

Coordinate Algebra

EOCT Review Test #2

1.

$$f(x) = -3x^2 + 2x - 7$$

$f(-1) =$

- A) -12
- B) -8
- C) -6
- D) 0

2. An arithmetic sequence is:

$$-\frac{1}{2}, 1, \frac{5}{2}, 4, \frac{11}{2}, 7, \dots$$

The general term of the sequence is:

- A) $t_n = -3 + \frac{3n}{2}$, where $n \in \mathbf{N}$ and $n \geq 1$.
- B) $t_n = -2 + \frac{3n}{2}$, where $n \in \mathbf{N}$ and $n \geq 1$.
- C) $t_n = -\frac{1}{2} + \frac{3n}{2}$, where $n \in \mathbf{N}$ and $n \geq 1$.
- D) $t_n = -\frac{1}{2} + \frac{5n}{2}$, where $n \in \mathbf{N}$ and $n \geq 1$.

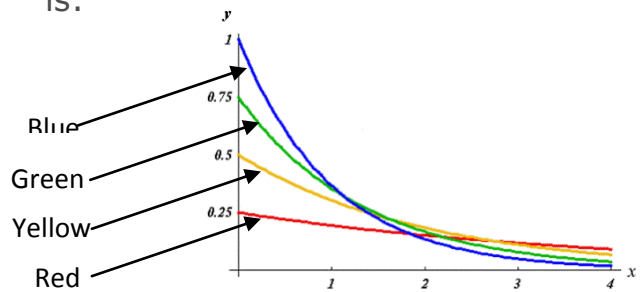
3. Find the y-intercept of the function: $f(x) = 6^x + 2$

- A) (0, 0)
- B) (0, 1)
- C) (0, 3)
- D) (0, 6)

4. For the function $f(x) = -2x^2$, if the domain is $\{-3, 0, 3\}$, find the range.

- A) $\{0, -36\}$
- B) $\{0, -18\}$
- C) $\{-18, 0, 18\}$
- D) $\{-36, 0, 36\}$

5. The graph shows the first quadrant portion of four exponential functions. If the equation of the BLUE curve is $y = ab^{-x}$, then the equation of the YELLOW curve is:



- A) $y = 0.5ab^{-x}$
- B) $y = a(0.5b^x)$
- C) $y = ab^{-x} - 0.5$
- D) $y = a\left(\frac{b}{2}\right)^x$

6. A wheelchair ramp runs 36 inches and rises 3 inches. What is the rate of change?

- A) $\frac{1}{12}$
- B) 12
- C) 33
- D) 39

7. Charles owed \$390 to his friend. On the first day Charles paid his friend \$12. Each following week the amount Charles paid his friend increased by the same amount. After 10 payments, Charles had paid back the full amount. By how much did each payment increase?

- A) \$6
- B) \$7
- C) \$8
- D) \$9

8. What expression shows the relationship between the value of any term and n , its position in the sequence?

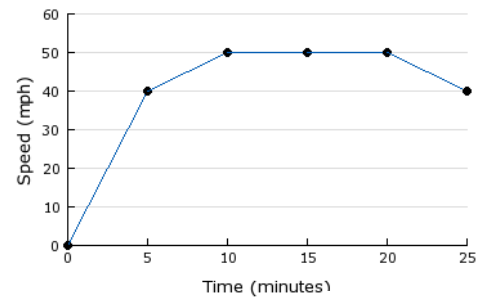
Position	Value of Term
1	4
2	8
3	12
4	16
5	20

- A) $2n$
- B) $3n$
- C) $4n$
- D) $5n$

9. The Fibonacci numbers are defined by the recursive formula $t_1 = 0, t_2 = 1, t_{n-1} + t_{n-2}$, where $n \in \mathbf{N}$ and $n > 2$. What are the first 9 Fibonacci number?

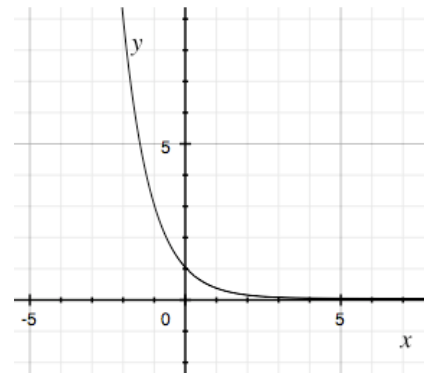
- A) 0, 1, 1, 2, 3, 5, 8, 13, 21
- B) 0, 1, 2, 3, 4, 7, 11, 18, 29
- C) 0, 1, 2, 3, 5, 8, 13, 21, 34
- D) 0, 1, 2, 3, 6, 9, 15, 24, 39

10. The graph represents Jason's speed on a trip. What is the rate of change for the period of time between 10 and 20 minutes?



- A) 0
- B) $\frac{1}{3}$
- C) $\frac{1}{2}$
- D) 1

11. What function is shown in the graph?



- A) $y = -3^x$
- B) $y = 3^{-x}$
- C) $y = 3^x + 2$
- D) $y = 3^x + 2$

12. Jillian has \$50 that she plans on investing in an account that will double her money every week. This can be represented by the equation $M = 50(2)^x$ where M represents the amount of money she has and x represents the number of weeks that have passed. If she invested it in an account that tripled her money every week, what should be changed in the equation $M = 50(2)^x$ to represent the new situation?

- A) Replace the 2 with a 3.
- B) Replace the 50 with 150.
- C) Replace the 50 with a 3.
- D) Switch the M and x

13. Rewrite $x - 2y = 8$ using function notation.

- A) $x - 2f(x) = 8$
- B) $f(x) = -x + 8$
- C) $f(x) = 2x + 8$
- D) $f(x) = \frac{1}{2}x - 4$

14. What is the missing reason?

$$\begin{aligned}
 2(x + 7) + 3x &= 12 \text{ (given)} \\
 2x + 14 + 3x &= 12 \text{ (?) } \\
 5x + 14 &= 12 \text{ (simplify)} \\
 5x &= -2 \text{ (subtraction)} \\
 x &= -\frac{2}{5} \text{ (division)}
 \end{aligned}$$

- A) Addition
- B) Subtraction
- C) Transitive Property
- D) Distributive Property

15. Which expression best represents *the difference between triple a number and double a number*?

- A) $3x - 2x$
- B) $2x - 3x$
- C) $x^3 - x^2$
- D) $x^2 - x^3$

16. The slope of a road is called the grade. What is the grade of a road that increases 4 feet in height over 100 feet of horizontal distance?

- A) 104
- B) $\frac{1}{20}$
- C) $\frac{1}{25}$
- D) $\frac{25}{1}$

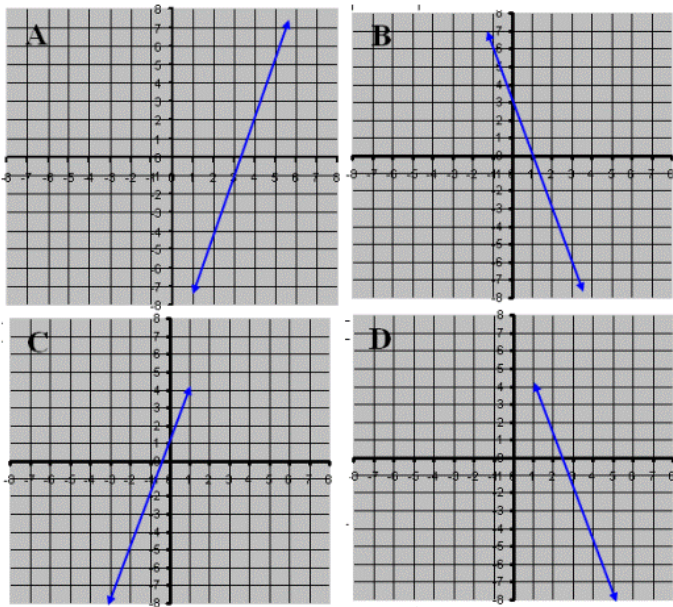
17. Solve the inequality.

$$-2x - 4 < 3x + 21$$

- A) $x > 5$
- B) $x < 5$
- C) $x > -5$
- D) $x < -5$

18. Jennifer sells paper by the pound. It costs Jennifer \$10.00 to ship any package of paper. For every pound of paper Jennifer sell she earns a profit of \$3.00. Which graph could Jennifer use to calculate her total profit from selling and shipping any package?

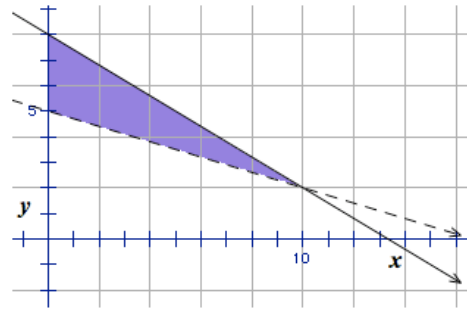
The x -axis represents the weight of any package (in pounds) and the y -axis represents Jennifer's total profit (in dollars).



19. Michael is helping to plan a family reunion. A park charges \$200 plus a charge of \$2 per person to rent out its pavilion for the day. This situation can be represented by the equation $y = 2x + 200$ where y is the total cost and x is the number of people attending the reunion. Another local park charges the same deposit, but \$3 per person. What should be changed in the equation $y = 2x + 200$ to represent this situation?

- A) Switch the x and y in the equation
- B) Change the slope of 2 to a slope of 3.
- C) Change the y -intercept of 2 to a y -intercept of 3.
- D) Change the y -intercept of 200 to a y -intercept of 3.

20. A carpenter is making tables(y) and chairs(x). Each table takes 5 hours to make and is sold for \$100 and each chair takes 3 hours to make and is sold for \$30. His goal each week is to make more than \$500 from selling tables and chairs and work no more than 40 hours. The region representing the solution set for the problem is shaded in the diagram. Which combination of tables and chairs will maximize his profit?



- A) 8 tables and 0 chairs
- B) 2 tables and 10 chairs
- C) 4 tables and 3 chairs
- D) 5 tables and 0 chairs

21. Hank delivers packages in his office building. On Tuesday he delivered four more packages than on Monday, and on Wednesday he delivered 6 more packages than on Monday. If he delivered 28 packages all together, how many did he deliver on Monday?

- A) 6
- B) 10
- C) 18
- D) 22

22. Car rental agency A charges \$50 per day plus 10 cents per mile driven. Agency B charges \$20 per day plus 30 cents per mile driven. For a one-day rental it is cheaper to rent from agency A if you drive more than

- A) 50 miles.
- B) 100 miles.
- C) 150 miles.
- D) 200 miles.

23. The answer to the problem $(6 + 7) - (8 + 2)$ is called a:

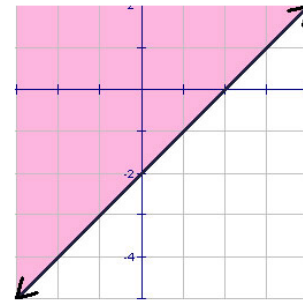
- A) sum
- B) difference
- C) product
- D) quotient

24. Solve.

$$-\frac{1}{3}x > 5$$

- A) $x < -15$
- B) $x > -15$
- C) $x > -\frac{5}{3}$
- D) $x < -\frac{5}{3}$

25. Which inequality represents the graph?



- A) $y < x - 2$
- B) $y > x - 2$
- C) $y \leq x - 2$
- D) $y \geq x - 2$

26. Solve the equation for x.

$$\frac{x + 3}{6} = \frac{x - 6}{3}$$

- A) 9
- B) 12
- C) 15
- D) 18

27. In which quadrants of the coordinate plane is the shaded region of the system located?

$$\begin{aligned} y &\geq x \\ y &\leq x + 4 \end{aligned}$$

- A) I, II and III
- B) I, II, and IV
- C) I, III, and IV
- D) II, III, and IV

28. Michael and Minnie are gathering coats for a coat-drive at their school. Minnie gathers 3 times as many coats as Michael and together they have 52 coats. How many coats did Michael contribute?

- A) 13
- B) 15
- C) 39
- D) 41

29. What is the value of w ?

$$\frac{w + 3}{4} = \frac{w - 2}{2}$$

- A) 7
- B) 9
- C) 11
- D) 13

30. Which statement about the pair of equations is true?

$$2x + 3y = 14$$

$$4x + 6y = 28$$

- a. The pair has no solutions because the equations are dependent.
- b. The pair has no solutions because the equations are not consistent.
- c. The pair has an infinite number of solutions because the equations are dependent.
- d. The pair has an infinite number of solutions because the equations are independent.

31. The summary statistics for all students that took the SAT at Jones High School are shown. Four sample groups of 10 students are shown. Which sample group has a mean deviation closest to that of the population?

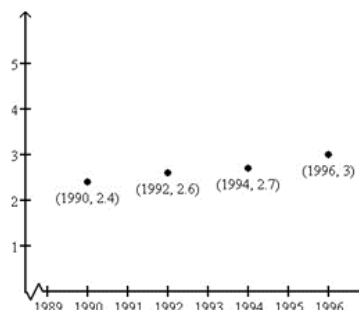
**Jones High School
SAT Data
All Students**

Mean: 1582
Median: 1518
Range: 900
Mean Deviation: 145.3
Standard Deviation: 233.4

Group A	Group B	Group C	Group D
1520	1510	1620	1480
1630	1480	1700	1570
1480	2100	1520	1400
1580	1800	1510	1800
1400	1300	1530	1930
1300	1250	1430	2150
1700	1400	2000	1340
1610	1430	1800	1580
1580	1390	1410	1530
1520	1520	1390	1610

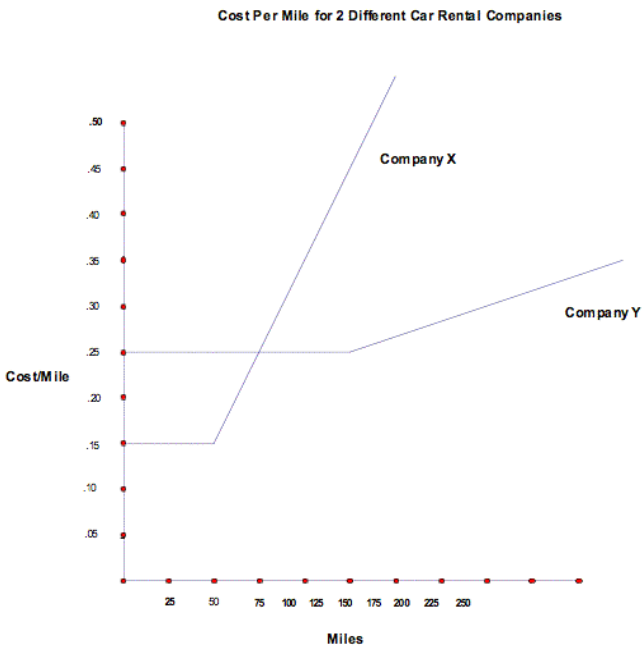
32. The graph shows the number of annual dental visits per person (y) during the years (x) 1990 to 1996.

For the data in the graph find the line of best fit, and use it to predict the number of dental visits per person in 2009.



- A) 3.6
- B) 3.8
- C) 4.2
- D) 4.8

33. Which statement is true about the cost per mile when renting from Company X?



- A) The cost per mile is constant for the first 150 miles then decreases.
- B) The cost per mile is constant for the first 50 miles than increases steeply.
- C) The cost per mile is more expensive than Company Y until you reach 100 miles.
- D) Company X has the same cost per mile as Company Y for the first 50 miles.

34. A local hospital tracked the blood type and gender of the patients they saw one day. Which statement is a fair statement?

Blood Type	Male	Female
A	105	93
B	99	84
O	160	140
AB	15	18

- A) At least 50% of the patients seen on an average day have Blood type O.
- B) The hospital sees about 10% more males than females on an average day.
- C) The hospital sees about 10% more females than males on an average day.
- D) The hospital sees about the same percentage of males as females on an average day.

35. Roberta has collected a set of data and calculated the mean to be 34. The set contains 75 numbers, but Roberta gets an email telling her to add the following 5 numbers to her data: {23, 26, 32, 33, 40}

To the nearest tenth, what is the new mean for her data?

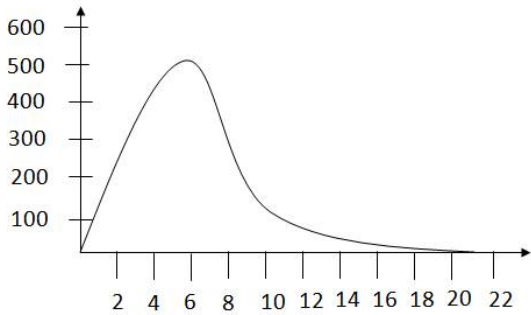
- A) 27.8
- B) 30.8
- C) 33.8
- D) 36.8

36. George has a goal to make an average of 90% for the first grading period. There will be 10 grades averaged together to determine the grade for the grading period. So far, George has the grades shown. What score does George need to reach his goal?

92, 86, 90, 79, 98, 75, 89, 98, 97

- A) at least 72
- B) at least 85
- C) at least 96
- D) at least 100

37. If the mean of this distribution is 7, which could be the mode?



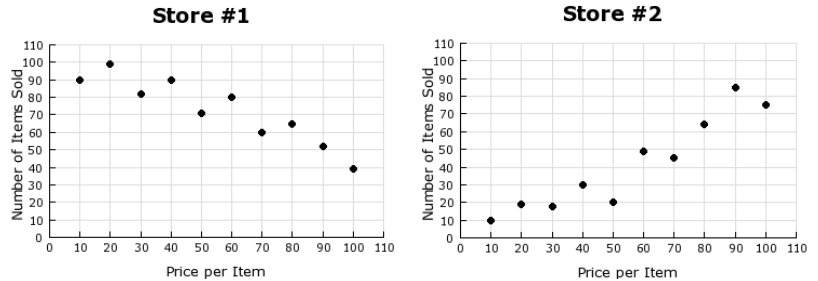
- A) 4
- B) 6
- C) 8
- D) 10

38. The points from a recent game for nine members of the high school basketball team are shown in the table. Which statement is true?

Player	Points
Travis	6
Marcus	7
James	17
Taylor	2
Hector	1
Julio	22
Jonah	8
Chris	11
Scott	14

- A) The mean is equal to the mode.
- B) The range is less than the mode.
- C) The median is greater than the mean.
- D) The mean is greater than the median.

39. Mike owns two hardware stores. The scatterplots show the number of items sold at a specific price for each store in one week. If he wants to sell a new type of hammer for \$30, at which store should Mike sell the hammer?



- A) Store #2. This store makes more money.
- B) Store #1. This store makes more money.
- C) Store #1. Mike sells more \$30 items at this store.
- D) Store #2. Mike sells more \$30 items at this store.

40. The Chorus at Eastside High School is holding a fund-raiser. The goal is to raise \$500. The graph shows the number of short sleeve and long sleeve t-shirts the chorus needs to sell in order to raise \$500.

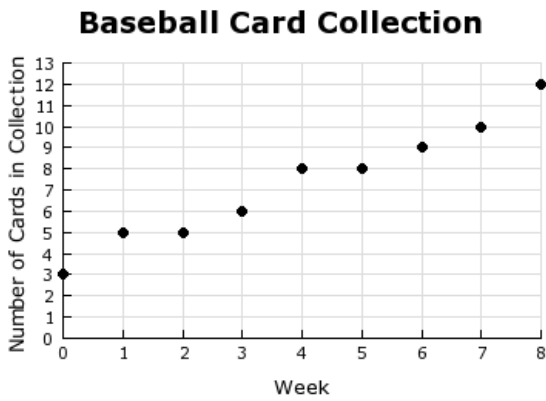
If they sold only short sleeve t-shirts and raised exactly \$500, how many shirts did they sell?

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

41. Suppose you are investigating which hamburger condiment is most popular in a school cafeteria. Which measure of *central tendency* would you MOST LIKELY use to analyze the data you collect?

- A) mean
- B) median
- C) mode
- D) range

42. Which equation is the BEST fit for the data in the graph?

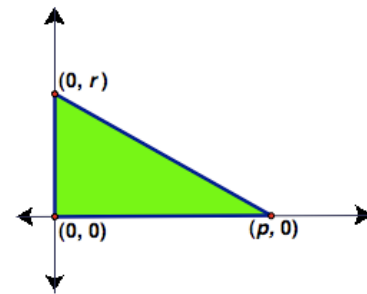


- A) $y = x + 3$
- B) $y = \frac{9}{8}x + 4$
- C) $y = \frac{8}{9}x + 4$
- D) $y = x + 4$

43. Trapezoid ABCD has vertices A(-3, 2), B(-1, 2), C(0, 0) and D(-4, 0). Rotate trapezoid ABCD 90° clockwise around the origin. What are the coordinates of D'?

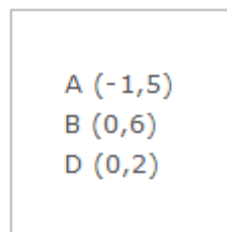
- A) (-4, 2)
- B) (-4, 2)
- C) (0, 4)
- D) (4, 0)

44. Which expression represents the length of the hypotenuse of the right triangle?



- A) r^2
- B) $r^2 + p^2$
- C) $\sqrt{r + p}$
- D) $\sqrt{r^2 + p^2}$

45. Kite ABCD has the vertices shown. Find the coordinates of point C.



- A) (2, 5)
- B) (1, 5)
- C) (1, 4)
- D) (1, 6)

46. A line passes through the point (0, 5) and has a slope of $-\frac{1}{2}$. Which is the equation of the line in slope-intercept form?

- A) $2x + y = 7$
- B) $y = -2x + 7$
- C) $y - 3 = -2(x - 2)$
- D) $y = -\frac{1}{2}x + 5$

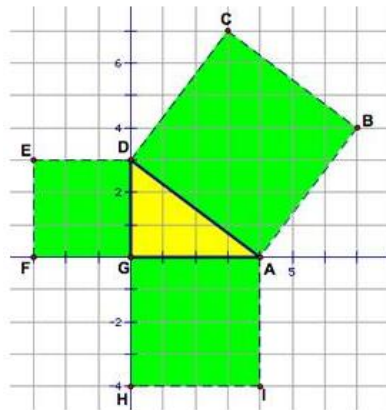
47. A triangle in Quadrant I is reflected over the y-axis, then over the x-axis, and then over the y-axis again. The new triangle, in Quadrant IV, could ALSO have been obtained by using a single

- A) dilation.
- B) reflection.
- C) rotation.
- D) translation.

48. Find the area of a right triangle with a hypotenuse of 5 inches and a leg of 3 inches.

- A) 6 in^2
- B) 12 in^2
- C) 15 in^2
- D) 20 in^2

49. Use the diagram and the Pythagorean Theorem to find the EXACT area of square ABCD.

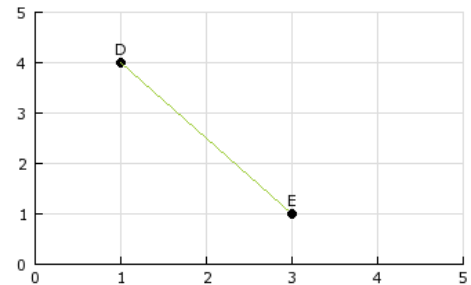


- A) 23
- B) 24
- C) 25
- D) 26

50. We can find the length of DE using the Pythagorean Theorem:

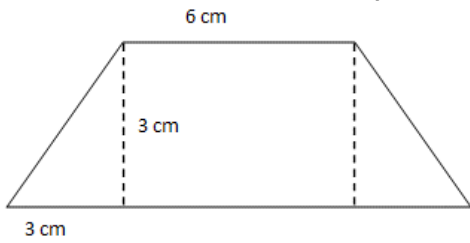
$$DE^2 = 3^2 + 2^2$$

Which formula also represents the length of DE?



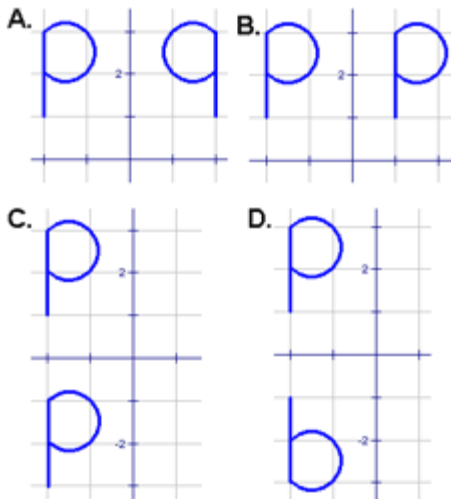
- A) $DE = (4 - 1)^2 + (1 - 3)^2$
- B) $DE = (4 - 1)^2 - (1 - 3)^2$
- C) $DE = \sqrt{(4 - 1)^2 + (1 - 3)^2}$
- D) $DE = \sqrt{(4 - 1)^2 - (1 - 3)^2}$

51. Find the area of the trapezoid.



- A) 18 cm^2
- B) 22.5 cm^2
- C) 27 cm^2
- D) 45 cm^2

52. Which transformation shows a reflection across the y-axis?



53. Write an equation of the line that is perpendicular to the line $y = \frac{1}{3}x + 6$ that passes through the point $(2, -3)$.

- A) $y = 3x + 9$
- B) $y = -3x - 3$
- C) $y = -3x + 3$
- D) $y = \frac{1}{3}x + 9$

54. Parallelogram ABCD has the coordinates:

- A $(1, -3)$
- B $(1, 0)$
- C $(4, 2)$

Find the coordinates of point D.

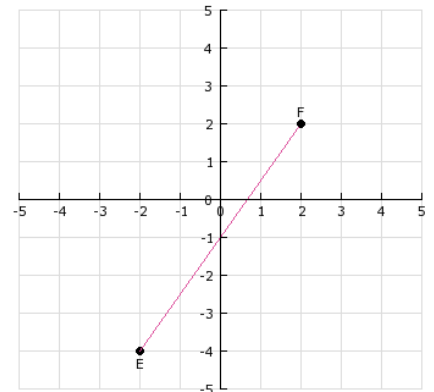
- A) $(4, 0)$
- B) $(4, -1)$
- C) $(3, -1)$
- D) $(5, -2)$

55. Which two lines are perpendicular?

Equation A: $3x + y = 6$
 Equation B: $6x - 2y = 4$
 Equation C: $y = 3x - 2$
 Equation D: $y = \frac{1}{3}x + 7$

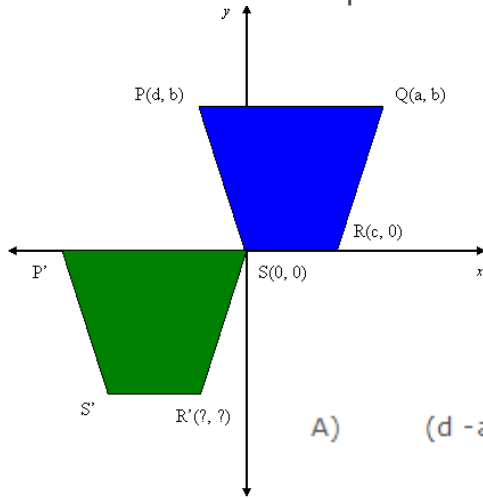
- A) A and B
- B) B and C
- C) A and D
- D) C and D

56. What is the midpoint of line segment EF ?



- A) $(3, 2)$
- B) $(0, -1)$
- C) $(-1, 0)$
- D) $(2, 3)$

57. A translation of trapezoid PQRS (blue) to trapezoid P'Q'R'S' (green) is shown, where the location of Q' is the origin. The coordinates of point R' are



- A) $(d - a, -b)$
- B) $(-a, -b)$
- C) $(c - a, -b)$
- D) $(-c, b - d)$

58. How many feet are equivalent to $\frac{1}{4}$ mile?

- A) 9
- B) 250
- C) 1,320
- D) 1,455

59. Lauren is building a tree house with her dad. The dimensions of the floor are 9 feet by 6 feet. What is the area of the floor, measured in square **yards**?

- A) 6 square yards
- B) 15 square yards
- C) 30 square yards
- D) 54 square yards

60. Sarah's parents are filling their swimming pool. Her pool holds 22,000 gallons. It takes 16 hours to fill. What unit would you use to represent the rate that water is flowing into the pool?

- A) hours
- B) gallons
- C) gallons per hour
- D) gallons per minute

61. A rectangular fish tank contains 3,240 cubic inches of water. The dimensions of the base of the fish tank are 12 inches x 18 inches. How tall is the fish tank?

- A) 15 inches
- B) 15 square inches
- C) 216 inches
- D) 216 square inches