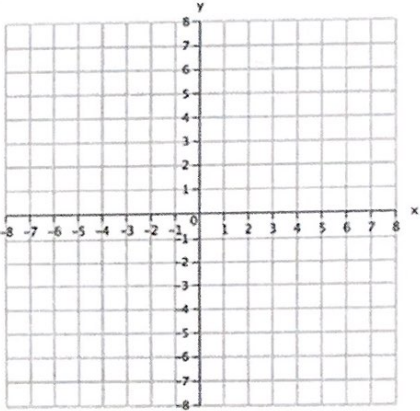


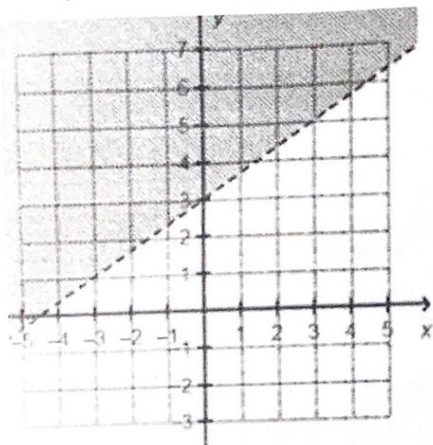
Algebra 1 Spring Semester Final Practice problems

Are you ready for our upcoming cumulative final exam? In addition to this review, use the past reviews, assignments, notes, & proficiency scales as study resources.

Level 2

<p>1. Is the point $(3, -2)$ a solution to the system: $4x + 2y = 8$ and $y = -\frac{1}{2}x + 5$?</p> <p>Explain your reasoning and justify it mathematically.</p> <p>yes</p>	<p>2. Solve the system of equations by graphing.</p> $y = 2x - 2$ $4x + y = -2$ <p>$(0, -2)$</p> 
<p>3. Solve the system by substitution.</p> $5x - 9y = 12$ $x + y = -6$ <p>$(-3, -3)$</p>	<p>4. Solve the system by elimination.</p> $7x - 3y = 17$ $2x - y = 6$ <p>$(-1, -8)$</p>
<p>5. Solve the system by any method.</p> $-2x + y = 6$ $-4x + 2y = 4$ <p>no solution</p>	<p>6. Is the point $(-2, 3)$ a solution to the inequality?</p> $y > -4x - 5$ <p>no</p>

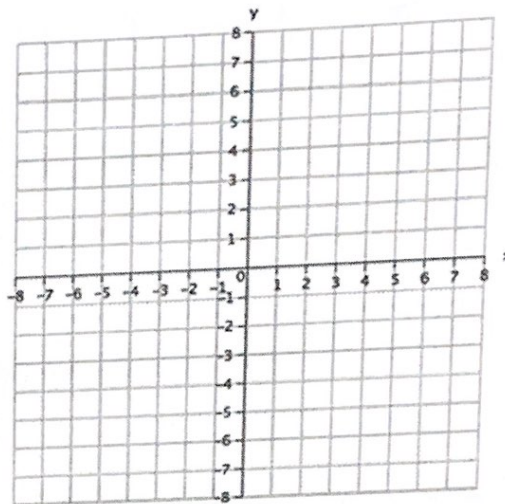
7. Circle the points that are solutions to the inequality based on the graph.



- (0,4)
 (-7,8)
 (0,0)
 (-3,1)

8. Graph the linear inequality

$$5x - 3y \leq -15$$



9. Simplify each expression

a. $x^3y^4x^2y$

$$x^5y^5$$

b. $\frac{4y^2}{2y}$ $2y$

c. $2b^{-3}$

$$\frac{2}{b^3}$$

d. $(a^3)^3$

$$a^9$$

e. $\left(\frac{z}{x}\right)^6$

$$\frac{z^6}{x^6}$$

f. $(5x^7)^0$

$$1$$

10. Factor out the GCF

$$4x^3 + 2x^2 + 2x$$

$$2x(2x^2 + x + 1)$$

11. Factor out the GCF

$$4x^2 + 2x - 8$$

$$2(x^2 + x - 4)$$

12. Distribute (multiply)

$$(2x - 3)(x + 4)$$

$$2x^2 + 5x - 12$$

13. Distribute (multiply)

$$(x + 2)^2$$

$$x^2 + 4x + 4$$

14. Distribute (multiply)

$$2x(x^2 + 6x - 2)$$

$$2x^3 + 12x^2 - 4x$$

15. Find the axis of symmetry, the vertex, and the y-intercept

$$f(x) = -(x + 2)^2 + 1$$

$$x = -2$$

vertex $(-2, 1)$
y-int $(0, -3)$

16. Find the zeros, the axis of symmetry, the vertex, and the y-intercept

$$f(x) = (x + 4)(x - 2)$$

Zeros: $-4, 2$
axis: $x = -1$
y-int: $(0, -8)$

17. Find the axis of symmetry, the vertex, and the y-intercept

$$f(x) = x^2 - 4x - 3$$

$$x = 2$$

$(2, -7)$ vertex
 $(0, -3)$ y-int

18. Use zero product property to solve the equation

$$(2x - 3)(4x + 5) = 0$$

$$x = \frac{3}{2}, -\frac{5}{4}$$

19. Solve using square roots

$$x^2 + 4 = 20$$

$$x = \pm 4$$

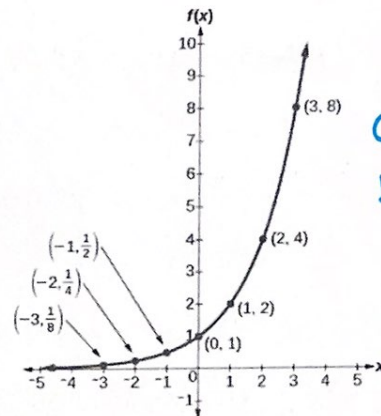
20. State the factor and the initial value for the table

X	y
-1	5
0	20
1	80
2	320

$$a = 20$$

$$b = 4$$

21. State the factor and the initial value for the graph



$$a = 1$$

$$b = 2$$

Level 3

22. Cameron bought tickets to the movies for a group of adults and children. He needs to know **how many adult tickets** and **how many children's tickets** he bought. He knows he bought a total of 15 tickets. He also knows that adult tickets are \$15 and children's tickets are \$10 and that he spend a total of \$180.

a. Write a system of equations for the situation

x : number of adult tickets
 y : number of children's tickets

b. Solve the system using any method

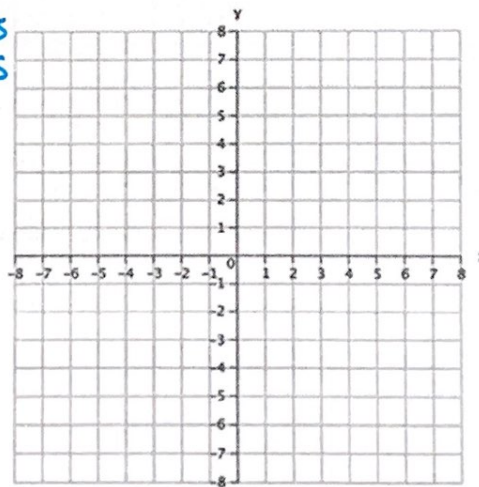
$$\begin{cases} x + y = 15 \\ 15x + 10y = 180 \end{cases}$$

23. Solve the system of linear inequalities by graphing.

$$y > 2x - 2$$

$$3x + y \leq 1$$

graph and shade



24. Sue works two jobs. She makes \$3 per hour cutting lawns and \$5 per hour baby-sitting. She needs to make at least \$60 per week, but she cannot work more than 15 hours a week. Write a system of inequalities to represent the number of hours she can work.

25. Evaluate the expression when $x = 2$ and $y = 1$

$$-2y^2x^3$$

26. Simplify

$$\left(\frac{3m^{10}y^4}{m^5}\right)^3$$
$$27m^{15}y^{12}$$

27. Simplify

$$\frac{4(5x^3y)^0y^3}{xy^{-2}}$$
$$\frac{4y^5}{x}$$

28. Factor

$$2x^2 + 11x + 12$$

$$(2x + 3)(x + 4)$$

29. Factor

$$x^2 - 4x - 12$$

$$(x - 6)(x + 2)$$

30. Factor

$$3x^2 - 7x + 2$$

$$(3x - 1)(x - 2)$$

31. Factor

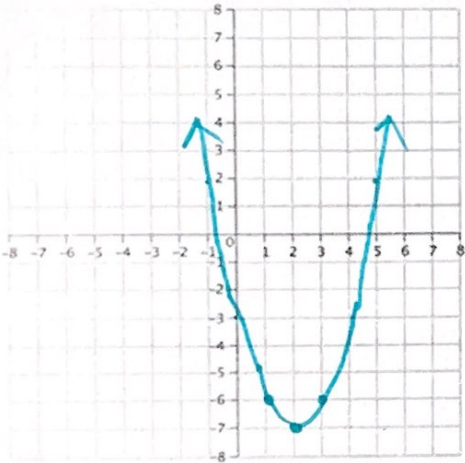
$$2x^2 + 3x - 20$$

$$(2x - 5)(x + 4)$$

32. Graph

$$f(x) = x^2 - 4x - 3$$

$$x = -\frac{b}{2a} \text{ axis of symmetry}$$



33. Solve by factoring

a. $x^2 + 5x + 6 = 0$

$$x = -3, -2$$

b. $6x^2 + 7x = 3$ $x = -\frac{3}{2}, \frac{1}{3}$

34. Solve using the quadratic formula

$$x^2 + 4x - 3 = 0$$

$$x = \frac{-4 \pm \sqrt{28}}{2}$$

35. Solve using the quadratic formula.

$$4x^2 - 8x = -3$$

$$x = \frac{1}{2}, \frac{3}{2}$$

36. An initial investment of \$900 and increases in value 4.2% each year. Write an equation to model this situation where x is the number of years and y is the value.

Initial value (a) = _____

Factor (b) = _____

Equation: $y = 900(1.042)^x$

What will be the value be in 6 years?