

Name: _____ Period: _____

Final Review A

Multiple Choice

Identify the choice that best completes the statement or answers the question.

Simplify the expression.

- _____ 1. $-6 - 7(c + 10)$
a. $64 - 7c$ b. $-76 - 7c$ c. $4 - 13c$ d. $-16 - 13c$
- _____ 2. $5k^2(-6k^2 - 2k + 6)$
a. $-30k^3 + 3k^2 + 30k$ c. $-k^4 + 3k^3 + 11k^2$
b. $30k^4 - 10k^3 + 11k^2$ d. $-30k^4 - 10k^3 + 30k^2$

Simplify the product.

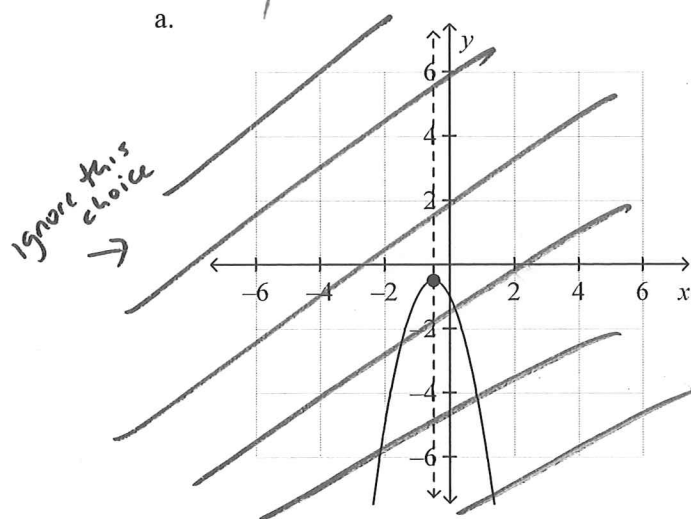
- _____ 3. $(x - 4)(x + 3)$
a. $x^2 - 7x - 12$ c. $x^2 - x - 12$
b. $x^2 + x - 12$ d. $x^2 - 12x - 1$
- _____ 4. The base of a triangle is $(6h + 16)$ centimeters. The height of the triangle is $(3h - 8)$ centimeters. Find the area of the triangle.
a. $(18h^2 - 96h - 64) \text{ cm}^2$ c. $(18h^2 + 64) \text{ cm}^2$
b. $(9h^2 - 16h - 64) \text{ cm}^2$ d. $(9h^2 - 64) \text{ cm}^2$

Factor the expression.

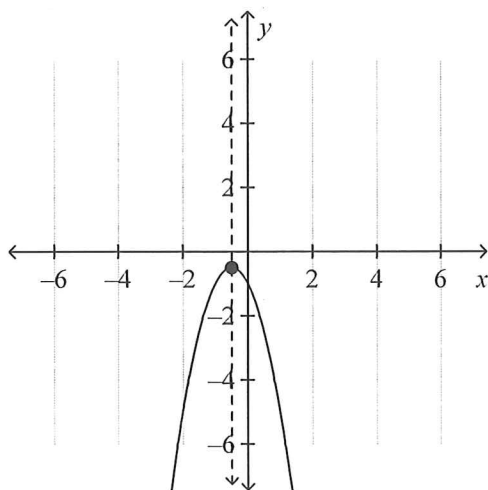
- _____ 5. $k^2 - 16h^2$
a. $(k + 4h)(k + 4h)$ c. $h^2(k + 4)(k - 4)$
b. $(k - 4h^2)(k + 4)$ d. $(k + 4h)(k - 4h)$
- _____ 6. $a^2 + ab - 56b^2$
a. $(a + 8b)(a + 7b)$ c. $(a + 8b)(a - 7b)$
b. $(a - 8)(a + 7b)$ d. $(a - 8b)(a - 7b)$
- _____ 7. $40p^2 - 13p - 36$
a. $(8p + 9)(5p + 4)$ c. $(8p - 9)(5p + 4)$
b. $(8p - 9)(5p - 4)$ d. $(8p + 9)(5p - 4)$

8. Graph $y = -2x^2 - 2x - 1$. Label the axis of symmetry and vertex.

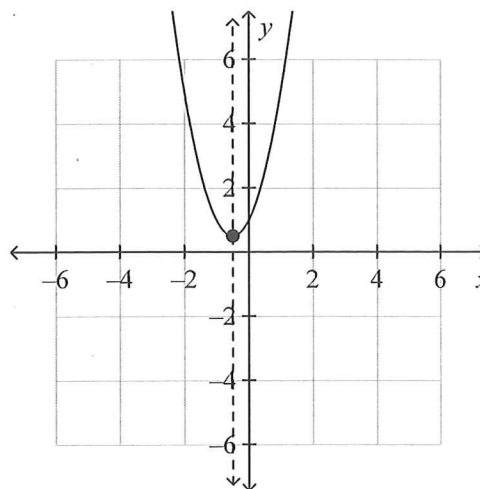
a.

Axis of symmetry: $x = -0.5$ Vertex: $(-0.5, 0.5)$

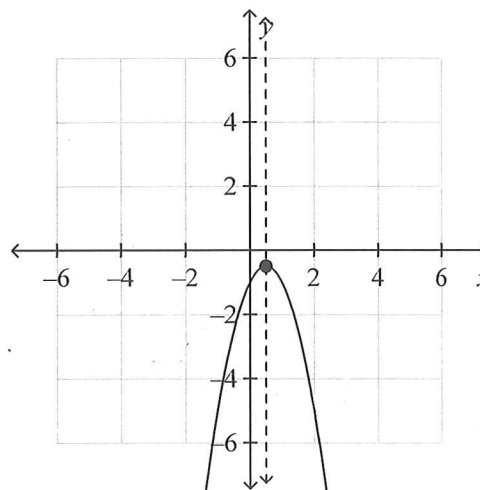
b.

Axis of symmetry: $x = -0.5$ Vertex: $(-0.5, -0.5)$

c.

Axis of symmetry: $x = -0.5$ Vertex: $(-0.5, 0.5)$

d.

Axis of symmetry: $x = 0.5$ Vertex: $(0.5, -0.5)$

9. A ball is thrown into the air with an upward velocity of 36 ft/s. Its height h in feet after t seconds is given by the function $h = -16t^2 + 36t + 9$.

a. In how many seconds does the ball reach its maximum height? Round to the nearest hundredth if necessary.

b. What is the ball's maximum height?

- a. 1.13 s; 69.75 ft b. 1.13 s; 29.25 ft c. 1.13 s; 31.5 ft d. 2.25 s; 9 ft

10. Write $9 \cdot 9 \cdot 9 \cdot 9 \cdot 9 \cdot 9 \cdot 9$ using an exponent.

- a. $9 \cdot 7$ b. 7^9 c. 99^7 d. 9^7

- _____ 11. Suppose the population of a town is 2,700 and is growing 4% each year.
- Write an equation to model the population growth.
 - Predict the population after 12 years.
- _____ 12. You deposit \$400 in an account that earns 6% compounded annually (once per year). What is the balance in your account after 5 years? Round your answer to the nearest cent.
- _____ 13. A boat costs \$15,500 and decreases in value by 10% per year. How much will the boat be worth after 5 years?

Write the expression using a single exponent.

- _____ 14. $2^2 \cdot 2^8$
- _____ 15. $6^a \cdot 6^v$
- _____ 16. $\frac{144^{14}}{144^2}$
- _____ 17. $\frac{x^{13}}{x^2}$

 Simplify the expression.

- _____ 18. 14^{-4}

Write the number in standard form.

- _____ 19. A cell has an approximate diameter of 3.656×10^{-5} millimeters.

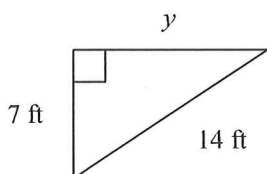
20. A scientist uses a spherical particle in an experiment. The diameter of Particle A is 3.09×10^{-5} centimeters.
- Write the diameter of Particle A in standard form.
 - What is the radius of Particle A? Express your answer in standard form.
- 0.0000309; 0.00001545 cm
 - 0.000309; 0.0000618 cm
 - 0.0000309; 0.0000618 cm
 - 0.000309; 0.00001545 cm

Simplify the square root.

21. $\sqrt{16}$
- 16
 - 0.4
 - 40
 - 4
22. $-\sqrt{25}$
- 0.5
 - 5
 - 5
 - 25

In the given right triangle, find the missing length to the nearest tenth.

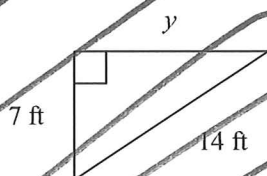
23.



Not drawn to scale

- 3.7 ft
- 15.7 ft
- 5.9 ft
- 12.1 ft

24.



Not drawn to scale

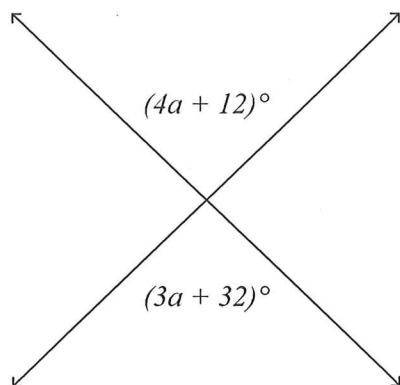
- 5.9 ft
 - 12.1 ft
25. Ingrid is making a quilt using squares that measure 5 in. on a side. What is the length of a diagonal of one of the quilt squares? Round to the nearest tenth.
- 8.7 in.
 - 7.1 in.
 - 3.5 in.
 - 14.2 in.

Simplify the expression.

- _____ 26. $(-2)^5$
a. -32 b. 16 c. -10 d. 32
- _____ 27. -5^4
a. 20 b. 125 c. -625 d. 625

Solve the equation.

- _____ 28. $8d - 4d - 6d - 8 = 2d$
a. 0 b. -1 c. -2 d. -4
- _____ 29. $37 - 18 + 8w = 67$
a. -6 b. 4 c. 7 d. 6
- _____ 30. a. Find the value of a .
b. Find the value of the marked angles.



not drawn to scale

- a. 22; 100° b. 19; 88° c. 20; 92° d. 24; 108°

Solve the equation.

- _____ 31. $78 = -2(m + 3) + m$
a. -28 b. -42 c. -72 d. -84
- _____ 32. $\frac{y - 5}{3} = 1$
a. -2 b. 8 c. 18 d. 6
- _____ 33. $\frac{w}{4} - 4 = 3$
a. -4 b. 28 c. 3 d. 11

____ 34. $\frac{d}{3} + 10 = 7$

- a. 51 b. 20 c. 0 d. -9

____ 35. $-4n + 7 + 2n = 1$

- a. 1 b. 3 c. -3 d. 4

Factor the polynomial.

____ 36. $24w^{12} + 64w^8$

- a. $8w^8(3w^4 + 8)$ c. $8(3w^{12} + 8w^8)$
b. $w^8(24w^4 + 64)$ d. $8w^7(3w^5 + 8w)$

Solve the equation by factoring.

____ 37. $z^2 - 6z - 27 = 0$

- a. $z = 3$ or $z = 9$ c. $z = -3$ or $z = 9$
b. $z = 3$ or $z = -9$ d. $z = -3$ or $z = -9$

____ 38. $3z^2 + 3z - 6 = 0$

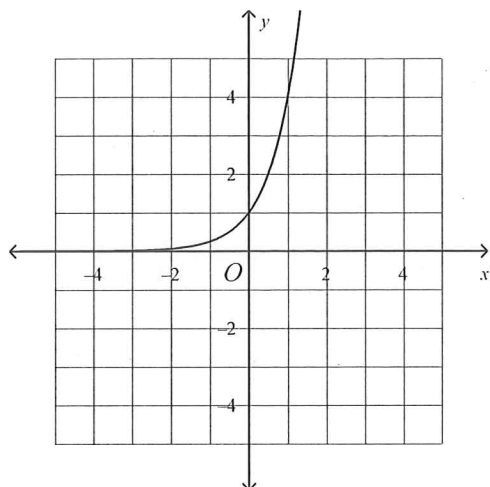
- a. $z = 1$ or $z = -2$ c. $z = 3$ or $z = -2$
b. $z = 1$ or $z = 2$ d. $z = 3$ or $z = 2$

____ 39. $c^2 - 4c = 0$

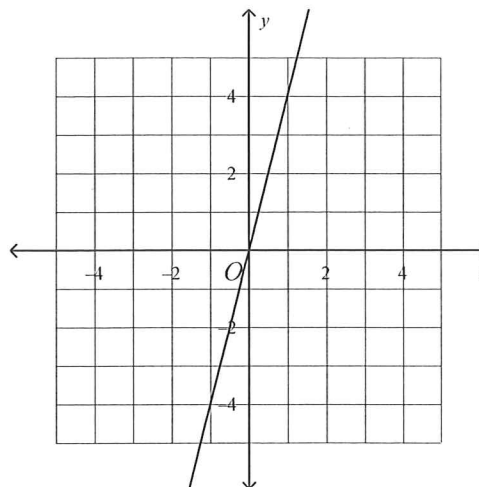
- a. $c = 0$ or $c = -4$ c. $c = 0$ or $c = 4$
b. $c = 0$ or $c = \sqrt{4}$ d. $c = 1$ or $c = -\sqrt{4}$

_____ 40. Graph the function $y = 4^x$.

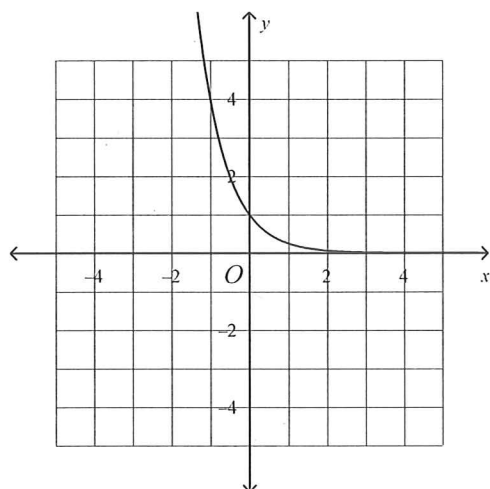
a.



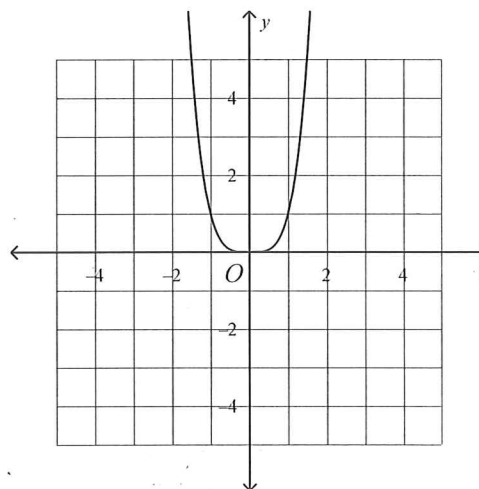
c.



b.



d.



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

_____ 41. $m = 1, b = 4$

a. $y = 4x + 1$

c. $y = -1x + 4$

b. $y = x - 4$

d. $y = x + 4$

Is the second equation parallel to the first equation?

_____ 42. $y = \frac{1}{6}x + 8$

$-2x + 12y = -11$

a. Yes, since the slope are the same and the y-intercepts are the same.

b. No, since the y-intercepts are different.

c. Yes, since the slope are the same and the y-intercepts are different.

d. No, since the slopes are different.

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

_____ 43. $y = \frac{3}{4}x - 9$; $(-8, -18)$

a. $y = \frac{3}{4}x + \frac{11}{2}$

c. $y = \frac{3}{4}x - 12$

b. $y = \frac{4}{3}x - 12$

d. $y = -\frac{4}{3}x + 12$

_____ 44. Find the perimeter of a right triangle with legs of 20 cm and 21 cm.

a. 882 cm

b. 82 cm

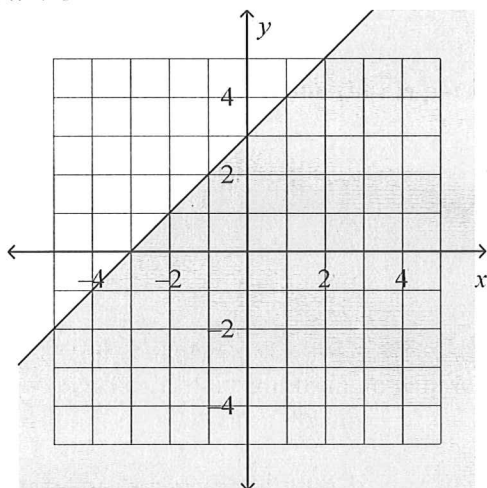
c. 70 cm

d. 47 cm

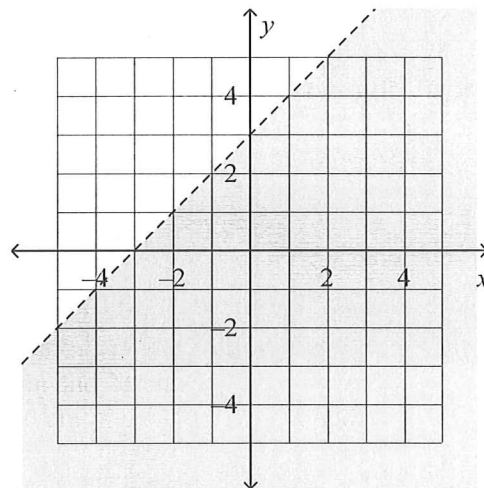
Graph the inequality on a coordinate plane.

_____ 45. $y < x + 3$

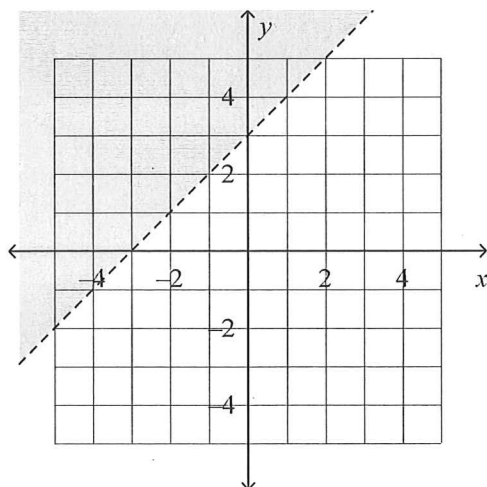
a.



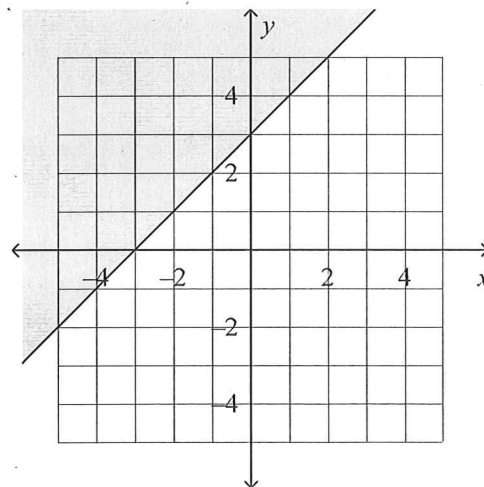
c.



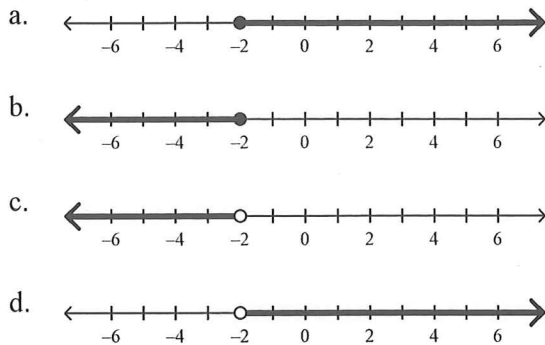
b.



d.



_____ 46. Graph the inequality: $x \leq -2$.



Solve the inequality.

_____ 47. $-7p - 16 > 82$

- a. $p < -9$ b. $p < -14$ c. $p > -14$ d. $p > 9$

_____ 48. $\frac{w}{-15} - 13 \geq 8$

- a. $w \leq -75$ b. $w \geq 315$ c. $w \leq -315$ d. $w \geq 75$

Write and solve an inequality.

_____ 49. The daily cost of renting a car is \$21 plus \$.53 per mile. Jane's budget allows her to spend a maximum of \$96.00 for a 1-day rental. How many miles m may Jane drive the rental car in one day without exceeding her budget of \$96.00?

- a. $21 \geq 96.00 - 0.50m$; 150 or fewer miles
 b. $0.50m + 21 > 96.00$; 150 or more miles
 c. $96.00 \geq 21 + 0.50m$; 150 or more miles
 d. $0.50m + 21 \leq 96.00$; 150 or fewer miles

_____ 50. Levi earns \$6.25 per hour working after school. He needs at least \$143.75 for a stereo system. How many hours h does he need to work to reach his goal?

- a. $\frac{h}{6.25} > 143.75$; $h > 23$; 23 hours c. $\frac{h}{6.25} < 143.75$; $h < 23$; 23 hours
 b. $6.25h \leq 143.75$; $h \leq 23$; 23 hours d. $6.25h \geq 143.75$; $h \geq 23$; 23 hours

_____ 51. What is the solution of the following system of equations?

$$y = -4x + 7$$

$$y = -x + 4$$

- a. (4, 0) b. (1, 3) c. (-3, 19) d. (0, 7)

Find the x - and y -intercept of the line.

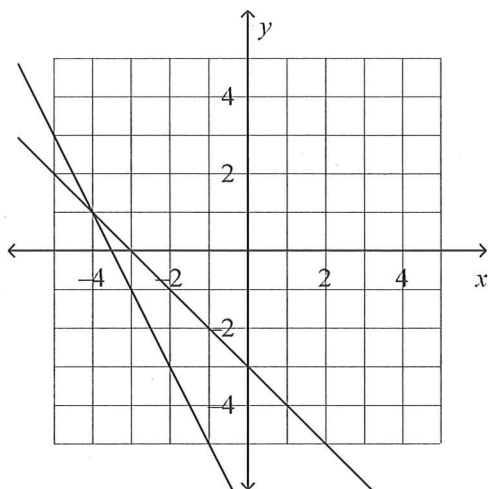
_____ 52. $-3x + 9y = 18$

- a. x -intercept is 2; y -intercept is -6. c. x -intercept is -6; y -intercept is 2.
 b. x -intercept is -3; y -intercept is 9. d. x -intercept is 9; y -intercept is -3.

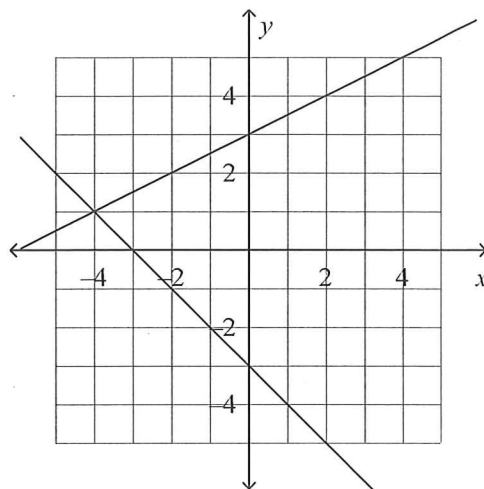
Solve the system of equations by graphing.

53. $y = \frac{1}{2}x + 3$
 $y = -2x - 7$

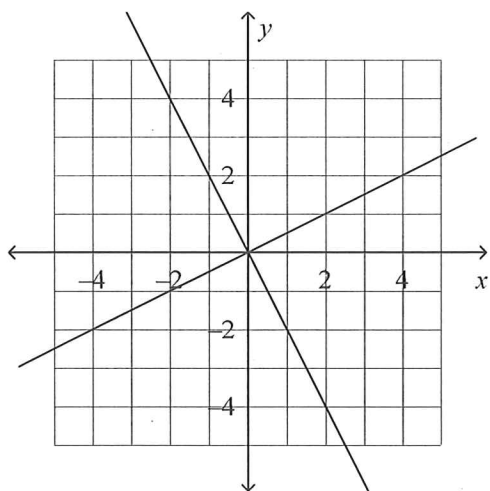
a.



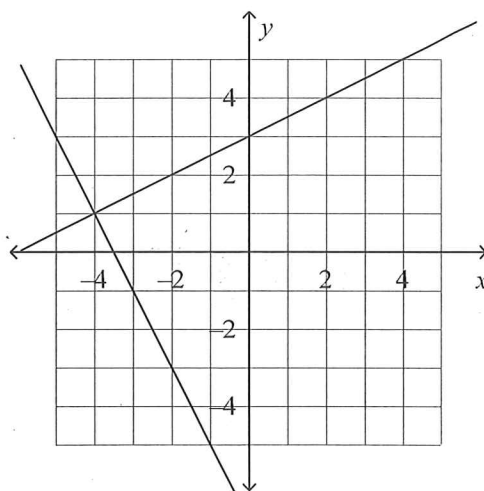
c.



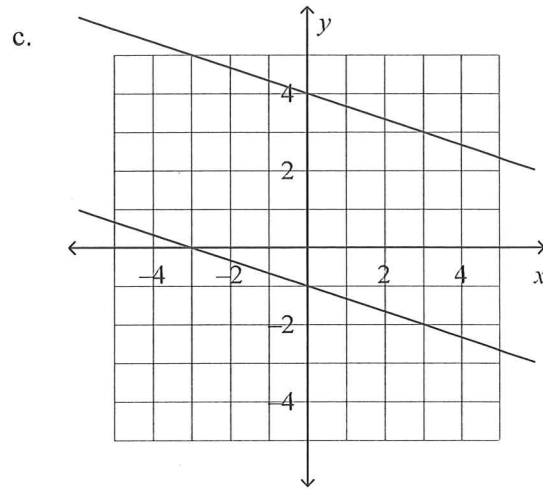
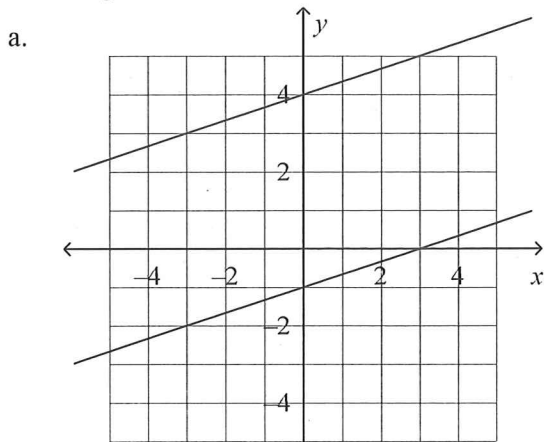
b.



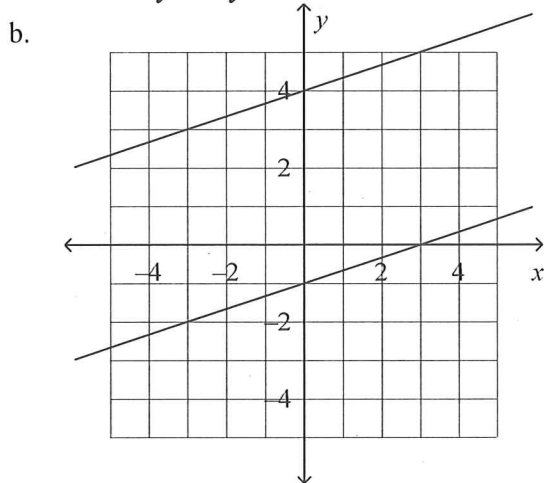
d.



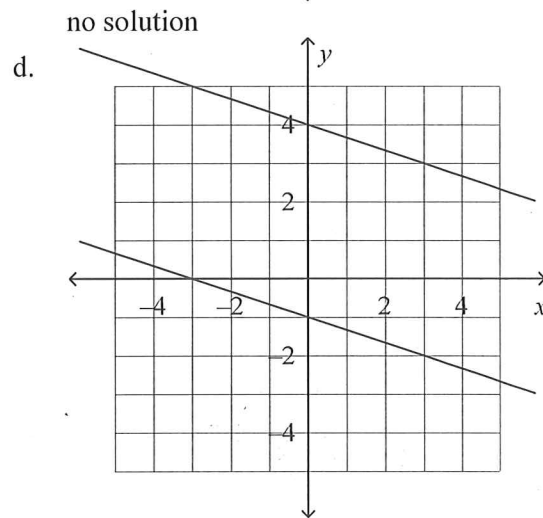
54. $-\frac{1}{3}x + y = -1$ Which shows the graph + solution for the system of equations?
 $y = 4 + \frac{1}{3}x$



infinitely many solutions



no solution



infinitely many solutions

Solve the system using elimination. (linear combination)

55. $3x + y = 11$
 $4x - y = 17$
- a. $(-1, 4)$ b. $(4, -1)$ c. $(5, -4)$ d. $(1, 4)$

Solve the system of equations using substitution.

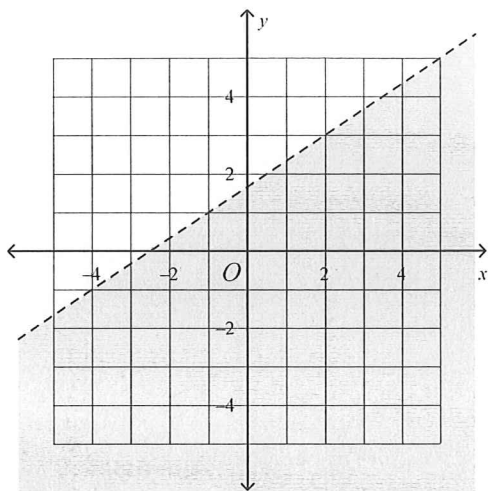
56. $y = 2x - 10$
 $y = 4x - 8$
- a. $(3, 4)$ b. $(-1, -12)$ c. $(-4, -17)$ d. $(3, -4)$

(gl)

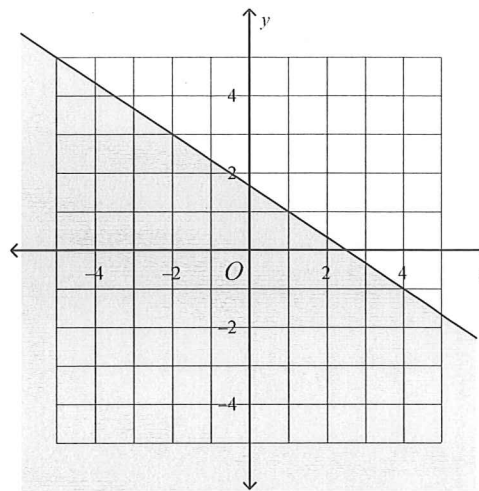
Graph the inequality.

57. $4x + 6y \geq 10$

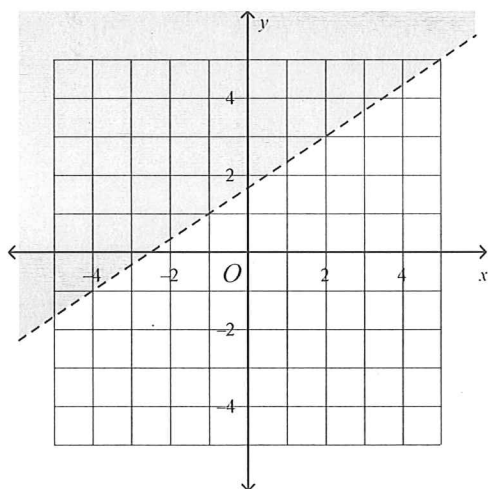
a.



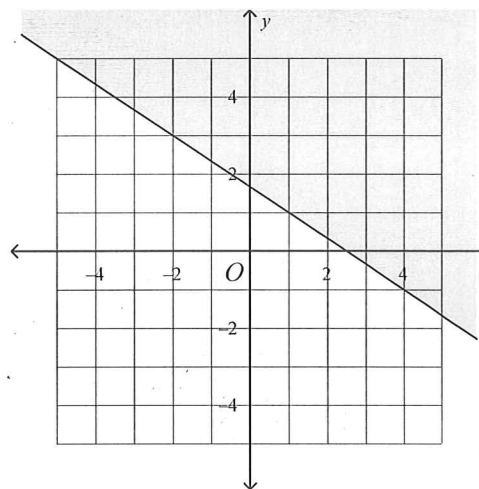
c.



b.



d.



58. Write the following inequality in slope-intercept form.

$5x - 5y \geq 70$

a. $y \geq x - 14$

b. $y \leq x + 14$

c. $y \leq x - 14$

d. $y \geq x + 14$

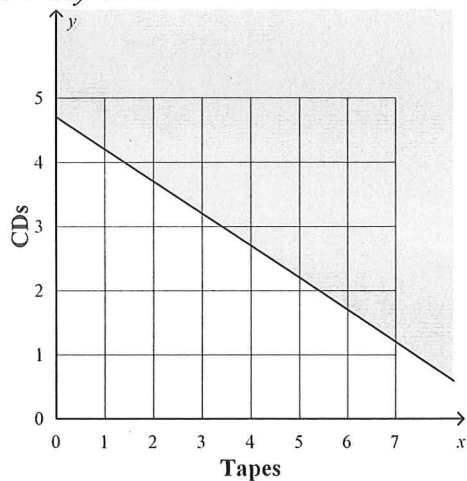
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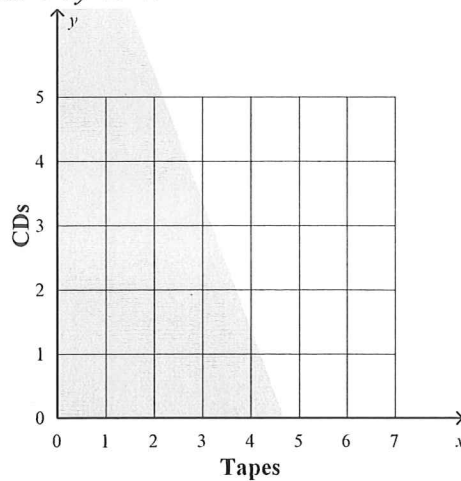
82

59. You have \$47 to spend at the music store. Each cassette tape costs \$5 and each CD costs \$10. Write and graph a linear inequality that represents this situation. Let x represent the number of tapes and y the number of CDs.

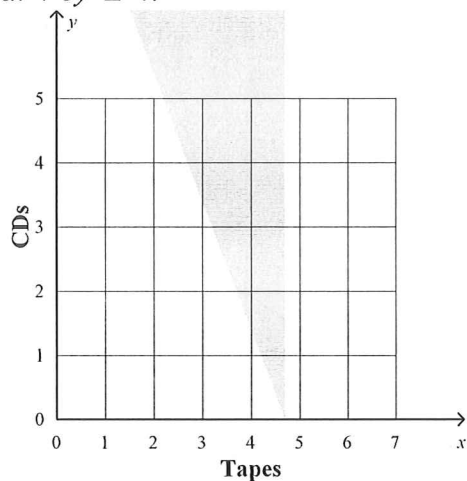
a. $5x + 10y \geq 47$



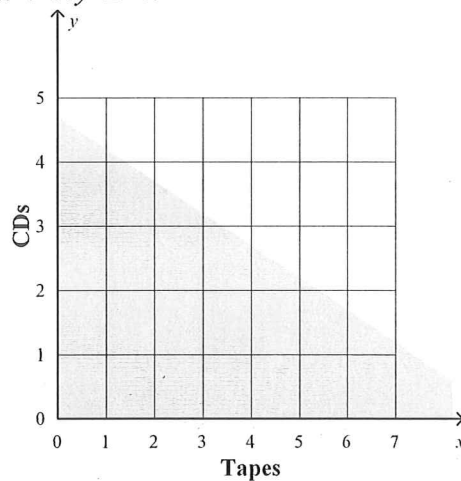
c. $10x + 5y \leq 47$



b. $10x + 5y \geq 47$

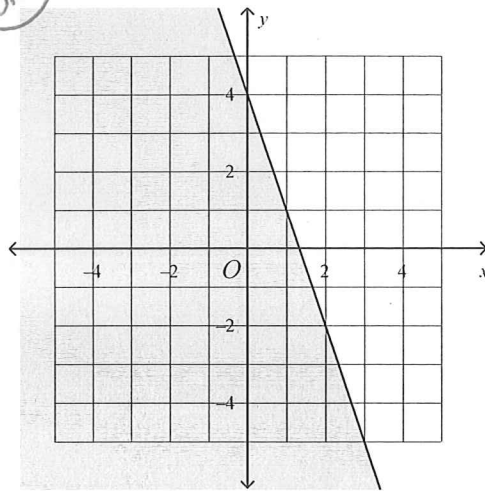


d. $5x + 10y \leq 47$



Write the linear inequality shown in the graph.

60. 82



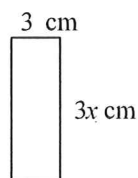
- a. $y \geq -3x + 4$ b. $y \leq -3x + 4$ c. $y \geq -3x - 4$ d. $y \leq -3x - 4$

Write and solve an equation.

61. Mark wants to buy a skateboard that costs \$65. He plans to save \$5 per week. How many weeks w will it take him to save \$65?

- a. $5w = 65$; 13 weeks c. $w - 65 = 5$; 70 weeks
b. $\frac{w}{5} = 65$; 13 weeks d. $5 + w = 65$; 60 weeks

62. The perimeter of the rectangle is 24 cm. Find the value of x .



- a. 3 b. 12 c. $\frac{8}{3}$ d. 18

63. The cost of a school banquet is \$90 for the room rental and \$14 per person attending. Write an expression to model the total cost of the banquet for p people. What is the cost for 70 people?

- a. $14p + 90$; \$1,330 c. $90p + 14$; \$1,070
b. $90 + 14p$; \$1,070 d. $14 + 90p$; \$1,330

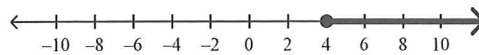
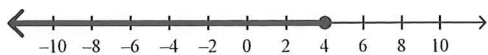
- _____ 64. A road has a speed limit of 30 mi/h. Write an inequality that describes the legal speeds r for motor vehicles.
- a. $r > 30$ b. $r \leq 30$ c. $r \geq 30$ d. $r < 30$

Solve the inequality. Graph the solutions.

- _____ 65. $a + 4 \geq 8$

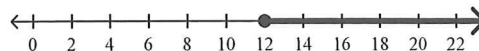
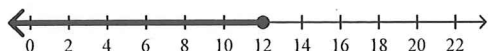
a. $a \leq 4$

c. $a \geq 4$



b. $a \leq 12$

d. $a \geq 12$



- _____ 66. What is the solution of the following system of equations?

$y = -4x + 7$

$y = -x + 4$

a. $(4, 0)$

b. $(1, 3)$

c. $(-3, 19)$

d. $(0, 7)$

- _____ 67. Suppose that y varies inversely with x . Write an equation for the inverse variation.

$y = 6$ when $x = 8$

a. $y = \frac{x}{48}$

b. $y = 2x$

c. $x = \frac{y}{2}$

d. $y = \frac{48}{x}$