After how many seconds does the ball hit the ground? Use the formula $h = rt - 16t^2$ where h represents height in feet and r represents the rate in feet per second.

MA.912.A.7.8

54. A company's monthly profit, P, from a product is given by $P = -x^2 + 105x - 1050$, where x is the price of the product in dollars. What is the lowest price of the product, in dollars, that gives a monthly profit of $1550?

MA.912.D.7.1:

55. The set *S* represents even numbers from 2 to 30.

S = {2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30}

The set *C* represents multiples of 3 from 3 to 30.

C = {3, 6, 9, 12, 15, 18, 21, 24, 27, 30}

How many elements are in the set S ∩ C?

MA.912.D.7.1:

56. The zip code of a location consists of five digits chosen from the set *Z* shown below.

Z = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}

The set *L* represents the digits in the zip code for Key Largo.

L = {3, 3, 0, 3, 7}

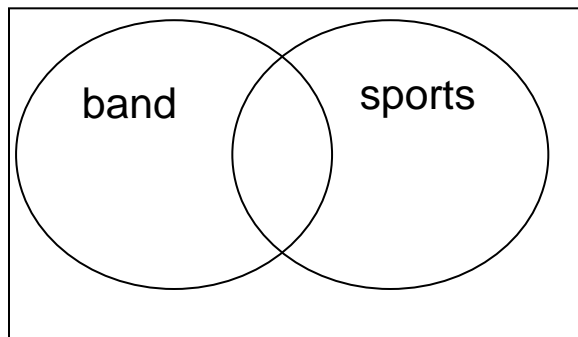The set *K* represents the digits in the zip code for Killarney.

K = {3, 4, 7, 4, 0}

How many odd numbers are in the set ~(L ∪ K)?

MA.912.D.7.2:

57. In a school of 200 students, 80 students are in the band, 160 students are on sports teams, and 60 students participate in both activities. How many students in the school are neither in band nor on a sports team?

band   sports

MA.912.D.7.2:

58. A news agent conducted a survey of business magazine subscribers in a town and found that there was circulation of only three business magazines. He made the Venn diagram below to show the number of subscribers to each of the three magazines: Board Review, Strategy and Finance, and Investor Journal.

Magazine Subscription
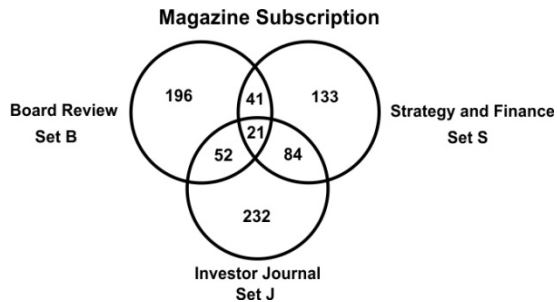
How many subscribers belong to the set $(\sim\!J \cap S) \cup B$?

A. 484

B. 443

C. 422

D. 370

MA.912.G.1.4

59. Let c be any constant number. Which of the following will ALWAYS be perpendicular to $-3x + y = 2$?

A. $y = 3x + c$

B. $y = \dfrac{1}{3}x + c$

C. $y = -3x + c$

D. $y = -\dfrac{1}{3}x + c$

MA.912.G.1.4

60. What is the slope of a line that passes through the point (–1, 1) and is parallel to a line that passes through (3, 6) and (1, –2)?