Lakeview Christian Academy
Summer Math Packet
For Students Entering Geometry

Student's Name _____

Summer 2019

To be completed during the month of August prior to the start of the school year.

Turn this math packet into your math teacher on the first day of school for your first homework grade.

Geometry Summer Math Packet

Instructions: Please circle the best answer for each multiple-choice question or follow direction provided. Question with multiple answers circled will be labeled as incorrect.

What is the simplified form of each expression?

1. $(0.1)^4$
   a. 1.1487
   b. 0.0001
   c. 0.001
   d. 0.00001

2. $\left(\frac{4}{7}\right)^3$
   a. $\frac{343}{64}$
   b. $\frac{64}{343}$
   c. 21952
   d. 407

3. What is an expression for the sale price of a bracelet that has been discounted 60% from its sticker price? Evaluate the expression for a sticker price of $90.

   Use the variable s for the sale price and p for the sticker price.

   a. $s = p - 0.6p$; $36
   b. $s = p - 0.4p$; $54
   c. $s = p + 60p$; $5490
   d. $s = p + 0.6p$; $90

What is the simplified form of each expression?

4. $\sqrt{\frac{1}{169}}$
   a. $\frac{1}{338}$
   b. $\frac{1}{13}$
   c. 13
   d. $\frac{2}{169}$

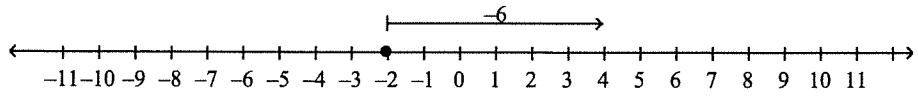
5. What is an inequality that compares the numbers $\sqrt{70}$ and 8 ½ ?
   a. $\sqrt{70} > 8\frac{1}{2}$
   b. $\sqrt{70} < 8\frac{1}{2}$

Simplify each expression.

6. $(8 + 7a) + 4$
   a. $12 + 11a$
   b. $19a$
   c. $8 + 11a$
   d. $12 + 7a$

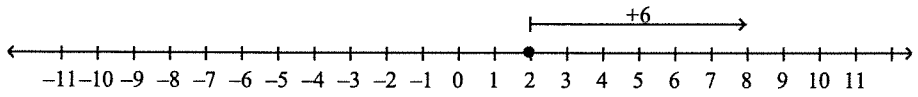
7. Which number line model can you use to simplify 2 + 6?

a.



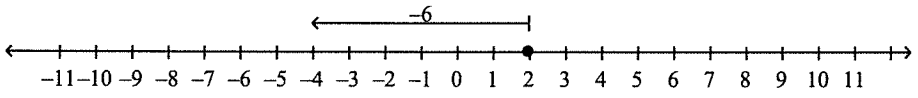
-2 + 6 = 4

b.



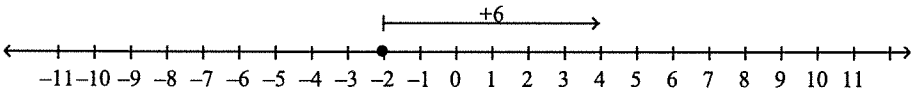
2 + 6 = 8

c.



2 - 6 = –4

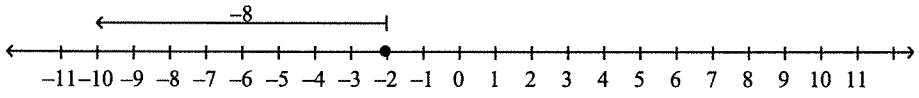
d.



-2 + 6 = 4

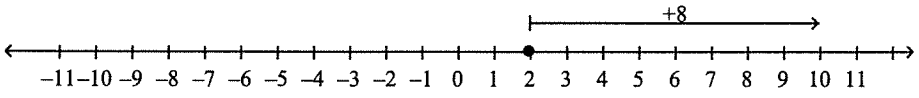
8. Which number line model can you use to simplify 2 + (–8)?

a.



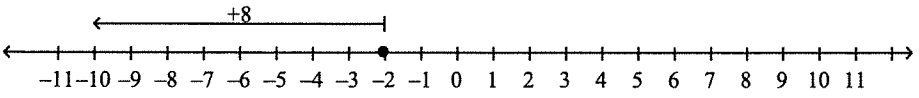
2 + (–8) = –10

b.



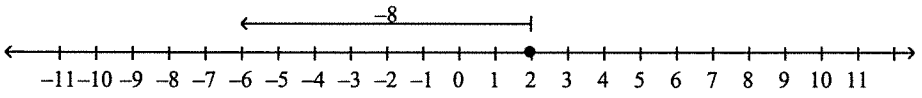
2 + (–8) = 10

c.



2 + (–8) = –10

d.



2 + (–8) = –6

What is each sum?

9. $-6 + (-3)$

a. 9 b. –3 c. 3 d. –9

What is each difference?

10. $\frac{9}{4} - \frac{1}{7}$

a. $\frac{3}{8}$ b. $\frac{59}{28}$ c. $\frac{8}{3}$ d. $\frac{67}{28}$

What is each product?

11. $4.3(-2.9)$

a. –5.22 b. 7.74 c. 12.47 d. –12.47

Is the equation *true*, *false*, or *open*? Explain.

12. $9p + 8 = 10p + 7$

a. Open; there is a variable.
b. True; the expressions are the same for all values of the variables.
c. False; the expressions are never the same.

13. A boat builder wants to make a model of a schooner, a type of sailboat with at least two masts. The schooner is 34 meters in length and has a beam of 8 meters (the measure of the widest point of a ship). If the builder wants her model to be 1.2 meters in length, what would be the length of the beam of the model?

a. 5.10 meters c. 0.70 meters
b. 3.54 meters d. 0.28 meters

14. A souvenir maker wants to create a scale model of the Empire State Building. The Empire State Building is 1472 feet tall and has a base with dimensions 286 ft by 286 ft. If the model is 6 in. tall, approximately what are the dimensions of its base in inches?

a. 1.2 in. by 1.2 in. c. 0.2 in. by 0.2 in.
b. 1 in. by 1 in. d. 2.3 in. by 2.3 in.

What is the solution of each equation? Use mental math.

15. $\frac{x}{9} = 10$

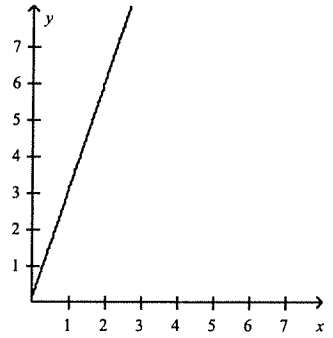
a. 90 c. 99
b. 100 d. 19

16. Which ordered pair is a solution of the equation $y = 3x$?

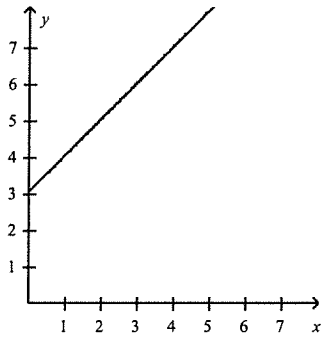
a. (–2, –9) c. (–8, –3)
b. (–8, –18) d. (–10, –30)

17. Mike and his best friend Dan have the same birthday, but Mike is 3 years older than Dan. Let the variable x represent Mike's age and y represent Dan's age. Which graph models the relationship between Dan's age and Mike's age?

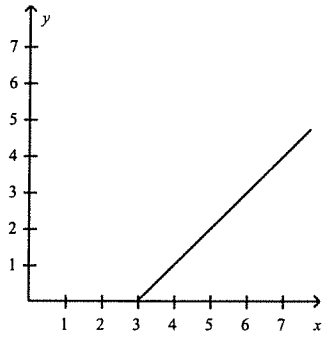
a.



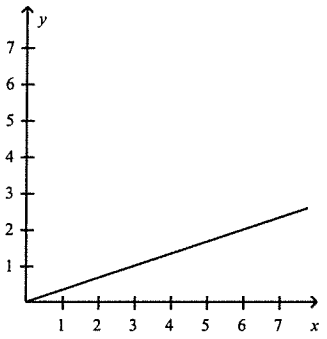
c.



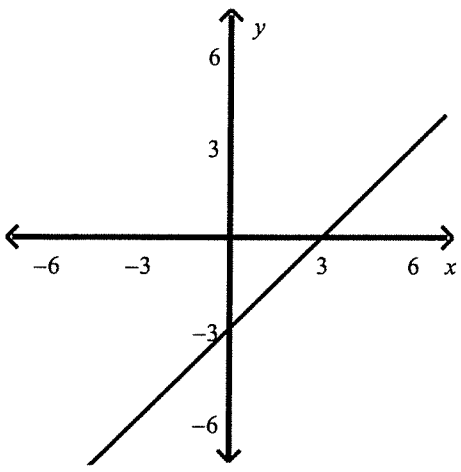
b.



d.



18. The graph of $y = x - 3$ is shown below. Which ordered pair is NOT a solution of the equation $y = x - 3$?



a. $(2, -1)$
b. $(-3, -6)$
c. $(3, 0)$
d. $(-4, -6)$

Solve for w.

19. $w - 2 = -3$

a. $\frac{3}{2}$
b. -5
c. -1
d. 6

20. Angela and Neil are going to the movies. They each bought a medium popcorn, and Neil got a small soft drink. Angela had a $10 gift certificate to put toward the cost, and Neil paid the rest, which came to $19.30. A movie ticket costs $9.00 and a medium popcorn costs $4.40. How much does a small soft drink cost at the theater?

a. $6.90
b. $1.30
c. $15.90
d. $2.50

What is the solution of the equation?

21. $4(y + 2) = 32$

a. 4
b. 6
c. -10
d. 10

22. $-6p + 7 = 3(2p - 3) - 4(-10 + 4p)$

a. $p = 6$
b. $p = 5$
c. $p = 7$
d. $p = 12$

What is the solution of each equation?

23. $2(h - 8) - h = h - 16$

a. 8
b. 8
c. infinitely many solutions
d. no solution

24. At an automobile factory, 1849 parts are made in 4 hours. What is the average rate at which parts are made per hour?

a. 491 parts/hr
b. 426 parts/hr
c. 511 parts/hr
d. 462 parts/hr

What is the solution of the proportion?

25. $\frac{h}{-8} = \frac{19}{-2}$

a. 76
b. -152
c. -38
d. 16

26. A scale model of a city has scale of 1 cm : 2.5 km. Two buildings in the model are 1.7 cm apart. To the nearest tenth of a kilometer, what is the actual distance between the buildings in the city?

a. 16.8 km
b. 6.8 km
c. 4.3 km
d. 6 km

Solve the following principal interest rate problem.

27. You deposited $8500 dollars in a savings account that earns a simple interest rate. What interest rate do you need to be paid, if you require $10093.75 after 5 years.

a. 3.75%
b. 4%
c. 4.25%
d. 3.5%

What inequality represents the verbal expression?

28. 8 less than a number n is less than 11

a. $11 - 8 < n$
b. $n - 8 < 11$
c. $8 - n < 11$
d. $11 < 8 - n$

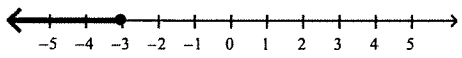
Which number is a solution of the inequality?

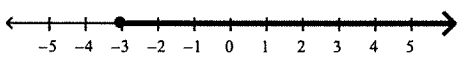
29. $3 \leq 3x - 15$

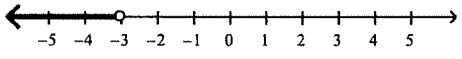
a. $\frac{9}{11}$
b. 5
c. $\frac{6}{11}$
d. 6

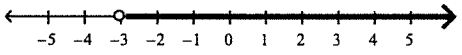
What is the graph of the inequality?

30. $x \geq -3$

a. 

b. 

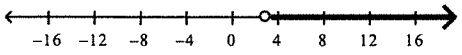
c. 

d. 

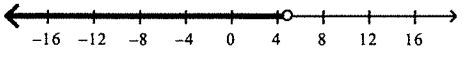
What are the solutions of the inequality? Graph the solutions.

31. $n + 4 > -1$

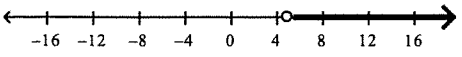
a. $n > 3$



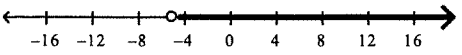
b. $n < 5$



c. $n > 5$

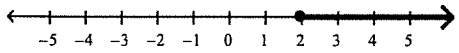


d. $n > -5$

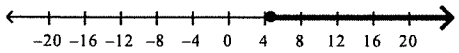


32. $-5x \geq -10$

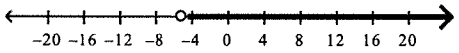
a. $x \geq 2$



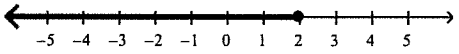
b. $x \geq 5$



c. $x > -5$



d. $x \leq 2$



What are the solutions of the inequality? Check the solutions.

33. $-\frac{2}{5}x - 9 < \frac{9}{10}$

a. $x > 24\frac{3}{4}$ b. $x < 10\frac{3}{10}$ c. $x < 9\frac{9}{10}$ d. $x < 3\frac{24}{25}$

What are the solutions of the inequality?

34. $12x - 3x + 11 > 4x - (17 - 9x)$

a. $x > -7$ b. $x < 7$ c. $x < -\frac{14}{11}$ d. $x > -\frac{14}{11}$

What are the solutions of the inequality?

35. $10x - 10 - 7x \geq 3x - 2$

a. $x \geq -8$
b. $x \leq 8$
c. all real numbers
d. no solution

Solve the following rate problem.

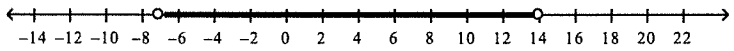
36. Starting from 1.5 miles away, a car drives towards a speed check point and then passes it. The car travels at a constant rate of 53 miles per hour. The distance of the car from the check point is given by $d = |1.5 - 53t|$. At what times is the car 0.1 miles from the check point?

a. 95.1 s and 108.7 s
b. 10.2 and 101.9 s
c. 108.7 s and 10.2 s
d. 95.1 s and 10.2 s

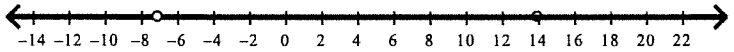
What compound inequality represents the phrase? Graph the solutions.

37. all real numbers w that are less than -7 or greater than 14

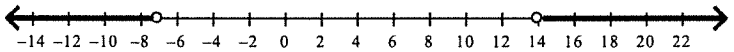
a. $-7 < w < 14$



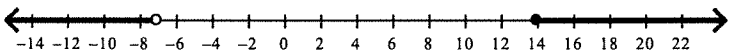
b. $w < 14$ or $w > -7$



c. $w < -7$ or $w > 14$

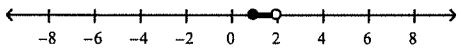


d. $w < -7$ or $w \geq 14$

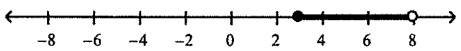


38. $-2 \leq 2x - 4 < 8$

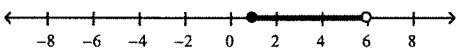
a. $1 \leq x < 2$



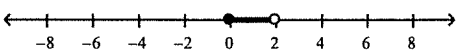
b. $3 \leq x < 8$



c. $1 \leq x < 6$

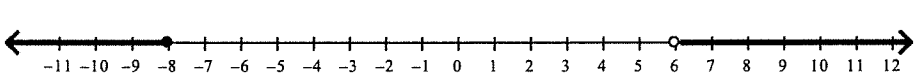


d. $0 \leq x < 2$

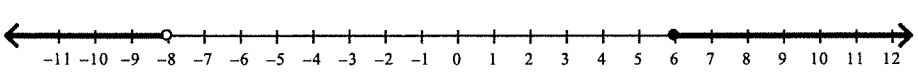


39. What is the graph of $(-\infty, -8)$ or $(6, \infty)$?

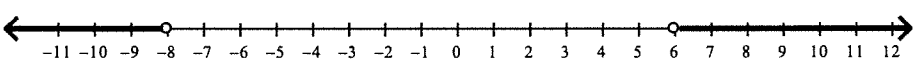
a.



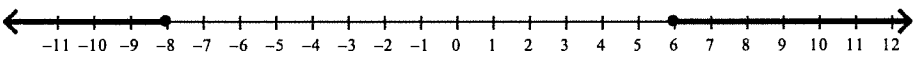
b.



c.



d.

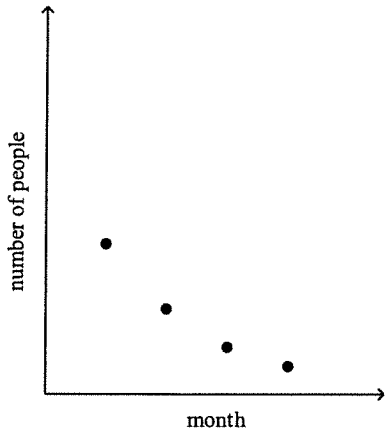


What are the variables in each graph? Describe how the variables are related at various points on the graph.

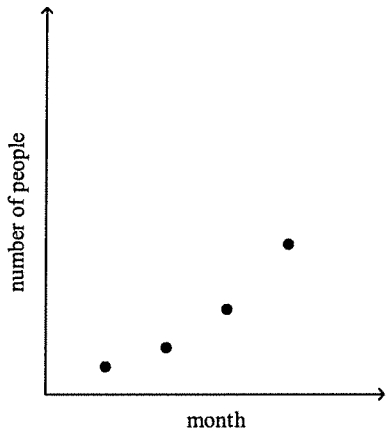
40. A new comedian is building a fan base. The table shows the number of people who attended his shows in the first, second, third and fourth month of his career. Which graph could represent the data shown in the table?

Month	Total Number of People
1	119
2	214
3	385
4	693

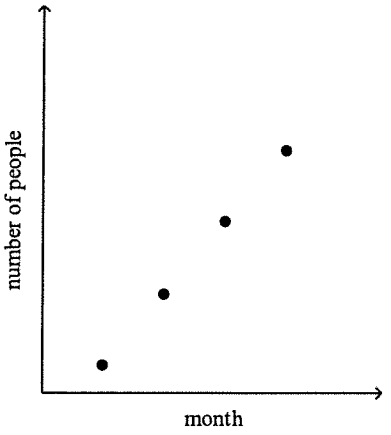
a.



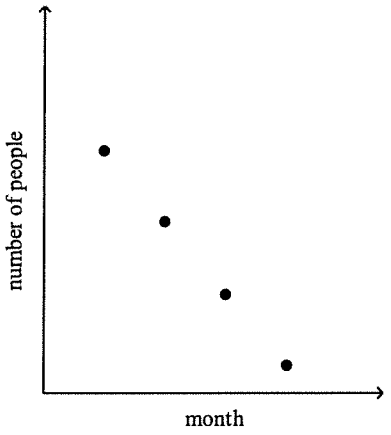
c.



b.

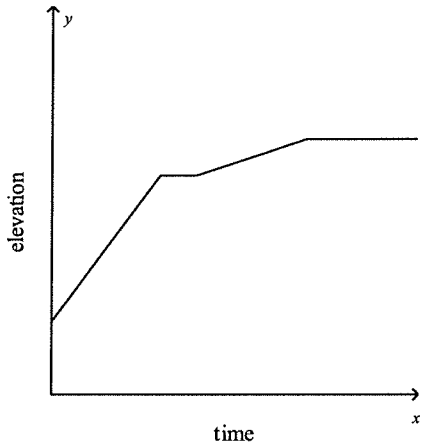


d.

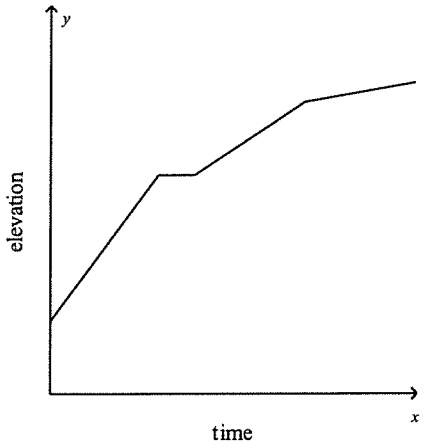


41. A hiker climbs up a steep bank and then rests for a minute. He then walks up a small hill and finally across a flat plateau. What sketch of a graph could represent the elevation of the hiker?

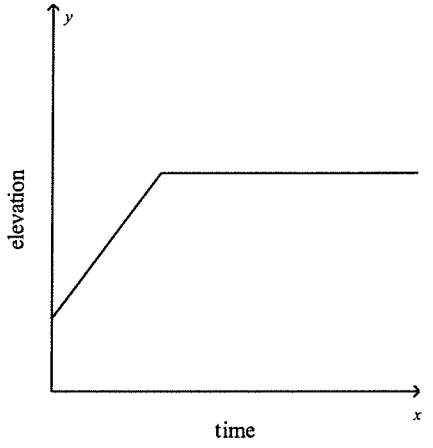
a.



c.



b.



d. Any of the graphs could represent the situation, depending on the hiker's speed.

42. The function $j(x) = 39x$ represents the number of jumping jacks $j(x)$ you can do in x minutes. How many jumping jacks can you do in 5 minutes?

a. 195 jumping jacks
b. 7 jumping jacks
c. 144 jumping jacks
d. 234 jumping jacks

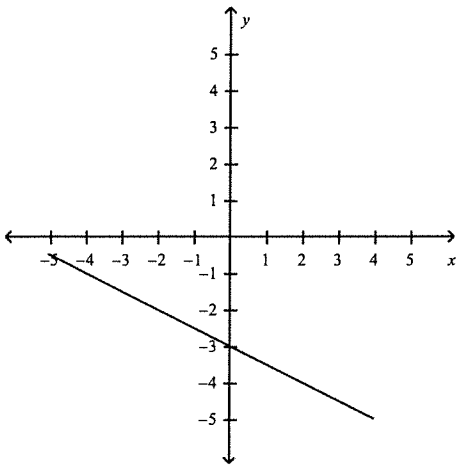
Tell whether the sequence is arithmetic. If it is, what is the common difference?

43. Bamboo plants grow rapidly. A bamboo plant is 130 inches tall. Tomorrow it will be 143 inches tall, the next day it will be 156 inches tall, and on the next day it will be 169 inches tall. Write an explicit formula to represent the height of the bamboo plant as an arithmetic sequence. How tall will the plant be in 13 days?

a. $A(n) = 130 + (n - 1)13$; 286 inches
b. $A(n) = 130 + (n - 1)13$; 299 inches
c. $A(n) = 130 + 13n$; 286 inches
d. $A(n) = 130 + 13n$; 299 inches

Find the slope of the line.

45.



a. $\frac{1}{2}$ b. $-\frac{1}{2}$ c. -2 d. 2

46. Suppose y varies directly with x, and $y = 10$ when $x = -3$. What direct variation equation relates x and y? What is the value of y when $x = -1$?

a. $y = \frac{3}{10}x; \frac{3}{10}$

b. $y = \frac{1}{10}x; \frac{3}{10}$

c. $y = \frac{10}{3}x; \frac{10}{3}$

d. $y = -\frac{10}{3}x; \frac{10}{3}$

47. Suppose y varies directly with x, and y = 19/3 when $x = 4/5$. What direct variation equation relates x and y? What is the value of y when $x = -7/6$?

a. $y = -\frac{12}{95}x; \frac{14}{95}$

b. $y = \frac{95}{12}x; -\frac{665}{72}$

c. $y = \frac{12}{95}x; -\frac{14}{95}$

d. $y = -\frac{95}{12}x; \frac{665}{72}$

For the data in the table, does y vary directly with x? If it does, write an equation for the direct variation.

48.

x	y
8	11
16	22
24	33

a. yes; $y = 2.75x$

b. yes; $y = 0.6875x$

c. yes; $y = 1.375x$

d. no; y does not vary directly with x

49.

x	y
16	4
32	16
48	36

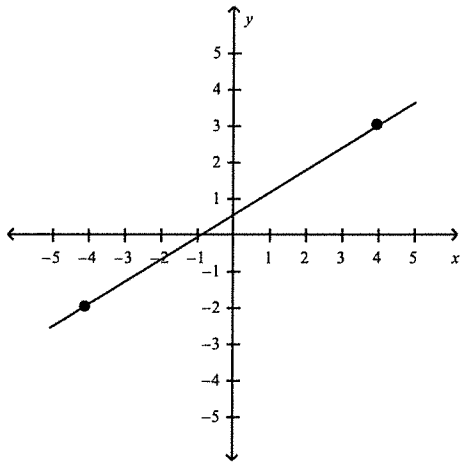
a. yes; $y = 2x$
b. yes; $y = 4x$
c. yes; $y = 8x$
d. no; y does not vary directly with x

Write an equation of a line with the given slope and y-intercept.

50. $m = -4.4, b = 6.8$
a. $y = -4.4x - 6.8$
b. $y = 4.4x + 6.8$
c. $y = 6.8x - 4.4$
d. $y = -4.4x + 6.8$

Write the slope-intercept form of the equation for the line.

51.



a. $y = -\frac{5}{8}x + \frac{1}{2}$
b. $y = \frac{8}{5}x - \frac{1}{2}$
c. $y = \frac{5}{8}x + \frac{1}{2}$
d. $y = \frac{8}{5}x + \frac{1}{2}$

What equation in slope intercept form represents the line that passes through the two points?

52. (6.6, –2.5), (8.6, –10.5)
a. $y = 4x + 23.9$
b. $y = -0.25x - 23.9$
c. $y = -4x + 23.9$
d. $y = 0.25x - 23.9$

Write an equation in point-slope form for the line through the given point with the given slope.

53. (3, –10); $m = -0.83$
a. $y - 10 = -0.83(x + 3)$
b. $y - 10 = -0.83(x - 3)$
c. $y - 3 = -0.83(x + 10)$
d. $y + 10 = -0.83(x - 3)$

54. The table shows the height of a plant as it grows. What equation in point-slope form gives the plant's height at any time? Let y stand for the height of the plant in cm and let x stand for the time in months.

Time (months)	Plant Height (cm)
3	15
5	25
7	35
9	45

a. $y-15=\frac{5}{2}(x-3)$

b. $y-15=5(x-3)$

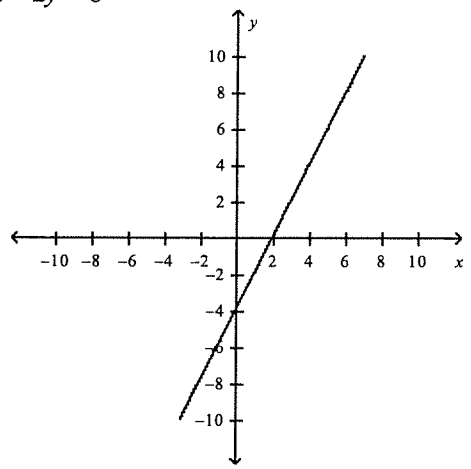
c. $y-3=\frac{5}{2}(x-15)$

d. The relationship cannot be modeled.

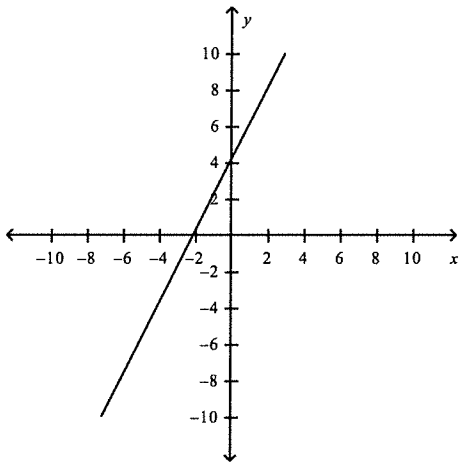
Match the equation with its graph.

55. $-4x-2y=8$

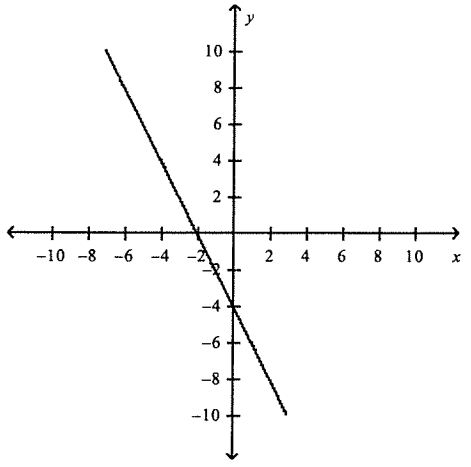
a.



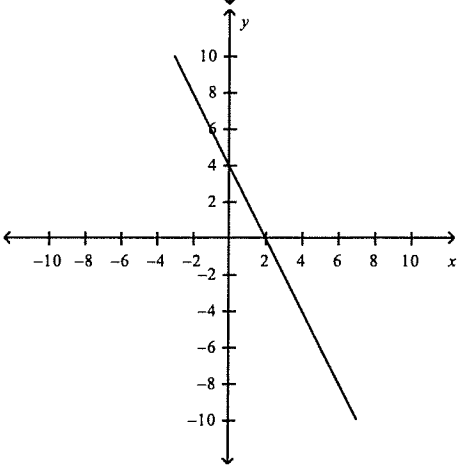
c.



b.



d.



What is the factored form of the expression?

56. $100b^2 - 81$

a. $(10b + 9)(10b - 9)$

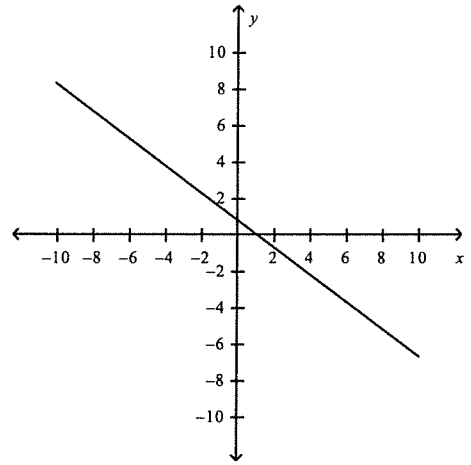
b. $(10b + 9)(10b + 9)$

c. $(10b - 9)(10b - 9)$

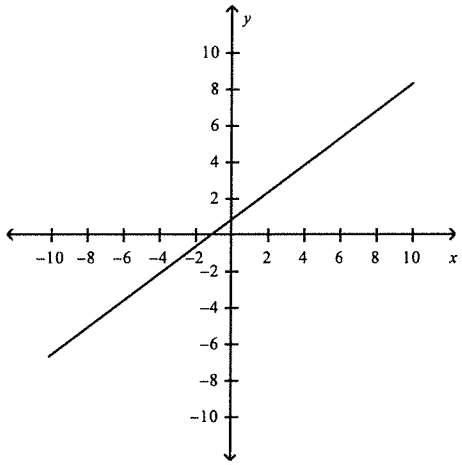
d. $(9b + 10)(9b - 10)$

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

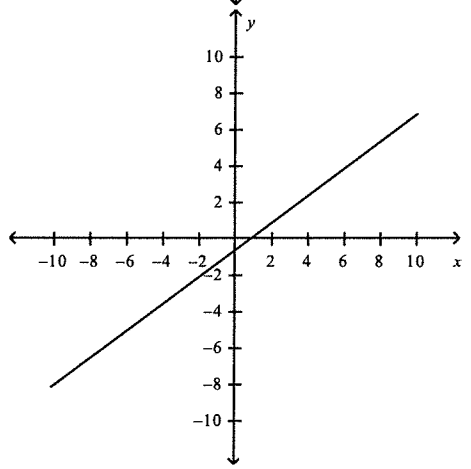
a.



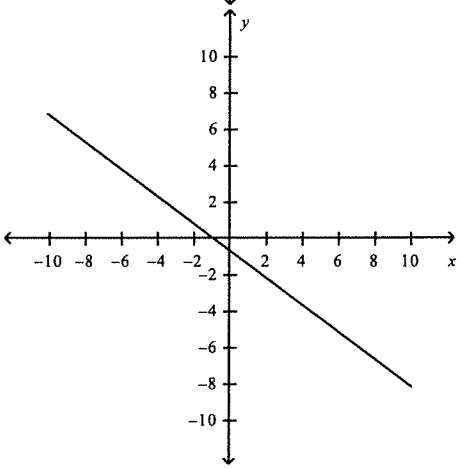
c.



b.



d.



Write an equation for the line that is parallel to the given line and passes through the given point.

58. $y = \frac{3}{5}x - 8; (-15, -23)$

a. $y = -\frac{5}{3}x + 14$

b. $y = \frac{3}{5}x - \frac{6}{5}$

c. $y = \frac{3}{5}x - 14$

d. $y = \frac{5}{3}x - 14$

Write the equation of a line that is perpendicular to the given line and that passes through the given point.

59. $x + 3y = 16; (-3, -4)$

a. $y = 3x + 5$

c. $y = \frac{1}{3}x + 5$

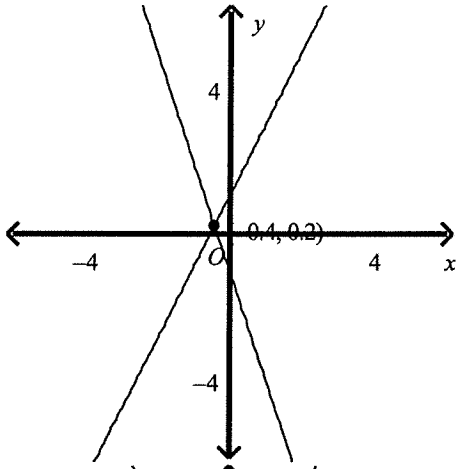
b. $y = \frac{1}{3}x + 9$

d. $y = -3x + 5$

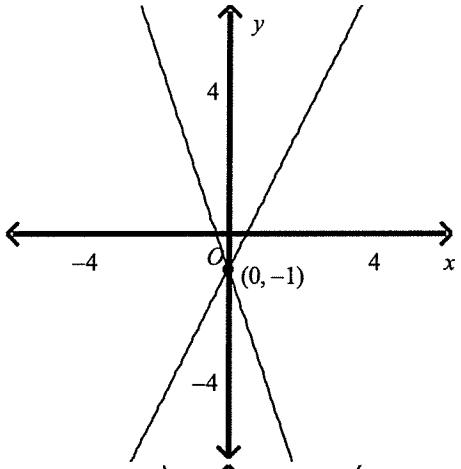
What is the solution of the system? Use a graph.

60. $y = 2x + 1$
$y = -3x - 1$

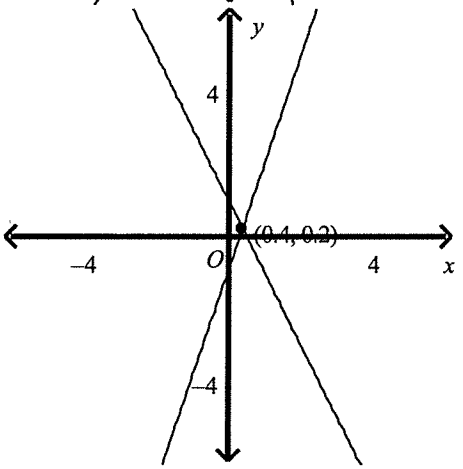
a.



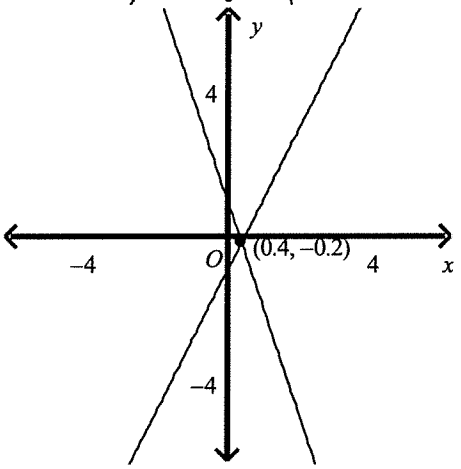
c.



b.



d.



What is the factored form of the expression?

61. $20x^2 + 22x - 12$

a. $2(5x - 2)(2x + 3)$

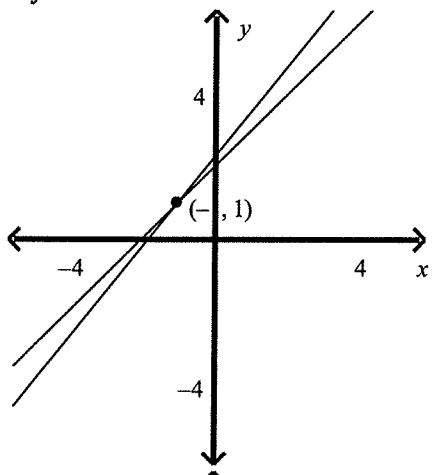
c. $(10x - 2)(4x + 3)$

b. $2(5x + 2)(2x - 3)$

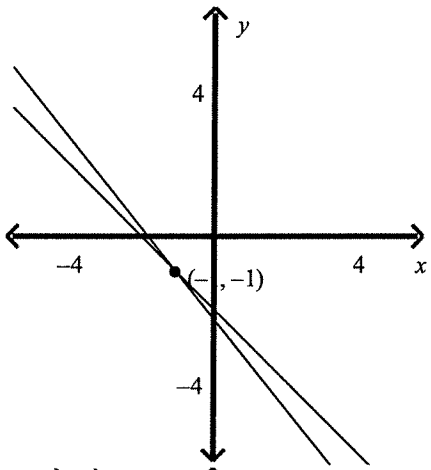
d. $2(5x + 4)(2x - 3)$

62. $5x + 4y = 9$
$4x + 4y = 8$

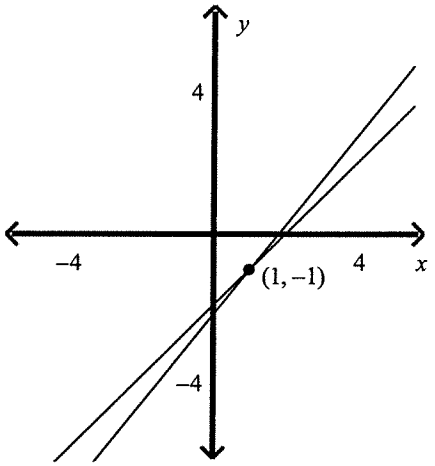
a.



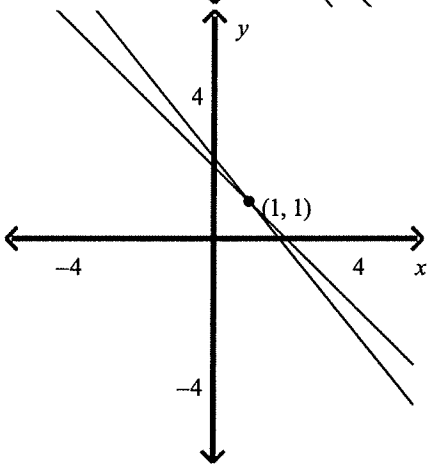
c.



b.



d.



What is a simpler form of the following expressions?

63. $(2n + 2)(2n - 2)$
a. $4n^2 - 4$
b. $4n^2 - 4n - 4$
c. $4n^2 + 2n - 4$
d. $4n^2 + 4n - 4$

Determine the speed of the wind and support your answer with work and a 2-3 sentence explanation.

64. A plane travels 236 miles in 1.4 hours against the wind. On the return trip, it travels the same 236 miles in 1 hour. Find the speed of the wind with units.