

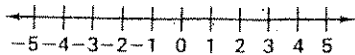
**ALGEBRA CONCEPTS  
FINAL EXAM**

NAME \_\_\_\_\_

*Review*

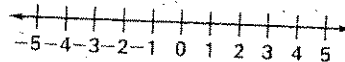
**1. Graph the inequality.**

$x > -2$



**2. Solve the inequality and graph.**

$x + 7 \leq 3$



**3. Solve the inequality.**

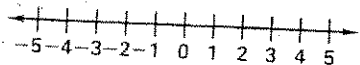
$2x - 5 \geq 27$

**4. Solve the inequality.**

You are at the music store to buy some CDs. You have \$40 to spend and the store sells CDs for \$6.99 each. Write an inequality that represents the number of CDs that you can buy without spending more money than you have.

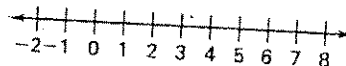
**5. Write an inequality that represents the statement and graph the inequality.**

$x$  is less than  $-2$  and greater than or equal to  $-5$



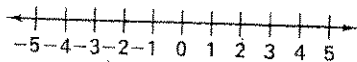
**6. Solve the inequality and graph its solution.**

$-2 < x - 6 \leq 1$



**7. Solve the inequality and graph its solution.**

$x - 7 < -10$  or  $x + 2 > 2$



**8. Solve the equation.**

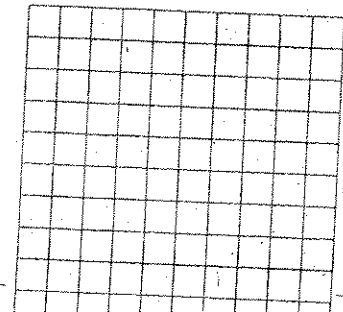
$|x| = 7$

**9. Is the ordered pair a solution?**

$x + y > -2$ ;  $(3, 0)$

**10. Graph the inequality.**

$x \geq -2$



<p><b>11. Check whether the ordered pair is a solution.</b></p> $x + y = 5 \quad (0, 5)$ $-5x + 2y = 10$	<p><b>12. Check whether the ordered pair is a solution.</b></p> $-x + 2y = 5 \quad (-2, 1)$ $x - 3y = 4$
<p><b>13. Solve.</b></p> <p>You are selling tickets for a high school basketball game. Student tickets cost \$2 and adult tickets cost \$5. You sell 75 tickets and collect \$240. How many of each type of ticket did you sell?</p>	<p><b>14. Solve the linear system.</b></p> $x + y = 7$ $x - y = 23$
<p><b>15. Solve the linear system.</b></p> $x + y = 8$ $2x + y = 10$	<p><b>16. Solve.</b></p> <p>A music store is selling CD's for \$9.50 and \$6.50. You buy 12 CDs and spend a total of \$87. How many CDs that cost \$9.50 did you buy?</p>
<p><b>17. Tell how many solutions the system has.</b></p> $-x - y = 1$ $x + 3y = 17$	<p><b>18. Tell how many solutions the system has.</b></p> $2x + 3y = 8$ $2x + 3y = 12$
<p><b>19. Simplify the expression.</b></p> $3^5 \cdot 3^2$	<p><b>20. Simplify the expression.</b></p> $(5x^3y)^2$

<p><b>21. Simplify the expression.</b></p> $n^7 \cdot n^4$	<p><b>22. Complete the statement using &lt; or &gt;.</b></p> $(4 \cdot 9)^4 \quad ? \quad 4 \cdot 9^4$
<p><b>23. Evaluate the expression.</b></p> $6^{-4}$	<p><b>24. Rewrite with positive exponents.</b></p> $\frac{1}{4x^{-5}}$
<p><b>25. Evaluate the expression.</b></p> $\frac{7^8}{7^5}$	<p><b>26. Rewrite the number in decimal form.</b></p> $3.156 \times 10^{-5}$
<p><b>27. Rewrite the number in scientific notation.</b></p> $5,340,000$	<p><b>28. In 1998, the population of a city was 100,000. Then for next five years, the population increased by 6%, what was the population in 2003?</b></p>
<p><b>29. You buy a used truck for \$ 8,000. It depreciates at a rate of 14% per year. Find the value of the truck after 5 years.</b></p>	<p><b>30. Classify the model as exponential growth or decay.</b></p> $y = 136(0.7)^x$

31. Evaluate the expression.

$$\sqrt{144}$$

32. Evaluate the expression.

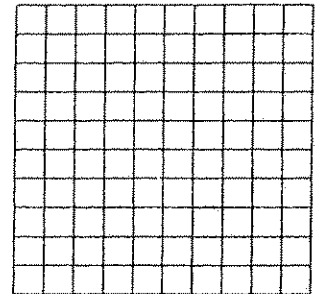
$$\sqrt{b^2 - 4ac} \text{ when } a = 8, b = 6, c = -2$$

33. Solve the equation.

$$x^2 = 36$$

34. Sketch the graph.  
Label the vertex.

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



35. Simplify the expression. (No decimals)

$$\sqrt{24}$$

36. Simplify the expression. (No decimals)

$$\sqrt{\frac{4}{49}}$$

37. Use the quadratic formula to solve the equation.

$$0 = x^2 + 6x - 16$$

38. Use the quadratic formula to solve the equation.

$$0 = x^2 - 6x + 8$$

39. Decide how many solutions the equation has.

$$x^2 - 6x + 9 = 0$$

40. Decide how many solutions the equation has.

$$x^2 + 5 = 0$$

**41. Find the sum.**

$$(2x^2 + 4x + 7) + (3x^2 - 2x - 6)$$

**42. Find the difference.**

$$(5x^2 + 6x - 8) - (2x^2 - 2x + 3)$$

**43. Find the product.**

$$(2x + 3)(3x - 6)$$

**44. Find the product.**

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

**45. Solve the equation.**

$$(x + 7)(x - 3) = 0$$

**46. Factor.**

$$2x^2 + 5x - 3$$

**47. Factor.**

$$x^2 + 12x + 32$$

**48. Factor.**

$$x^2 - 49$$

**49. Factor then solve.**

$$x^2 - 3x + 10 = 0$$

**50. Factor then solve.**

$$4x^2 + 7x + 3 = 0$$

