

Teachers and students of Algebra 1, Algebra 1 Honors and Algebra 1B:

Please find attached the Study Guide for the State End of Course (EOC) Algebra 1 Exam.

When creating the study guide, I used the Reporting Categories issued by the state for the EOC and chose a question or two from each benchmark that should have been covered throughout the year.

I also included Fill-In Response (FR) items, as many of the questions on the Exam will use this format. Many of these questions came from the [Algebra 1 Item Specifications](#) on the Florida Department of Education website.

Study Guides for all middle and high school mathematics exams can be found on the Marion County Public Schools website [here](#).

Please contact me with any suggestions, questions, comments, etc.

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(352) 236.0591 or x. 50271

- 1 Which of the following relations can be determined to be a function?

- (A) $\{(-1, 4), (5, 7), (-2, 6), (-1, 7)\}$
 (B) $\{(-1, 6), (2, 6), (3, -7), (-1, -8)\}$
 (C) $\{(-1, 6), (2, 7), (-3, 6), (-2, -8)\}$
 (D) $\{(-1, 4), (5, 7), (-2, 7), (-1, 8)\}$

- 2 Which table represents a linear function?

(A)

x	y
0	-1
1	-3
2	-4
3	-6

(C)

x	y
0	0
1	1
2	2
3	7

(B)

x	y
0	10
1	12
2	18
3	28

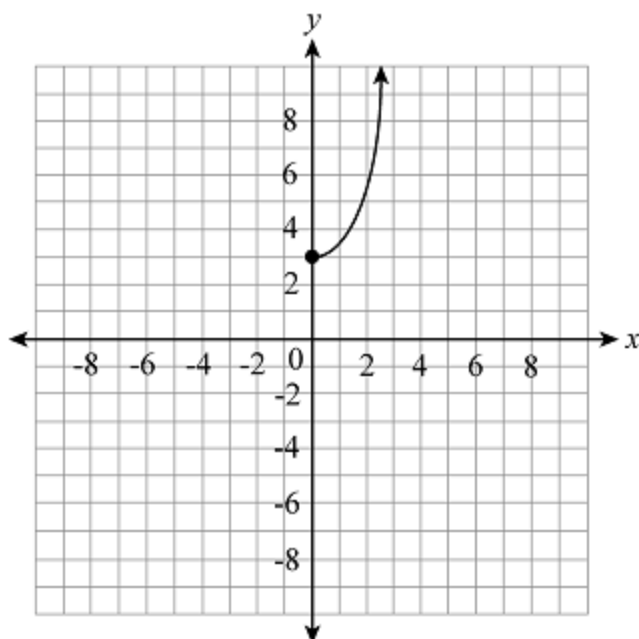
(D)

x	y
0	-5
1	-2
2	1
3	4

- 3 Which of the following shows the domain and range of $f(x) = \sqrt{x-4}$?

- (A) Domain: $\{0 \leq x \leq \infty\}$
 Range: $\{4 \leq y \leq \infty\}$
 (B) Domain: $\{0 \leq x \leq \infty\}$
 Range: {All real numbers}
 (C) Domain: $\{4 \leq x \leq \infty\}$
 Range: $\{0 \leq y \leq \infty\}$
 (D) Domain: {All real numbers}
 Range: $\{0 \leq y \leq \infty\}$

- 4 Which of the following best describes the domain and range of the relation in the graph?



- (A) Domain: $\{0 \leq x \leq \infty\}$
Range: $\{0 \leq y \leq \infty\}$
- (B) Domain: $\{3 \leq x \leq \infty\}$
Range: $\{0 \leq y \leq \infty\}$
- (C) Domain: $\{0 \leq x \leq \infty\}$
Range: $\{3 \leq y \leq \infty\}$
- (D) Domain: $\{3 \leq x \leq \infty\}$
Range: $\{3 \leq y \leq \infty\}$

- 5 Solve the following equation for y :

$$\frac{1}{3}(y - 6) = 4y - \frac{2}{5}(2 - y)$$

- (A) $y = -\frac{79}{15}$
- (B) $y = -\frac{366}{75}$
- (C) $y = -\frac{11}{5}$
- (D) $y = -\frac{18}{61}$
- 6 What is the value of x in the equation below?

$$4x - 8 = 6x + 16$$

- (A) $x = -12$
- (B) $x = -2$
- (C) $x = 10$
- (D) $x = 24$

- 7 In physics, the velocity (v) of an object accelerating (at acceleration a) in a straight line for t seconds can be found using the following equation.

$$v = u + at$$

Which of the following is the same equation solved for u , the starting velocity of the object?

(A) $u = at - v$

(B) $u = \frac{v - a}{t}$

(C) $u = v - at$

(D) $u = at + v$

- 8 A line in the coordinate plane is represented by the equation below.

$$y = mx + 6$$

Which of the following is the same equation solved for x ?

(A) $x = \frac{y}{m} - 6$

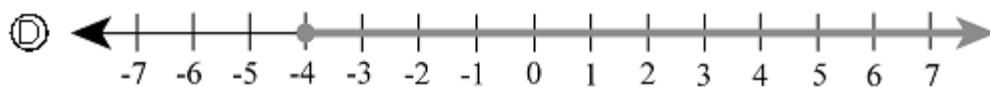
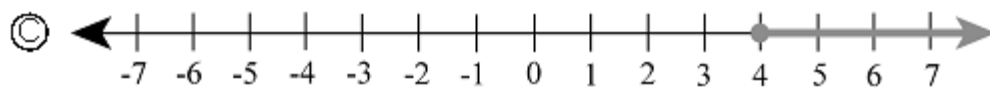
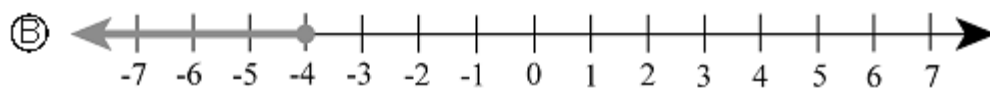
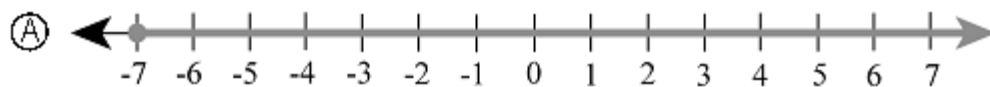
(B) $x = \frac{y - 6}{m}$

(C) $x = my + 6$

(D) $x = my - 6$

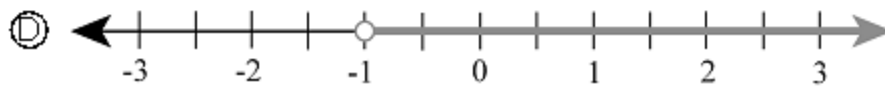
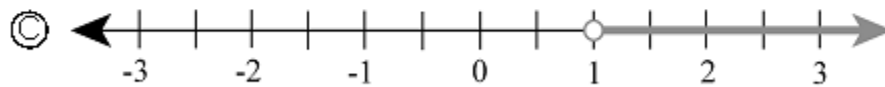
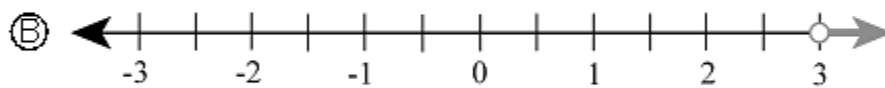
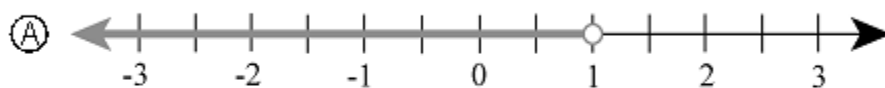
- 9 Which graph represents the solution to the following inequality?

$$-2x + 3 \leq 11$$



- 10 Which graph represents the solution to the following inequality?

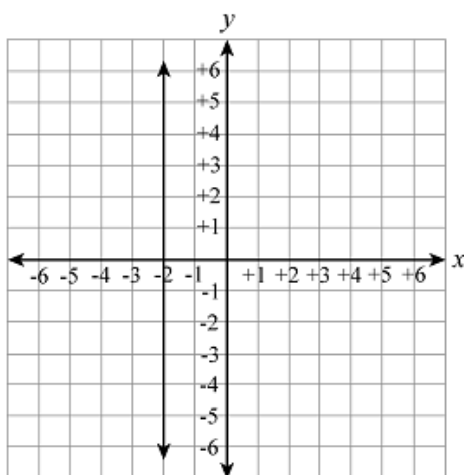
$$2 - x < 1$$



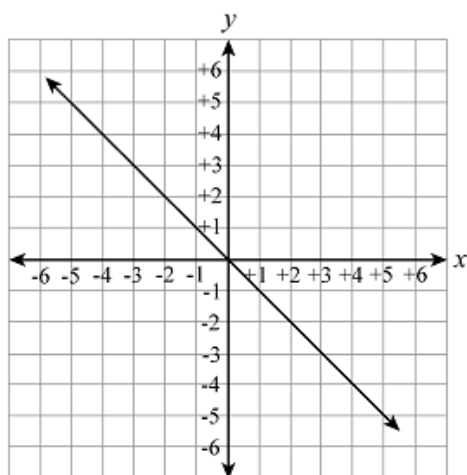
- 11** Rasheed works in a department store and is paid an hourly wage of \$9.00 and a 6 percent commission on all his sales. Last week, Rasheed earned \$542.64 and averaged \$88.00 in sales per hour. What was Rasheed's total amount of sales last week?
- (A) \$2,018
(B) \$3,171
(C) \$3,344
(D) \$4,562
- 12** Woody wants to earn \$250 to buy a bicycle by selling lemonade. It costs him \$0.05 to make a glass of lemonade, which he sells for \$0.25. How many drinks does he have to sell to save \$250?
- (A) 125 drinks
(B) 500 drinks
(C) 1,250 drinks
(D) 1,500 drinks

- 13 Which is the graph of the equation $y = -x$?

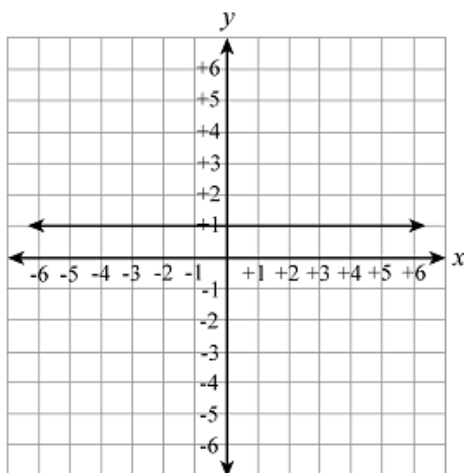
(A)



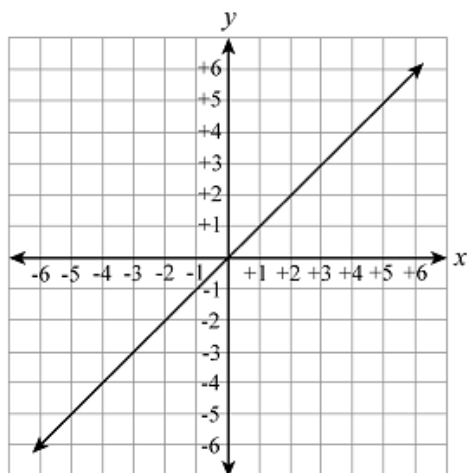
(C)



(B)



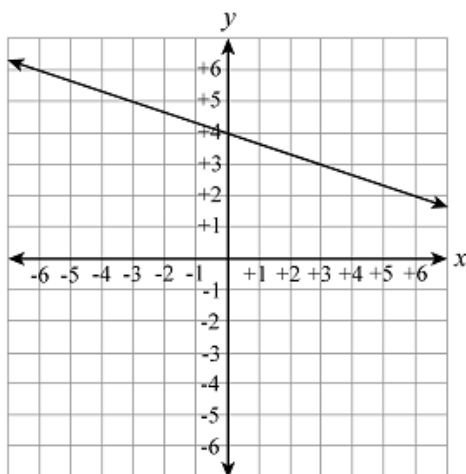
(D)



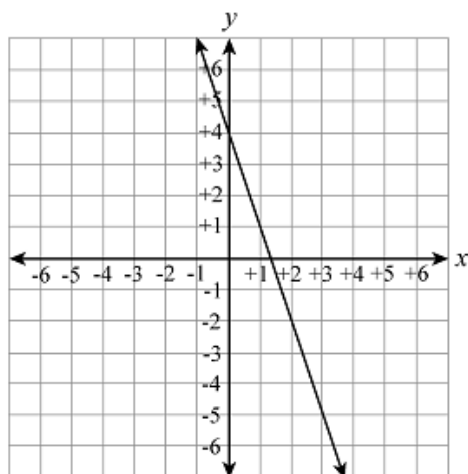
Algebra 1 End of Course Exam Study Guide (for Algebra 1, Algebra 1B and Algebra 1 Honors)

14 Which is the graph of the equation $y = \frac{1}{3}x + 4$?

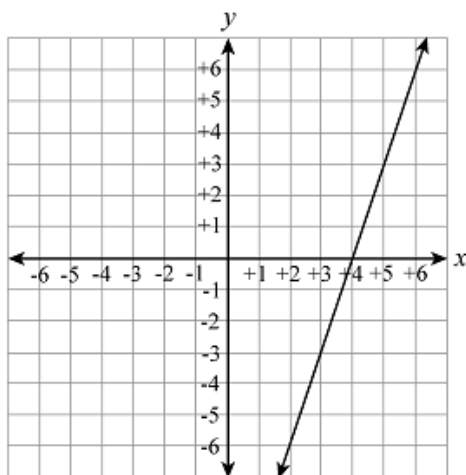
(A)



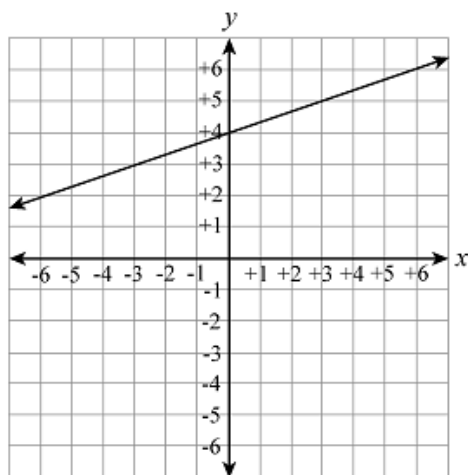
(C)



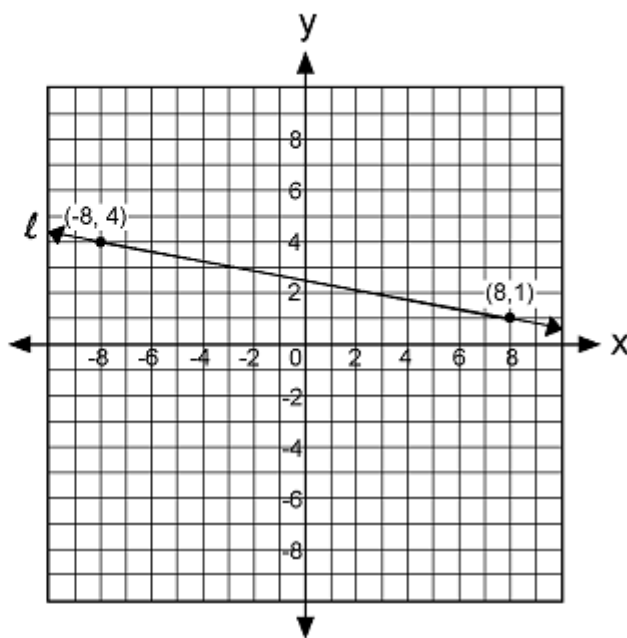
(B)



(D)



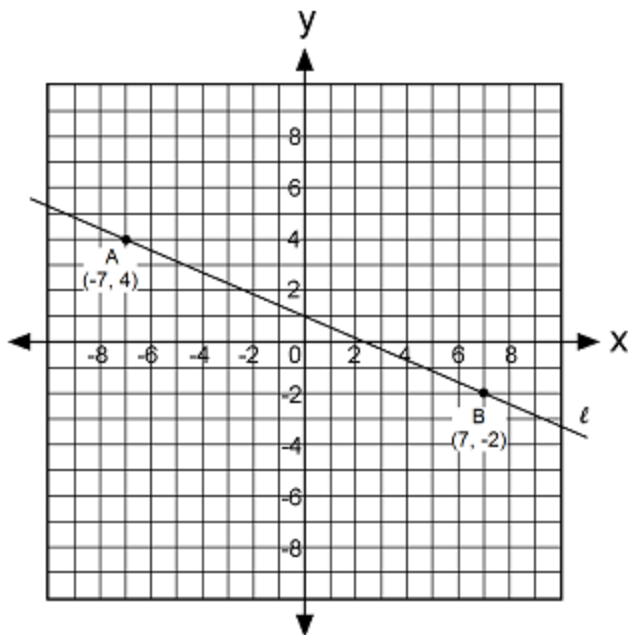
- 15 The graph of line l is shown below.



What is the slope of line l ?

- A $-\frac{16}{3}$
- B $-\frac{3}{16}$
- C $\frac{3}{16}$
- D $\frac{16}{3}$

- 16 The graph of line l is shown below.



What is the slope of line l ?

- A $-\frac{7}{3}$
- B $-\frac{3}{7}$
- C $\frac{3}{7}$
- D $\frac{7}{3}$

- 17 A line has a slope of $-\frac{5}{3}$ and a y -intercept of 6.

Which of the following is an equation of the line?

- (A) $5x + 3y = 18$
 (B) $18x - 3y = 5$
 (C) $5x - 3y = -18$
 (D) $5x + 3y = -18$
- 18 Which is an equation of the line that passes through the points $(-2, 0)$ and $(-6, -2)$?
- (A) $y = 2x - 2$
 (B) $y = -2x - 4$
 (C) $y = -\frac{1}{2}x - 1$
 (D) $y = \frac{1}{2}x + 1$
- 19 A car accelerated along a straight road while its speed was measured at various times. The table shows the collected data.

Car Acceleration

Seconds after start of trial (x)	Speed in feet per second (y)
0.5	10
1.4	28
1.9	38
2.8	56
4.0	80

What is the slope of the line that fits these data?

- (A) 15
 (B) 20
 (C) 25
 (D) 50

- 20 Look at the table below.

x	y
1	5
2	7
3	9
4	11
5	13

Which equation represents the relationship of x to y ?

- (A) $y = 3x + 1$
(B) $y = 3x - 1$
(C) $y = 2x + 3$
(D) $y = 3x$
- 21 Solve the following system of equations:

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

$$\frac{1}{4}x + \frac{2}{3}y = 5$$

- (A) (4, 9)
(B) (-4, 9)
(C) (4, -9)
(D) (-4, -9)
- 22 Solve the following system of equations:

$$2x - 3y = 13$$

$$2x + y = 1$$

- (A) (2, -3)
(B) (-4, -7)
(C) (5, -1)
(D) (-2, 3)

- 23 Simplify:

$$\frac{(a^2b^3)^2}{(a^4b^2c)^2}$$

(A) $\frac{b^2}{a^4c^2}$

(B) $\frac{b}{a^2c^3}$

(C) $\frac{b^2}{a^4c^3}$

(D) $\frac{b}{a^2c}$

- 24 Simplify:

$$\frac{3x^2y^6z^{-2}}{4x^4y^3z^4}$$

(A) $\frac{3y^2}{4x^2z^2}$

(B) $\frac{3y^2z^2}{4x^2}$

(C) $\frac{3y^3z^6}{4x^2}$

(D) $\frac{3y^3}{4x^2z^6}$

- 25 Simplify:

$$(3x + 2)^2 =$$

- (A) $9x^2 + 12x + 4$
- (B) $9x^2 + 6x + 4$
- (C) $9x^2 + 4$
- (D) $6x^2 + 4$

- 26 Simplify:

$$(2x^2y + 4xy - 3y^2) + (6xy - x^2y + 2y^2) =$$

- (A) $3x^2y - 2xy - 5y^2$
- (B) $x^2y + 10xy + y^2$
- (C) $8x^2y + 3xy - y^2$
- (D) $x^2y + 10xy - y^2$

- 27 Factor the following polynomial:

$$x^2 - 25$$

- (A) $(x - 5)(x - 5)$
- (B) $(x - 5)$
- (C) $(x + 5)(x + 5)$
- (D) $(x + 5)(x - 5)$

- 28 Factor the following polynomial:

$$3a^2b + ab^2 + 6a^3b^3$$

- (A) $a^3b^3(3ab^2 + a^2b + 6)$
- (B) $3ab(a + b + 2a^2b^2)$
- (C) $ab(3 + b + 6a^2b^2)$
- (D) $ab(3a + b + 6a^2b^2)$

- 29 Divide:

$$\frac{x^2 - 6x + 9}{2x^2 - 9x + 9}$$

(A) $\frac{x + 3}{2x - 3}$

(B) $\frac{x - 3}{2}$

(C) $\frac{x - 6}{2x - 9}$

- 30 Divide:

$$\frac{2x^2y + 4xy^2 - 6xy}{2xy}$$

(A) $x + 4xy^2 - 6$

(B) $xy + 2x - 6$

(C) $x + 2y - 3$

(D) $x + y - 6$

- 31 Solve the following proportion for x :

$$\frac{10}{14} = \frac{x}{7}$$

(A) 2

(B) 5

(C) 9.8

(D) 20

- 32 Solve the following proportion for x :

$$\frac{7.2}{3.5} = \frac{x}{4.25}$$

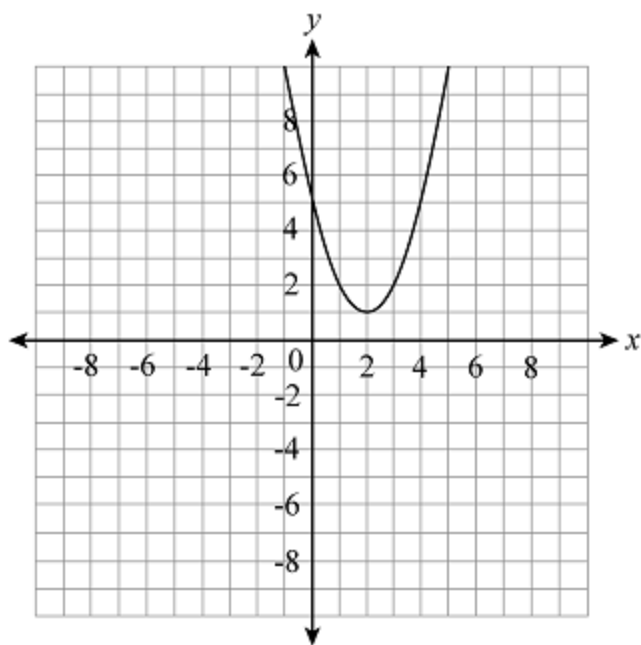
- (A) 2.07
(B) 5.93
(C) 8.64
(D) 8.74
- 33 What is the value of the expression below?

$$\sqrt{1.6 \times 10^{-25}}$$

- (A) 4.0×10^{-13}
(B) 0.4×10^{-13}
(C) 0.4×10^{-11}
(D) 4.0×10^{-12}
- 34 Which of the following expressions is equal to $\sqrt{147}$?

- (A) $3 \times \sqrt{21}$
(B) $7 \times \sqrt{3}$
(C) $7 \times \sqrt{9}$
(D) $7 \times \sqrt{21}$

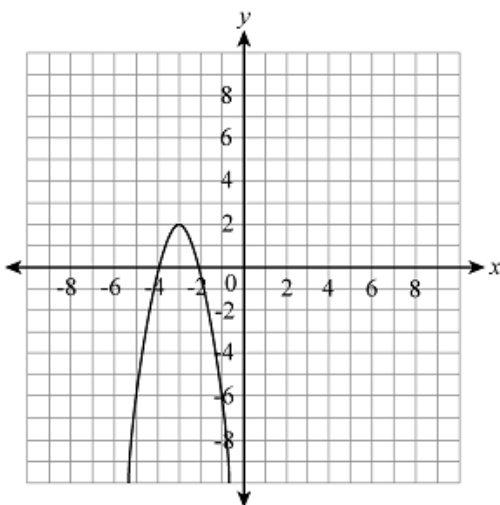
- 35 Which equation represents the parabola below?



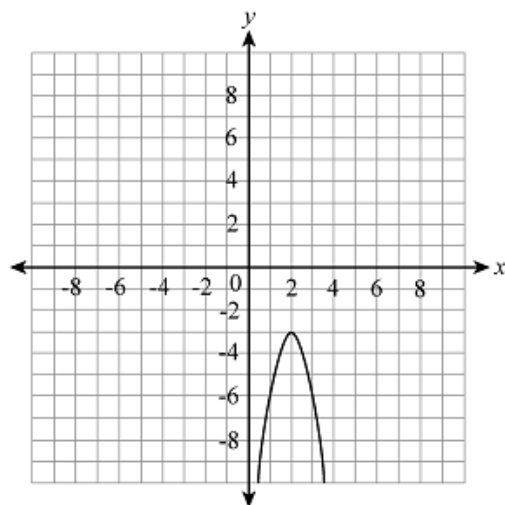
- (A) $y = 4x^2 - 6x + 13$
(B) $y = 2x^2 - 8x + 9$
(C) $y = x^2 - 4x + 5$
(D) $y = 4x^2 - 6x + 17$

- 36 Which graph shows a parabola with a vertex at $(-3, 2)$ that is a minimum value?

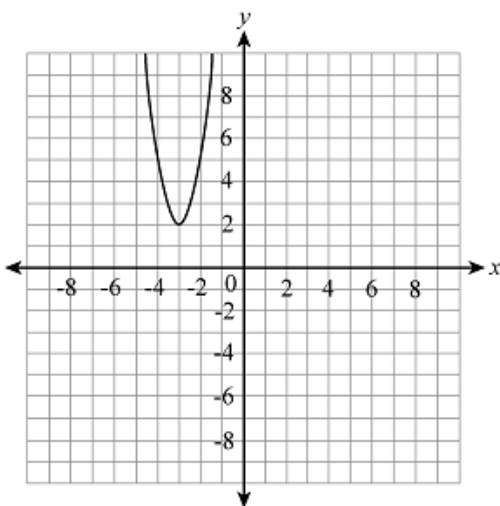
(A)



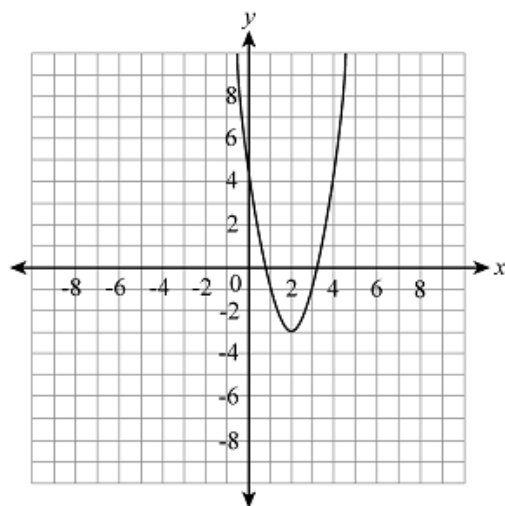
(C)



(B)



(D)



- 37 Solve for x :

$$2x^2 + x - 15 = 0$$

(A) $-\frac{5}{2}, 3$

(B) $-\frac{5}{2}, 5$

(C) $\frac{3}{2}, -5$

(D) $\frac{5}{2}, -3$

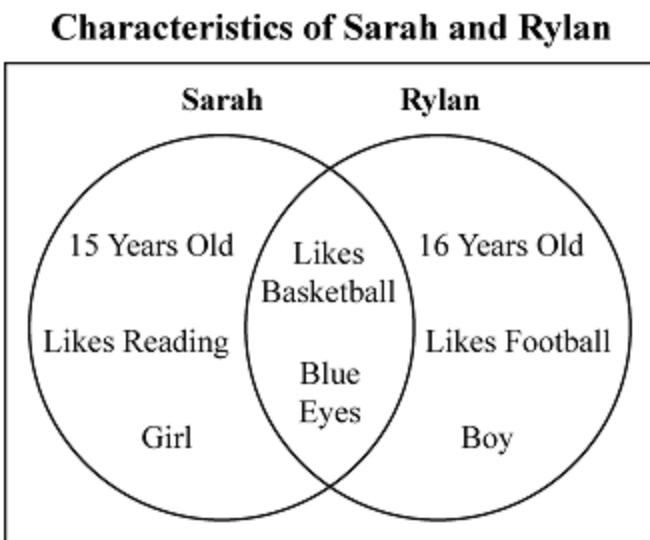
- 38** Solve for x :

$$-2x^2 - 4x + 5 = 0$$

- (A) -0.22, 2.22
(B) -0.87, 2.87
(C) -2.87, 0.87
(D) -2.22, 0.22
- 39** If $U = \{x \mid x \text{ is an integer, } 1 \leq x \leq 5\}$ and $P = \{1, 2, 5\}$, what is the complement of P (P')?
- (A) $\{1, 2, 5\}$
(B) $\{1, 2, 3, 4, 5\}$
(C) $\{3, 4\}$
(D) $\{2, 3, 4\}$
- 40** Given $R = \{a, b, d, g, h, j\}$ and $S = \{b, c, g, j, k, m\}$, what is the intersection of A and B ?
- (A) $\{a, b, c, d, g, h, j, k, m\}$
(B) $\{b, c, g, j, k, m\}$
(C) $\{b, g, j\}$
(D) $\{a, b, d, g, h, j\}$

Directions: Use the diagram below to answer the questions that follow.

The Venn diagram shows characteristics of Sarah and Rylan.



41 Which of these is a characteristic of only Rylan?

- (A) Likes basketball
- (B) Blue eyes
- (C) Girl
- (D) 16 years old

42 Which of these is a characteristic of only Sarah?

- (A) Blue eyes
- (B) Likes basketball
- (C) Likes football
- (D) Likes reading

43. Karen works as a salesperson for a local marketing company. Using the equations shown below, the company calculates her monthly earnings based upon her total sales for the month.

MONTHLY EARNINGS EQUATIONS

Total Sales for the Month (s in dollars)	Earnings Equation
$s \leq \$5,000$	$E = 1,600 + 0.1s$
$s > \$5,000$	$E = 1,600 + 0.1s + 0.15(s - 5000)$

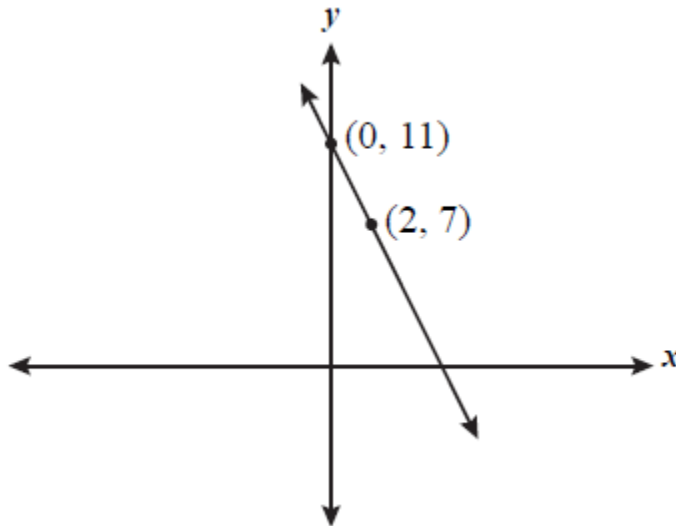
where:

E represents total monthly earnings before taxes and withholding
 s represents the dollar amount of her total sales

Karen's total sales were greater than \$5,000 in October. If her total monthly earnings for October were \$3,000, what was the value of her total monthly sales, s ?

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44. Joel graphed the line shown on the coordinate plane below.



What is the x -coordinate of the point at which this line intersects the x -axis?

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45. A website that sells songs for downloading increased its price per song from \$0.99 to \$1.29. Macy spent \$15.36 downloading songs during the month of the price increase. She downloaded 4 more songs at \$0.99 than at \$1.29. The set of equations below represents the situation where x is the number of songs Macy downloaded at \$0.99 and y is the number of songs she downloaded at \$1.29.

$$x = y + 4$$

$$0.99x + 1.29y = 15.36$$

What is the exact number of songs Macy downloaded at the \$0.99 price?

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46. A ball is kicked from ground level into the air. Its height y , in feet, after x seconds can be represented by the equation $y = 40x - 16x^2 + 2$. What is the total elapsed time, in seconds, from the time the ball is kicked until it reaches ground level again?

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47. Set D lists the ages of Dianna's grandchildren.

$$D = \{2, 5, 6, 8, 10, 11\}$$

Set K lists the ages of Karen's grandchildren.

$$K = \{2, 10, 18\}$$

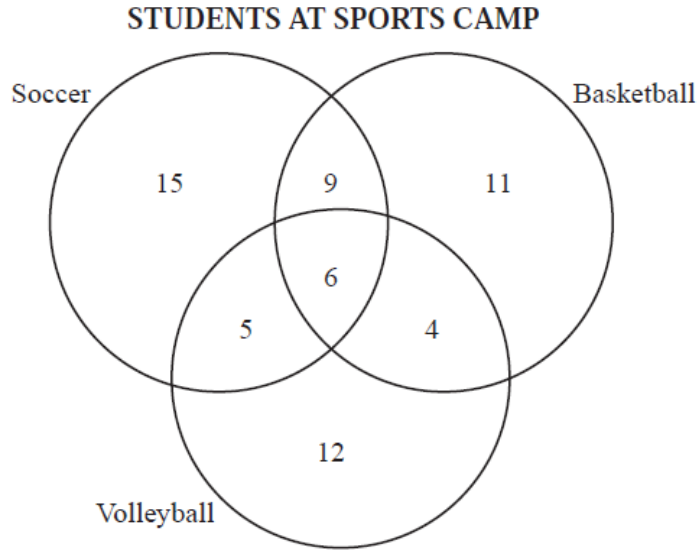
Set P lists the ages of Patrick's grandchildren.

$$P = \{10, 11, 14\}$$

What is the greatest age in the set $(K \cup P) \cap D$?

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48. The Venn diagram below shows the number of students who chose to participate in each of the three sports offered at Sports Camp.



Based on the diagram, what is the total number of students who did NOT participate in volleyball?

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49. Bill is planning to drive from his house to a baseball stadium and arrive in time for the beginning of the championship game. His arrival time depends on the traffic. If traffic is light, he will travel at an average speed of 50 miles per hour and arrive 1 hour early. If traffic is heavy, he will travel at an average speed of 30 miles per hour and arrive on time. The equation below can be used to model this situation, where t represents Bill's driving time, in hours.

$$50(t - 1) = 30t$$

What is the distance, **in miles**, from Bill's house to the baseball stadium?

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50. The set of ordered pairs shown below defines a relation.

$$\{(0, 0), (1, 5), (2, 8), (3, 9), (4, 8), (5, 5), (6, 0)\}$$

What is the value of the greatest element in the range of this relation?

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ALGEBRA 1 End of Course Study Guide

ANSWER KEY

- | | |
|-------|----------|
| 1. C | 37. D |
| 2. D | 38. C |
| 3. C | 39. C |
| 4. C | 40. C |
| 5. D | 41. D |
| 6. A | 42. D |
| 7. C | 43. 8600 |
| 8. B | 44. 5.5 |
| 9. D | 45. 9 |
| 10. C | 46. 2.5 |
| 11. C | 47. 11 |
| 12. C | 48. 35 |
| 13. C | 49. 75 |
| 14. D | 50. 9 |
| 15. B | |
| 16. B | |
| 17. A | |
| 18. D | |
| 19. B | |
| 20. C | |
| 21. B | |
| 22. A | |
| 23. A | |
| 24. D | |
| 25. A | |
| 26. D | |
| 27. D | |
| 28. D | |
| 29. D | |
| 30. C | |
| 31. B | |
| 32. D | |
| 33. A | |
| 34. B | |
| 35. C | |
| 36. B | |