

Algebra 1 - Semester 1 (2008)
Final Exam Study Guide

6. A bakery truck left the bakery parking lot at 6:15 A.M. to make deliveries to supermarkets. The driver stopped for lunch from 11:30 A.M. to 12:00 P.M. Making the actual deliveries of baked goods into the stores took a total of $1\frac{3}{4}$ hours. The driver averaged 40 miles per hour while driving and pulled into the bakery parking lot at 3:30 P.M. Approximately how many miles did the truck travel on the delivery route?
- A. 300 miles
B. 350 miles
C. 280 miles
D. 270 miles
7. In March, a customer spent \$10.20 at an office-supply store for some 12-packs of pens. At that time, the office-supply store was selling packages of one dozen pens for \$1.30. Any customer who bought more than 4 packages, received a discount of \$0.30 on the price of each package in excess of 4 packages. In September, the same customer went back to the store to buy the same number of pens. By then, the price per 12-pack of pens had been raised to \$1.50 each, with the same discount for more than 4 packages. How much more did the customer have to pay in September than in March?
- A. \$10.50
B. \$1.68
C. \$1.80
D. \$0.60
8. A college student has set aside \$240 for the rest of the school year to use the coin-operated laundry facility in his dormitory. Each time he uses the machines, it costs \$7.50. Choose the equation that represents the amount remaining in his fund, A , after he has done laundry x times. Find the amount remaining in the fund after 12 trips to the laundry facility.
- A. $A = 240 - 7.50x$: \$150
B. $A = 240 - 7.50x$: \$90.00
C. $A = 7.50 - 240x$: \$90.00
D. $A = 7.50 - 240x$: \$150
9. A used-book store sells paperback books for \$1.30, with a \$0.30 discount for each book more than 5 that a customer buys. A customer bought some books last week for \$9.50. The store has a sale this week. The price for each book is \$1.20, with the same discount on each book over 5 purchased. How much would the customer save if the same books were bought this week?
- A. \$0.75
B. \$0.80
C. \$0.10
D. \$8.70
10. The length of the base of an isosceles triangle is one half the length of one of its legs. If the perimeter of the triangle is 26 inches, what is the length of the base?
- A. $5\frac{7}{8}$ inches
B. $5\frac{1}{5}$ inches
C. $6\frac{1}{2}$ inches
D. $10\frac{2}{5}$ inches

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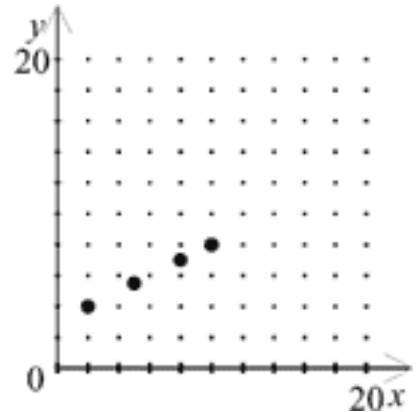
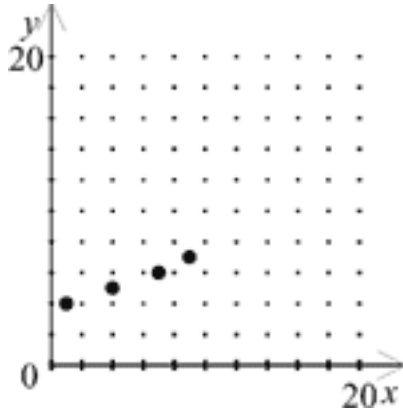
11. Bartholomew's pet snake was 1.3 meters long one week ago. In 7 days it grew 22 centimeters. How long is the snake?
- A. 23.3 cm
B. 1.52 m
C. 1.43 m
D. 23.39 cm
12. Which function rule matches the input-output table?
- | | | | | | |
|------------|---|----|----|----|----|
| Input x | 1 | 2 | 3 | 4 | 5 |
| Output y | 9 | 12 | 15 | 18 | 21 |
- A. $y = 5 + 4x$
B. $y = 3 + 6x$
C. $y = 6 + 3x$
D. $y = 4 + 5x$
13. A pint of ice cream costs \$3.20. Your total grocery bill, b , is a function of the number of pints of ice cream, n , you purchase. Write an equation to represent this function.
- A. $n = 3.2b$
B. $b = 3.2n$
C. $b = \frac{3.2}{n}$
D. $\frac{b}{3.2} = n$
14. A shoe manufacturer sells its most popular shoe to shoe stores for \$45 per pair. Each pair is made from beginning to end by a single person, who is paid \$9.50 per hour. The materials for each pair cost the company \$8. The company's profit can be determined by using the formula $P = x(45 - 8 - 9.50t)$, in which P is the profit, t is the number of hours it takes to make one pair of shoes, and x is the number of pairs made. Which equation shows the company's profit if a shoe store orders 120 pairs of these shoes?
- A. $P = 5392 - 1140t$
B. $P = 5392 - 9.5t$
C. $P = 4440 - 9.5t$
D. $P = 4440 - 1140t$
15. At Dr. Kain's clinic, 46% more patients are treated for flu symptoms in the winter than in the summer. Which is an algebraic expression for the number of flu cases in the winter?
- A. $s + (0.46)s$
B. $(0.46)s$
C. $w - (0.54)w$
D. $-(0.54)w$
16. The cost of a company's winter banquet is \$70 plus \$11 for each person attending. Determine the equation that models this problem, where x is the number of people attending and y is the cost. What is the cost for 62 people?
- A. $y = 11x - 70$; \$612
B. $y = 11x + 70$; \$752
C. $y = 70x - 11$; \$4329
D. $y = 70x + 11$; \$4351

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17. Employees earn \$3 per hour plus \$0.50 for every unit they produce per hour. Which of the following shows both an equation in which y represents the employee's wages for producing x units per hour, and the graph of the wages earned for producing 2, 5, 8, and 10 units per hour?

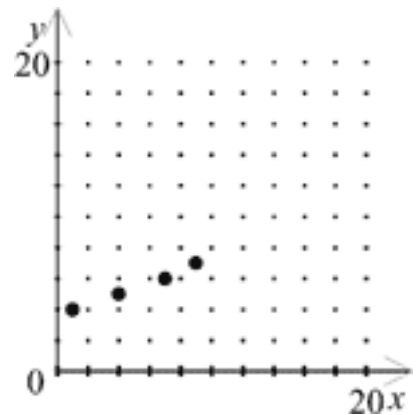
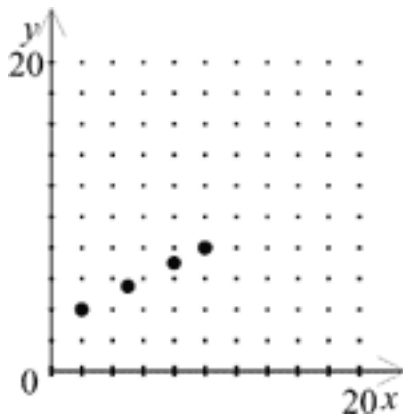
A. $y = 3x + 0.5$

C. $y = 3 - 0.50x$



B. $y = 3 + 0.50x$

D. $y = -3x + 0.5$



18. You deposit \$400 at a rate of 11% per year. How much simple interest will you earn after two and a half years?

- A. \$1.10
B. \$11

- C. \$110
D. \$1100

19. What is the value of $(4x)^2 + 3$ when $x = 3$?

- A. 39
B. 147

- C. 153
D. 225

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20. Which of the following numbers is a solution of the equation $4x - 13 = 22 - 3x$?

- A. $\frac{7}{9}$
- B. $\frac{9}{7}$

- C. 5
- D. 9

21. Which of the following numbers is a solution of the inequality $6x - 47 > 43 - 4x$?

- A. 7
- B. 8

- C. 9
- D. 10

22. $-4(x - 4)$

- A. $-4x + 16$
- B. $-4x + 4$

- C. $-4x - 16$
- D. $-4x - 4$

23. Bill wants to simplify this expression.

$$5(3x - 2y) + 2(x + 2y) - 3(3x - 2y)$$

Which of the following expressions is equivalent to the expression above?

- A. $8x - 12y$
- B. $8x$

- C. $8x - 8y$
- D. $8xy$

24. Simplify $3x + 2(x - 5)$.

- A. $5x - 10$
- B. $5x - 5$

- C. $x - 10$
- D. $5x + 10$

25. What is the value of $\frac{a-2b+3}{5}$ when $a = 3$ and $b = -4$?

- A. $-\frac{2}{5}$
- B. $-\frac{7}{5}$

- C. $\frac{14}{5}$
- D. 1

Solve:

26. $16 = 4y$

- A. $\frac{1}{12}$
- B. 20

- C. 12
- D. 4

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Solve the equation. Round your result to two decimal places.

27. $-1.9x + 1.5 = 2.1$

A. -0.84

B. -1.89

C. -0.32

D. 2.50

28. Melvin Torme teaches an English literature class in the evening. He charges a materials fee of \$10.00 plus \$9.25 per hour of instruction. How many hours of instruction must Mr. Torme teach in order to collect \$185.75? Model the situation using an equation, then solve the equation.

A. $185.75 + 9.25x = 10$

He would have to work 19 hours.

B. $10 + 185.75x = 9.25$

He would have to work 18 hours.

C. $10 + 9.25x = 185.75$

He would have to work 19 hours.

D. $9.25 + 10x = 185.75$

He would have to work 18 hours.

Solve:

29. $-x + 15 + 3x + 15 = -4$

A. 17

B. -17

C. -13

D. 13

30. When Alexa works overtime (any hours over 40 hours a week), she is paid 1.5 times her regular hourly rate. In one week, she worked 60 hours. If her regular hourly rate is \$8.70, how much did she earn that week?

A. \$696.00

B. \$522.00

C. \$783.00

D. \$609.00

31. The perimeter of a rectangular garden is 860 ft. The two short sides of the garden are each 30 ft long. You are asked to find the length of the other sides. Which equation models this situation?

A. $30 + 2x = 860$

B. $2(30) + 2x = 860$

C. $30(x - 2) = 860$

D. $30 + x = 860$

32. Michelle wants to take in \$550 selling 36 teddy bears. She wants to sell each bear for \$2 less than her competitor. You need to know how much her competitor charges for each bear. Which equation models this situation?

A. $36 + 2x = 550$

B. $36(x - 2) = 550$

C. $2(36) + 2x = 550$

D. $36x = 550$

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40. Which of these steps can you use to solve the equation $14 = \frac{2}{3}x$?

I. Multiply by $\frac{2}{3}$.

II. Divide by $\frac{2}{3}$.

III. Multiply by $\frac{3}{2}$.

IV. Divide by $\frac{3}{2}$.

A. I only

B. III only

C. I and IV

D. II and III

41. If $\frac{2}{5}x = -\frac{10}{13}$, then $x = \underline{\quad?}$.

A. $-\frac{4}{13}$

B. $-\frac{13}{25}$

C. $-\frac{25}{13}$

D. $-\frac{13}{4}$

42. If $2x - 4(3 - x) = 18$, then $x = \underline{\quad?}$.

A. -15

B. -3

C. 1

D. 5

43. Solve $1.69x + 14.75 = 4.21x - 5.87$. Round the solution to the nearest tenth.

A. 0.12

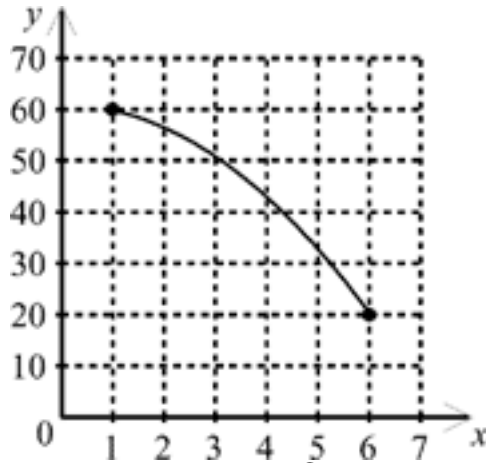
B. 0.28

C. 3.52

D. 8.18

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44. What is the range of the function in the graph?



- A. $1 \leq y \leq 6$
- B. $20 < x < 60$

- C. $1 < x < 6$
- D. $20 \leq y \leq 60$

45. State the x - and y -intercepts of $y = -3x + 3$.

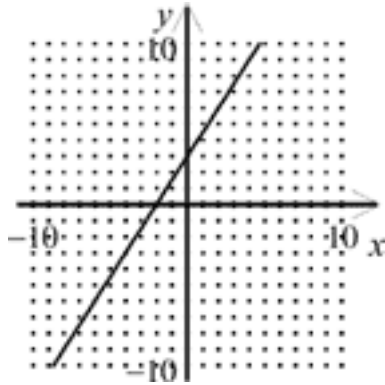
- A. x -intercept: 3; y -intercept: -3
- B. x -intercept: 3; y -intercept: 1

- C. x -intercept: -3 ; y -intercept: 3
- D. x -intercept: 1; y -intercept: 3

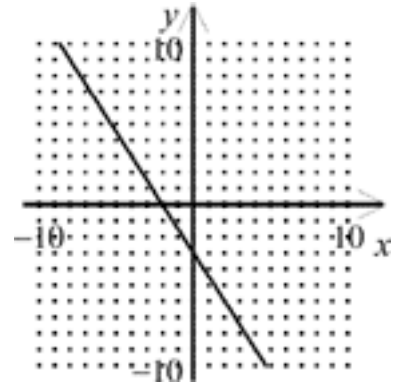
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46. Graph the linear equation by finding x - and y -intercepts. $3x - 2y = -6$

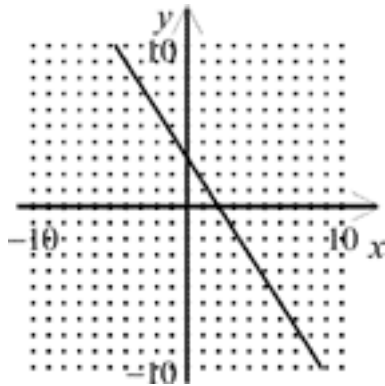
A.



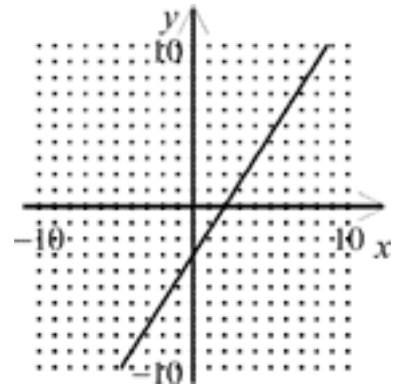
C.



B.

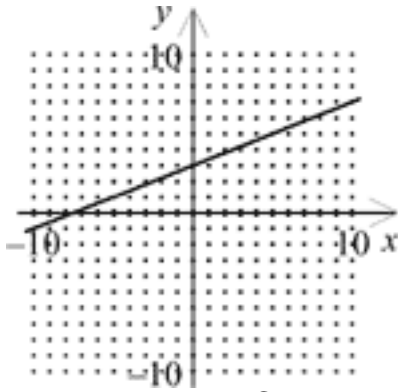


D.

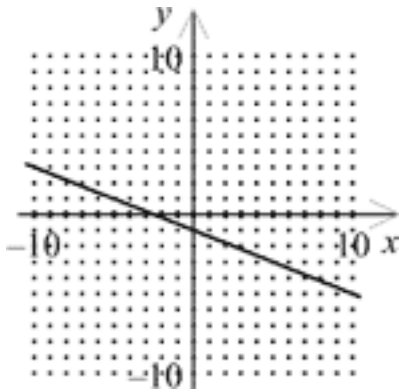


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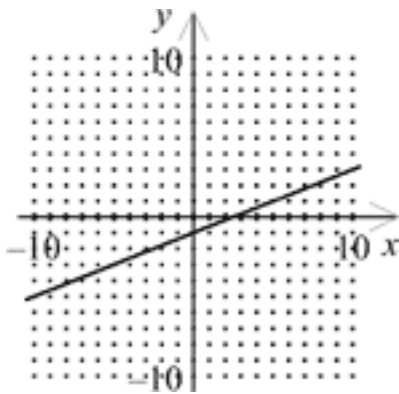
47. The equation $y = \frac{2}{5}x + 3$ is graphed below. Which graph shows the result of changing the 3 in the equation to -1 ?



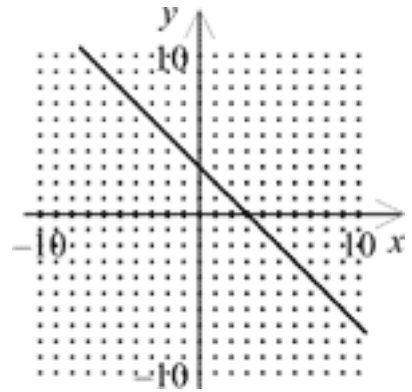
A.



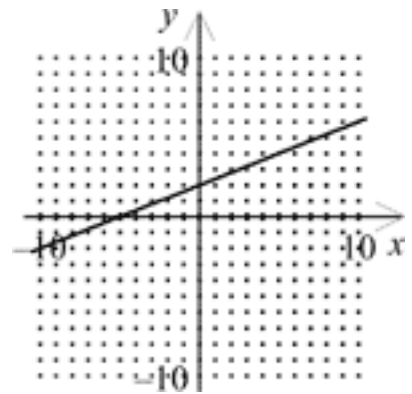
B.



C.



D.



48. Find the slope of the line passing through the points $A(-2, 2)$ and $B(7, -3)$.

A. $\frac{3}{5}$

C. $-\frac{9}{5}$

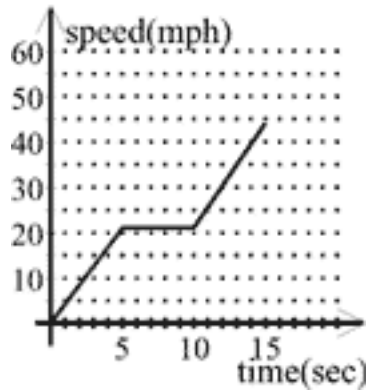
B. $-\frac{1}{5}$

D. $-\frac{5}{9}$

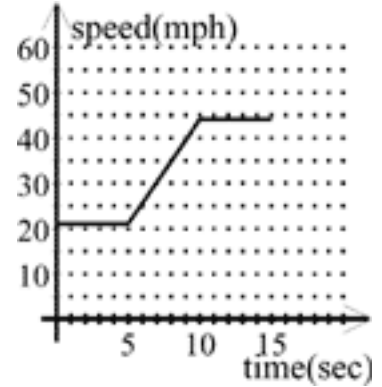
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49. Which graph below would match the situation described?
A car is travelling at 44 mph slows to 21 mph in the first 5 seconds. It maintains that speed for the next 5 seconds, and then slows to a stop in the next five seconds.

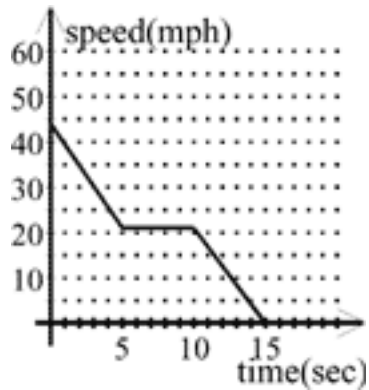
A.



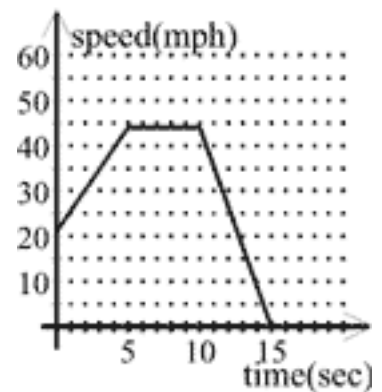
C.



B.

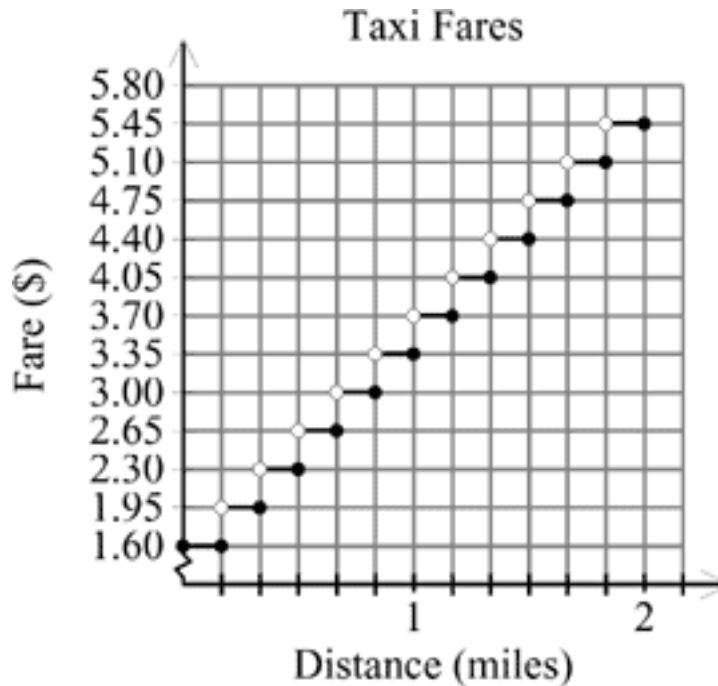


D.



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50. The graph below shows the taxi fares for rides of various distances in a large city.



How much does the fare increase with distance, expressed in terms of dollars per fraction of a mile?

- | | |
|---------------------------------|---------------------------------|
| A. \$0.35 per $0.1\bar{6}$ mile | C. \$1.60 per $0.1\bar{6}$ mile |
| B. \$0.35 per 0.2 mile | D. \$1.60 per 0.2 mile |

51. Find the slope and y -intercept of the line $9x + 3y = -54$.

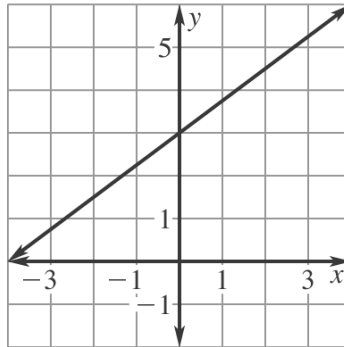
- | | |
|------------------------------|-------------------------------|
| A. $m = 3, y = 18$ | C. $m = 27, y = -\frac{1}{3}$ |
| B. $m = 18, y = \frac{1}{3}$ | D. $m = -3, y = -18$ |

52. The amount a spring will stretch S is proportional to the force (or weight) F attached to the spring. If a spring stretches 8.9 inches when 20 pounds are attached, how far will it stretch when 70 pounds are attached?

- | | |
|-----------------|-----------------|
| A. 30.15 inches | C. 31.15 inches |
| B. 3.54 inches | D. 2.54 inches |

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53. What is an equation of the line shown?



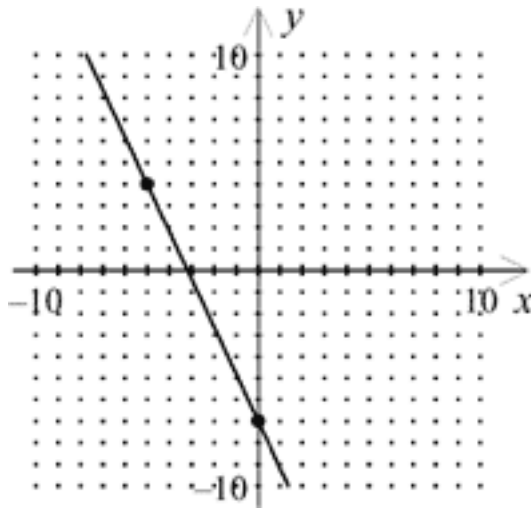
A. $y = -\frac{3}{4}x + 3$

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

C. $y = -\frac{4}{3}x + 4$

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

54. Write an equation in slope-intercept form of the graph.



A. $y = \frac{5}{11}x - 7$

B. $y = \frac{11}{5}x - 7$

C. $y = -\frac{5}{11}x - 7$

D. $y = -\frac{11}{5}x - 7$

55. The cost of a school banquet is \$70 plus \$11 for each person attending. Write an equation that gives total cost as a function of the number of people attending. What is the cost for 62 people?

A. $y = 70x + 11$; \$4351

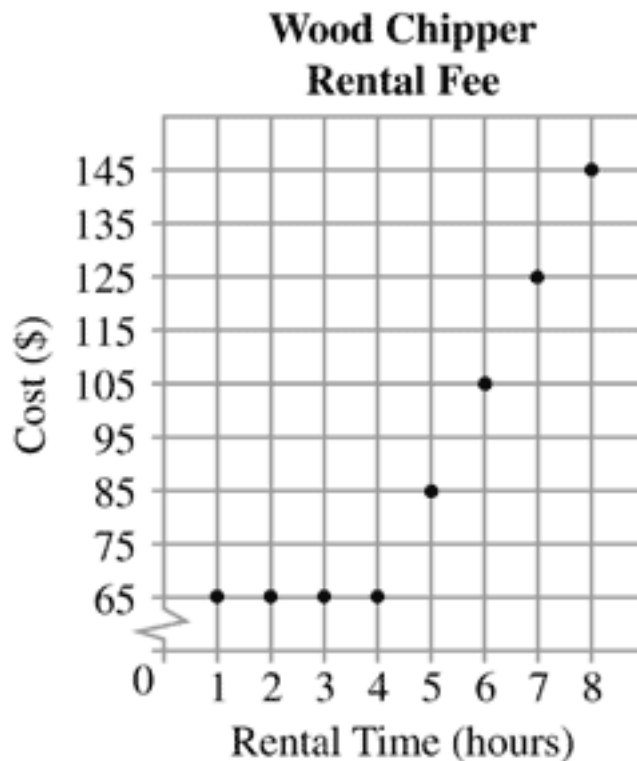
B. $y = 11x - 70$; \$612

C. $y = 70x - 11$; \$4329

D. $y = 11x + 70$; \$752

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56. Erik pays \$225 in advance on his account at the athletic club. Each time he uses the club, \$9 is deducted from the account. Write an equation that represents the value remaining in his account after x visits to the club. Find the value remaining in the account after 7 visits.
- A. $V = 225 - 9x$; \$162
 B. $V = 225 - 9x$; \$2046
 C. $V = 9 - 225x$; \$162
 D. $V = 225 - 9x$; \$2032
57. In 1980 the average price of a home in Brainerd County was \$93,000. By 1987 the average price of a home was \$107,000. Which of the following gives the price of a home, P , in Brainerd County as a function of the year, t ? Let $t = 0$ correspond to 1980.
- A. $P = 107,000 - 2000t$
 B. $P = 14,000t + 93,000$
 C. $P = 107,000 - 14,000t$
 D. $P = 2000t + 93,000$
58. A tool-rental business will rent a wood chipper for a minimum of 4 hours and a maximum of 8 hours, which must all be in a single day. After 4 hours, the charge is based on a per-hour fee, as shown in the graph below.



Which of the following equations represents the total cost, t , for renting the wood chipper for h hours? Assume h is longer than 4 hours.

- A. $t = 65 + (20h - 4)$
 B. $t = 65 + 20h$
 C. $t = 65(h - 4) + 20h$
 D. $t = 65 + 20(h - 4)$

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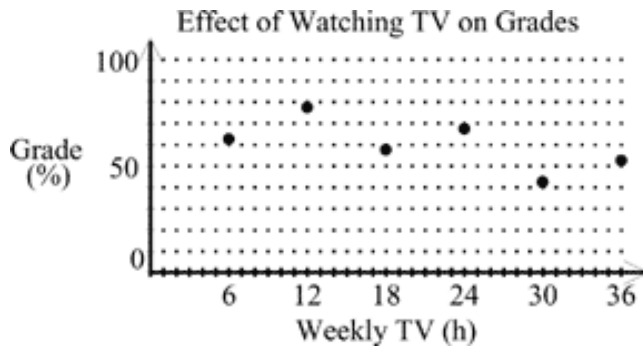
62. The table shows the amount of time several students spent watching TV and their test grades.

Weekly TV (h) 6 12 18 24 30 36

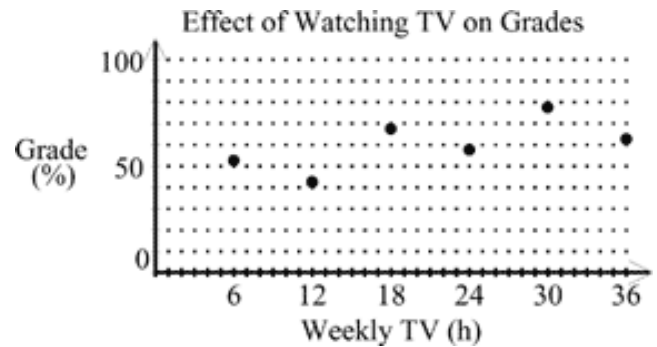
Grade (%) 62.5 77.5 57.5 67.5 42.5 52.5

Which scatter plot and description match the data, if any?

A.



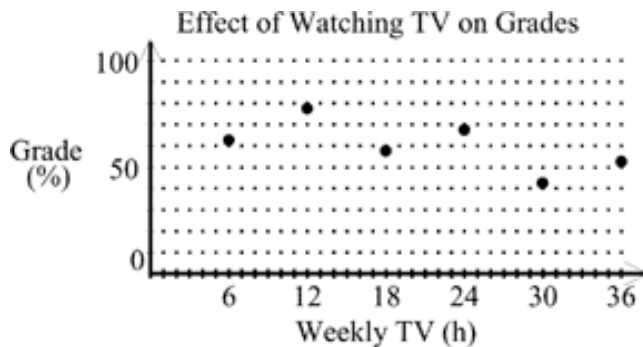
C.



More hours spent watching TV may increase grades.

More hours spent watching TV may reduce grades.

B.

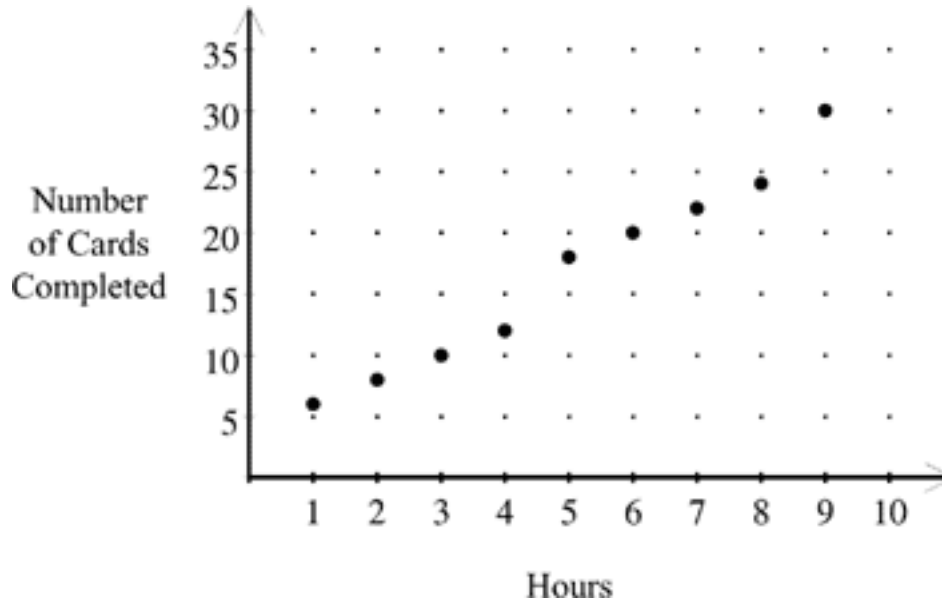


D. none of these

More hours spent watching TV may reduce grades.

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63. Glenalee is making home-made cards to send to friends and family and to sell at the local craft fair. This scatter plot shows the total number of cards she had made after each hour she worked on the task.

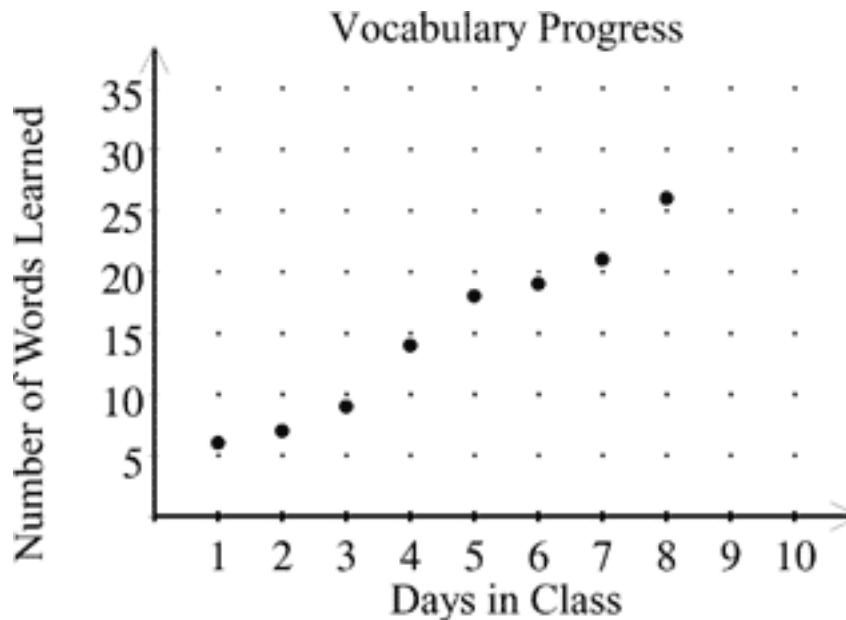


Using this information, what is the best prediction of the number of cards Glenalee can make in 10 hours?

- A. 50
B. 30
C. 15
D. 40

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64. Nick is learning a foreign language. The scatter plot shows the total number of vocabulary words Nick has learned at the end of each of his first eight days in class.



Assuming the trend shown by the scatter plot continues, which is the best prediction of the number of words Nick will have learned by his 10th day in class?

- | | |
|-------|-------|
| A. 45 | C. 15 |
| B. 40 | D. 30 |
65. Sean earns \$5.35 per hour working after school. He needs at least \$275 for a stereo system. Write and solve an inequality that describes how many hours he must work to reach his goal.
- | | |
|--|------------------------------------|
| A. $x + 5.35 \geq 275$
$x > 52$ hours | C. $5.35x > 275$
$x > 53$ hours |
| B. $275 \div x > 5.35$
$x > 51$ hours | D. $5.35x > 275$
$x > 52$ hours |

Solve:

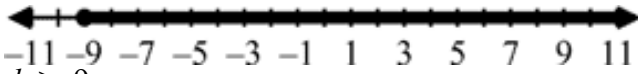
66. $-5x + 5 > 25$
- | | |
|-------------|-------------|
| A. $x > 25$ | C. $x > -4$ |
| B. $x < -4$ | D. $x < 25$ |

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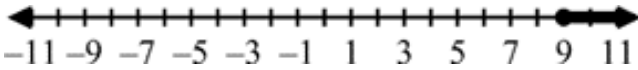
Solve and graph:

67. $-8(3d - 2) \geq -200$

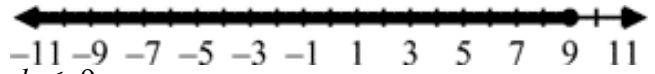
A. $d > -9$



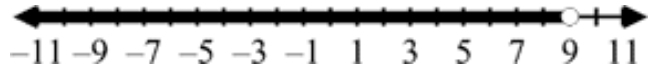
B. $d > 9$



C. $d < 9$



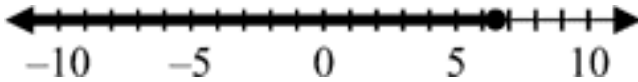
D. $d < 9$



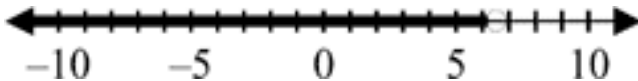
Solve the inequality.

68. $5x - 4 \leq 3(x + 3)$. Graph your solution.

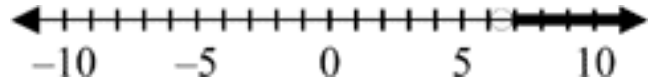
A.



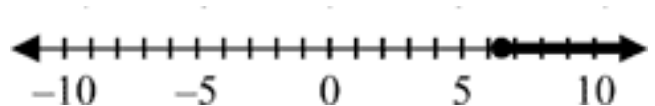
B.



C.



D.



69. Kwame sells ice cream cones at the county fair. He has to rent the equipment for \$29 and spend \$0.53 on ingredients for each cone. What are the possible numbers of ice cream cones that he must sell at \$1.30 each in order to make a profit?

A. $x > 40$

B. $x > 38$

C. $x > 39$

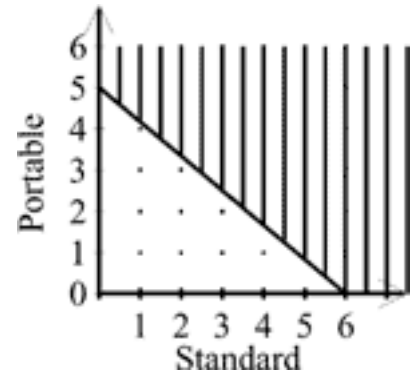
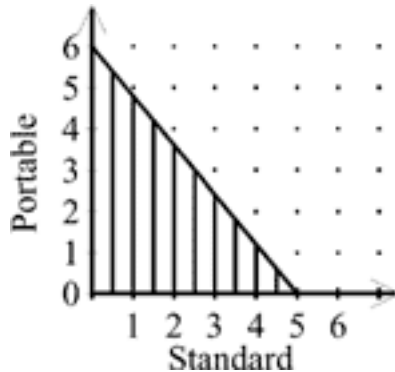
D. $x > 37$

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70. An electronics store makes a profit of \$96 for every standard CD player sold and \$80 for every portable CD player sold. The manager's target is to make at least \$480 a day on sales from standard and portable CD players. Identify the inequality and graph that represent the numbers of both kinds of CD players that can be sold to reach or beat the sales target. Let s represent the number of standard CD players sold and p represent the number of portable CD players sold.

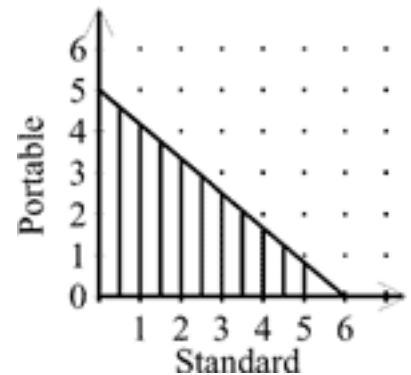
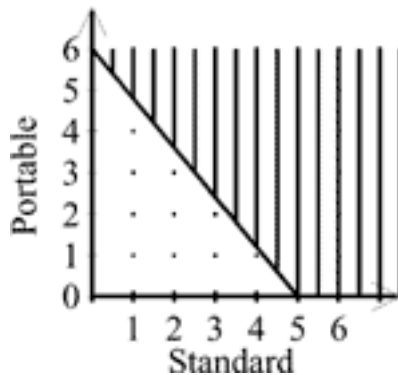
A. $96s + 80p \leq 480$

C. $80s + 96p \geq 480$



B. $96s + 80p \geq 480$

D. $80s + 96p \leq 480$



71. Joel sells ice cream cones at the county fair. He has to rent the equipment for \$29 and spend \$0.44 on ingredients for each cone. What is the minimum number of ice cream cones Joel must sell at \$1.30 each in order to make a profit?

A. 36

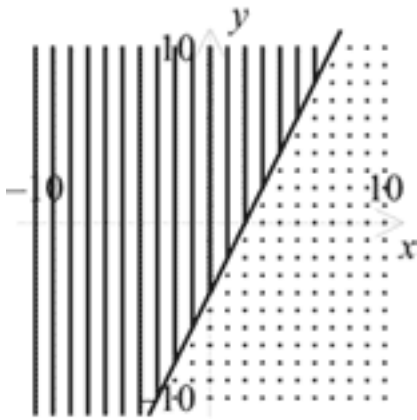
C. 33

B. 35

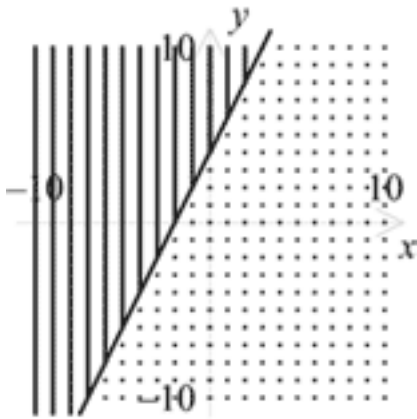
D. 34

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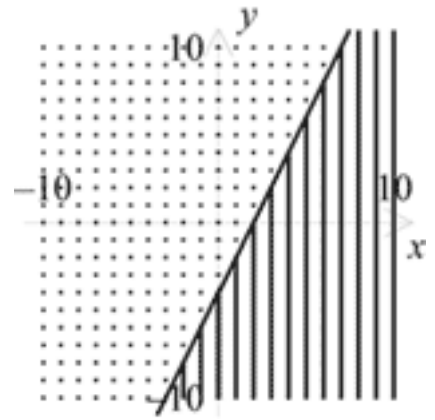
72. Graph: $y \leq 2x + 4$
A.



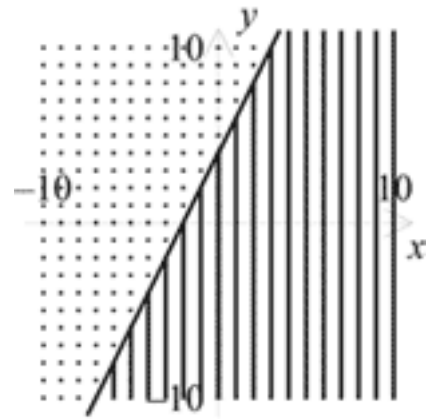
B.



C.



D.

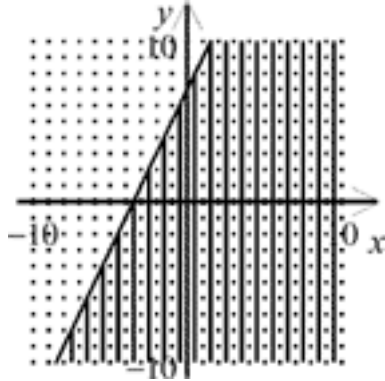


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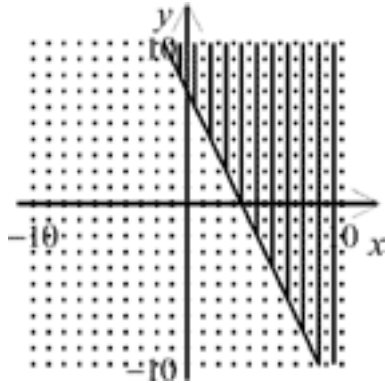
Graph:

73. $-y \geq 2x - 7$

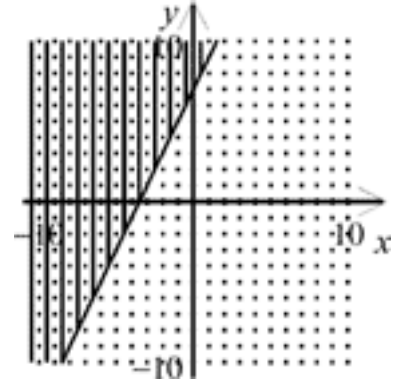
A.



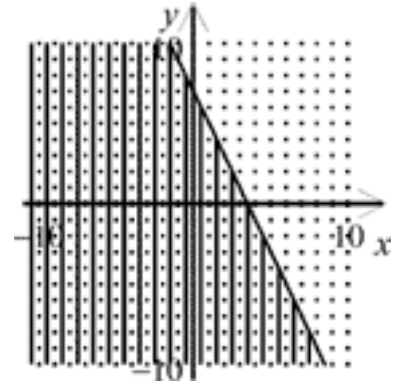
B.



C.

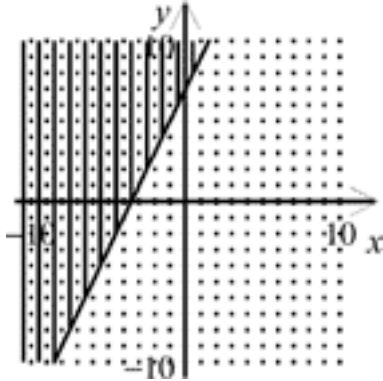


D.

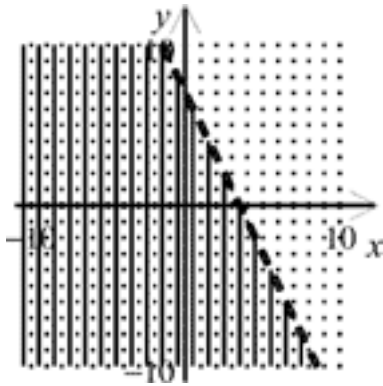


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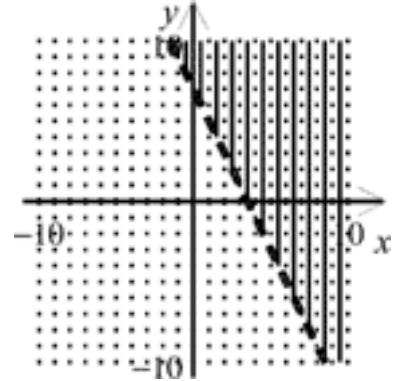
74. $-y > 2x - 7$
A.



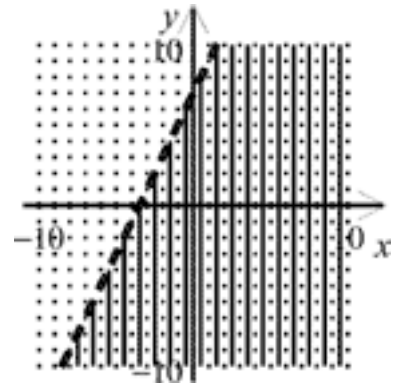
B.



C.



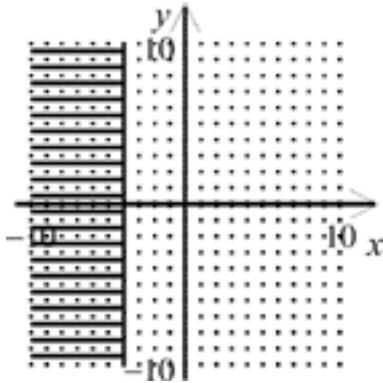
D.



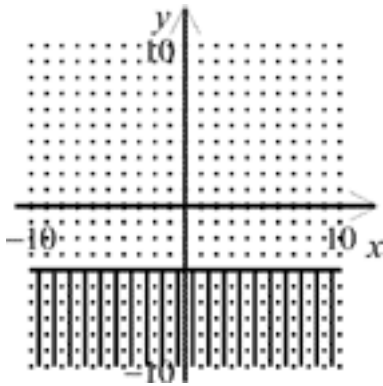
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75. $x > -4$

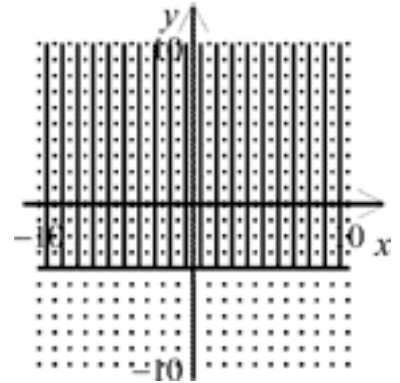
A.



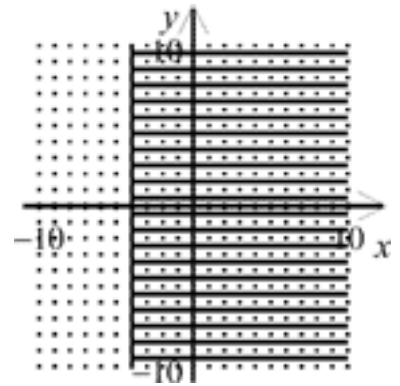
B.



C.



D.



76. Which inequality is equivalent to $-5x + 4 < -2x + 7$?

A. $x < 1$

C. $x < -1$

B. $x > 1$

D. $x > -1$

77. You are at a used book sale. Softcovers are \$0.75 each and hardcovers are \$1.50 each. If you have \$6 to spend and you buy four softcovers, how many hardcovers can you buy at most?

A. 0

C. 2

B. 1

D. 3

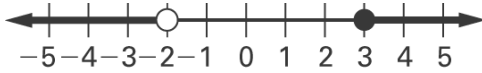
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78. Which graph represents the solution of $6x - 4 > 14$ or $3x + 10 < 4$?

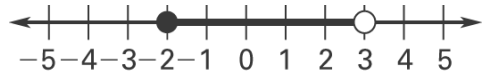
A. Graph A:



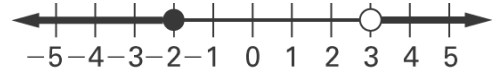
B. Graph B:



C. Graph C:



D. Graph D:



79. Which ordered pair is *not* a solution of $5x + 4y < -12$?

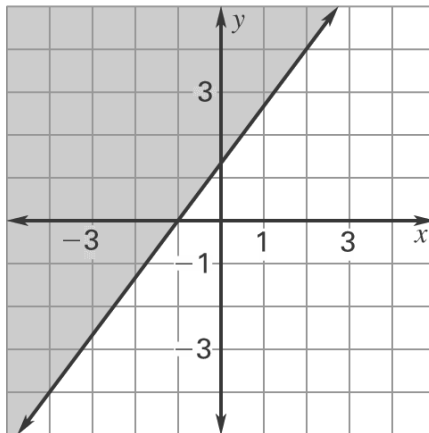
A. (1, -5)

C. (-4, 0)

B. (-2, 4)

D. (-3, -8)

80. Choose the inequality whose solution is shown in the graph.



A. $3y - 4x \geq 4$

C. $3y - 4x < 4$

B. $4x - 3y \geq 4$

D. $4x - 3y \leq 4$

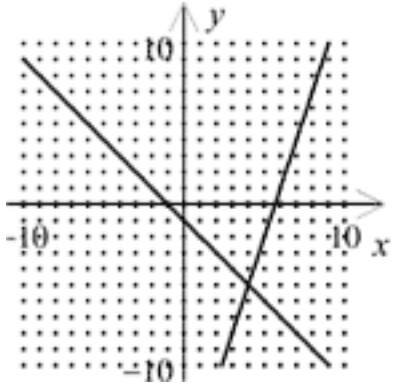
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Solve the system by graphing.

81. $x + y = -1$

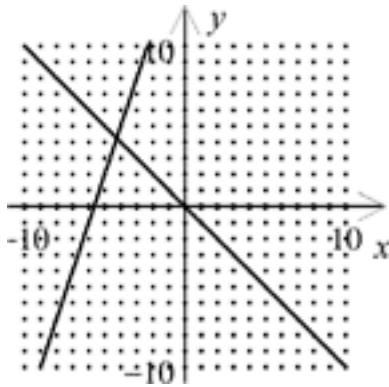
$3x - y = 17$

A.



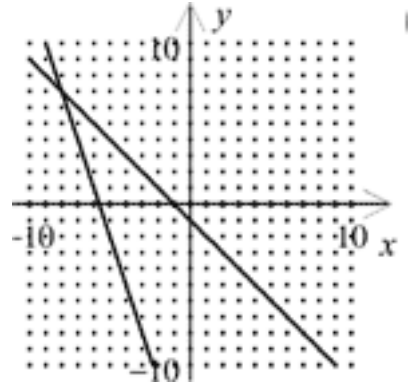
(4, -5)

B.



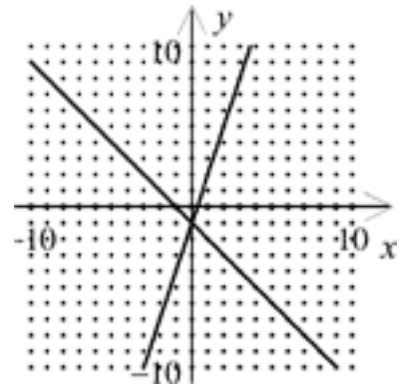
(-4, 4)

C.



(-8, 7)

D.



(0, -1)

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82. The Williams family is going to the county fair. They have two ticket options as shown in the chart below.

Ticket Option	Admission Price	Price Per Ride
A	\$4	\$.40
B	\$2	\$.80

- A. Write an equation that shows the cost per person for each option.
 B. Use graphing to solve the system of equations.
 C. Find the number of rides for which the total cost is the same with both ticket options.

- | | |
|---|--|
| <p>A. A. $C = 2 + 0.8r$
 $C = 4 + 40r$
 B. (0.05, 0.06)
 C. .05 ride</p> <p>B. A. $C = 4 + 40r$
 $C = 2 + 80r$
 B. (0.05, 0.06)
 C. .005 ride</p> | <p>C. A. $C = 4 + 0.4r$
 $C = 2 + 80r$
 B. (5, 6)
 C. 5 rides</p> <p>D. A. $C = 4 + 0.4r$
 $C = 2 + 0.8r$
 B. (5, 6)
 C. 5 rides</p> |
|---|--|

83. Mr. Frankel bought 8 tickets to a puppet show and spent \$33. He bought a combination of child tickets for \$3 each and adult tickets for \$6 each. Which system of equations below will determine the number of adult tickets, a , and the number of child tickets, c , he bought?

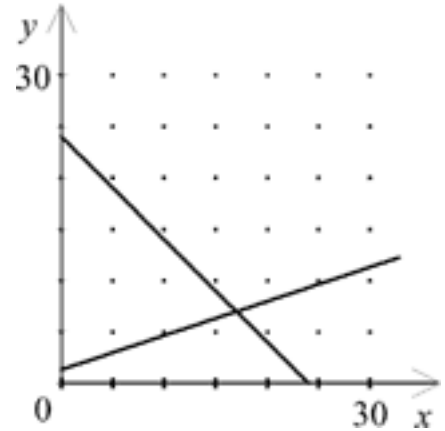
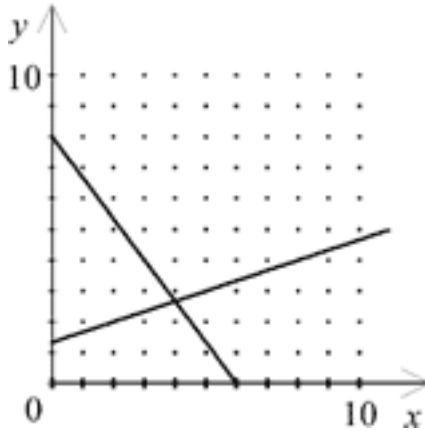
- | | |
|--|---|
| <p>A. $6a + 3c = 33$
 $a + c = 8$</p> <p>B. $a + c = 264$
 $a + c = 8$</p> | <p>C. $3a + 3c = 41$
 $a + c = 8$</p> <p>D. $a = c - 6$
 $6a + 3c = 33$</p> |
|--|---|

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84. Lena made 24 ounces of a fruit drink mix using pineapple juice and grapefruit juice. The number of ounces of pineapple juice in the fruit drink mix is 4 less than 3 times the number of ounces of grapefruit juice in the fruit drink mix. Which graph shows the number of ounces grapefruit juice, x , and the number of ounces of pineapple juice, y , in the fruit drink mix? What system of equations was used to create the graph?

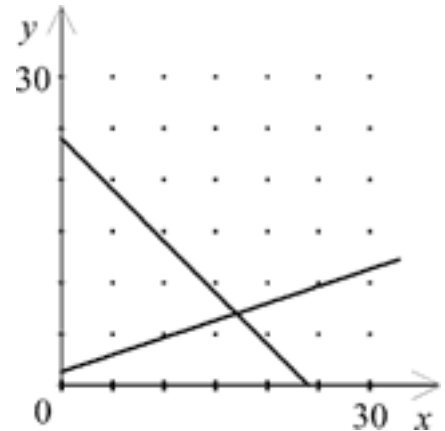
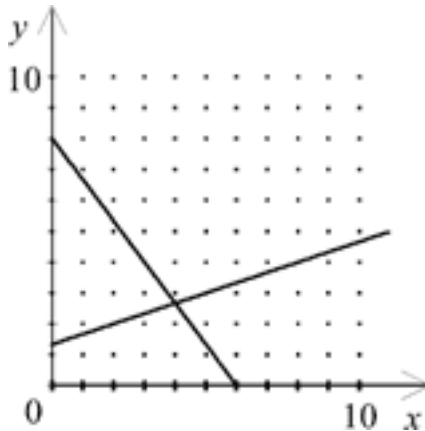
A. $4x + 3y = 24$
 $x - 4 = 3y$

C. $4x + 3y = 24$
 $x + 4 = 3y$



B. $x + y = 24$
 $x - 4 = 3y$

D. $x + y = 24$
 $x + 4 = 3y$



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85. Mr. Jarvis invested a total of \$10,437 in two savings accounts. One account earns 8% simple interest per year and the other earns 9% simple interest per year. Last year, the two investments earned a total of \$849.52 in interest. Which of the following systems of equations could be used to determine the amount Mr. Jarvis initially invested in each account? Let x represent the amount invested at 8% and let y represent the amount invested at 9%.
- A. $x + y = 849.52$
 _____ $8x + 9y = 10,437$
- B. $x + y = 849.52$
 $0.08x + 0.09y = 10,437$
- C. $x + y = 10,437$
 $0.08x + 0.09y = 849.52$
- D. $x + y = 10,437$
 _____ $8x + 9y = 849.52$
86. A small airplane flies at 145 miles per hour in still air. It took 2.5 hours for the airplane to fly d miles against a headwind blowing toward the airplane at w miles per hour. Which of the following equations can be used to represent this information?
- A. $d = (w - 2.5)145$
- B. $d = (145 - w)2.5$
- C. $145 = (w - 2.5)d$
- D. $145 = (d - w)2.5$
87. Marc sold 504 tickets for the school play. Student tickets cost \$3 and adult tickets cost \$5. Marc's sales totaled \$2090. How many adult tickets and how many student tickets did Marc sell?
- A. 284 adult, 220 student
- B. 220 adult, 284 student
- C. 215 adult, 289 student
- D. 289 adult, 215 student
88. If $4y = x + 13$ and $x + 2y = 5$, then $x + y = ?$.
- A. -1
- B. 2
- C. 3
- D. 4
89. Your teacher is giving a test worth 200 points. There is a total of 30 five-point and ten-point questions. How many five-point questions are on the test?
- A. 10
- B. 15
- C. 20
- D. 25
90. Which point is a solution of the linear system?
- $2x + y = -8$
 $-3x + 2y = 5$
- A. $(-3, -2)$
- B. $(-1, -6)$
- C. $(3, 7)$
- D. $(21, -50)$