Cumulative Test

Chapters 1–6

Name _____

Date _____

1. Write the numbers in increasing order. **1.** _____

$0,\ -\frac{3}{5},\ \frac{5}{3},\ -\frac{2}{3},\ \frac{4}{7},\ \frac{7}{4},\ -\frac{3}{2}$.

2. State the property that is illustrated. **2.** _____

$(5 \cdot 2) \cdot 3 = 3 \cdot (5 \cdot 2)$

3. Evaluate $100 - (6)(4x) \div y$ when $x = 20$ and $y = 5$. **3.** _____

4. Use a calculator to evaluate the expression to two decimal places. **4.** _____

$9.83z - (7.16)(3.82)$ when $z = 6.62$

5. Solve the equation. **5.** _____

$3(5 + 4x) = 7 - 2(3 - 4x)$

6. Solve for t. **6.** _____

$A = P(1 + rt)$

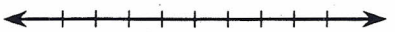
7. Solve and graph the inequality.

$2x - 5 < 3(x - 2)$

7. _____
Use graph at left.

8. Solve and graph the inequality.

$|3 - 2x| \leq 5$



8. _____
Use graph at left.

9. Write the equation of the horizontal line passing through the point $(-7, -2)$.

9. _____

10. Write the equation of the line passing through the points $(7, 1)$ and $(0, -3)$ in slope-intercept form.

10. _____

11. Which of the given lines are parallel?

$2x - 4y = 5,\ 4x + 2y = 5,\ x - 2y = 5$

11. _____

12. ***Bicycling*** At 12 noon two bicyclists going in the same direction are 15 miles apart. At 2:30 P.M. they are 10 miles apart. Write an equation for the distance, D (in miles), separating the bicyclists in terms of the time t. (Assume $t = 0$ at 12 noon.)

12. _____

13. The values of x and y vary *directly*. $y = 18$ when $x = 4$. Write an equation that relates the variables.

13. _____

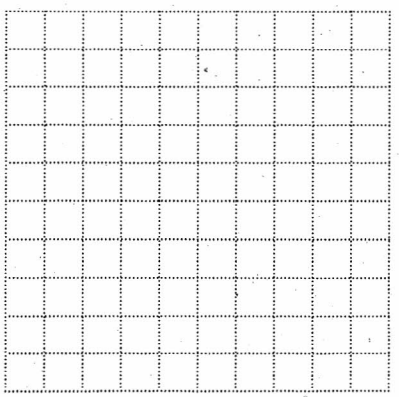
14. Is the ordered pair (6, 7) a solution of the inequality?

$5x - 3y \leq 7$

14. _____

15. Sketch the graph of the inequality.

$y \geq \frac{3}{2}x + 3$



15. *Use graph at left.*

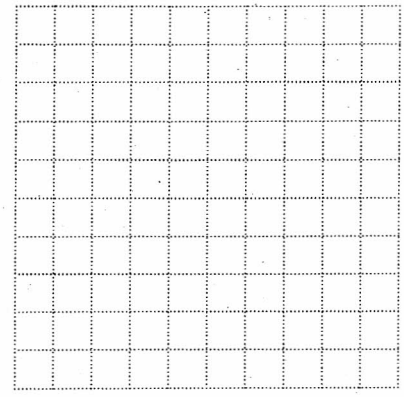
16. Evaluate $5 - 3|2 - 4x|$ when $x = 2$.

16. _____

17. Sketch the graph of the equation.

$$y = 3 - |2x - 1|$$

Label the vertex.



17. *Use graph at left.*

18. Are there none, one, or many solutions to the system?

$$\begin{cases} \frac{1}{2}x - 3y = 2 \\ 2x - 12y = 8 \end{cases}$$

18. _____

19. Solve the system of linear equations.

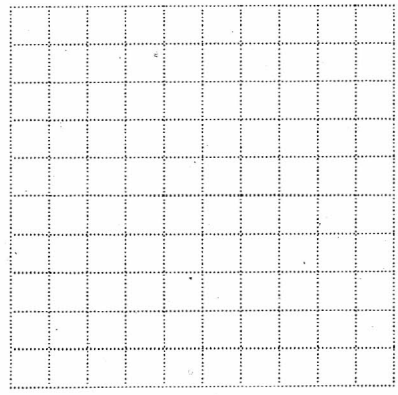
$$\begin{cases} 3x + 6y = 4 \\ 2x - 3y = -4 \end{cases}$$

19. _____

20. Graph the system of linear inequalities and find the maximum value of C under the constraints.

$C = -4x + 7y$ Constraints

$$\begin{cases} y \leq \frac{1}{2}x + 1 \\ y \geq -1 \\ x \leq 3 \end{cases}$$



20. _____

Use graph at left.

21. Evaluate the binomial coefficient. $\binom{8}{4}$

22. Expand $(2s - 3t)^3$

23. What is the coefficient of the x^7y^3 term of the expansion $(x+y)^{10}$?

24. A AND B ARE INDEPENDENT EVENTS.
$P(A) = 0.6$
$P(B) = 0.8$
FIND $P(A \cap B)$

25. Consider all families that have five children. If one family is chosen at random, what is the probability that all five children are boys?

26. A jar contains 21 green marbles and 30 yellow marbles. One marble is withdrawn and the color noted. It is then returned the jar and mixed in, and then another marble is withdrawn. What is the probability that both marbles are green?

27. [redacted] solve the system. **27.** _____

$$\begin{cases} x + y + z = -2 \\ 3x - y + 2z = 1 \\ 2x - 2y - z = 9 \end{cases}$$

28. [redacted] solve the linear system. **28.** _____

$$\begin{cases} 5x - 4y = 8 \\ 2x + 7y = -3 \end{cases}$$

29. Solve the equation. **29.** _____

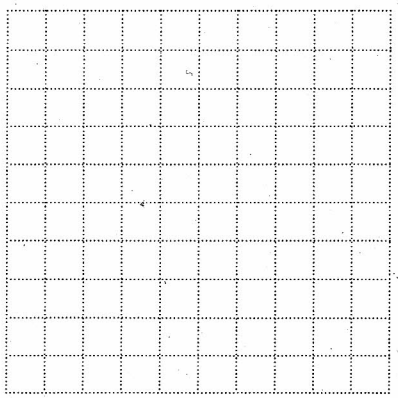
$$5x^2 - 8 = 22$$

30. Solve the equation. **30.** _____

$$3x^2 + 5x - 1 = 0$$

31. Sketch the graph of the parabola. Label the vertex. **31.** *Use graph at left.*

$$y = -x^2 + 4x - 1$$



32. Solve the equation. Round your result to two decimal places. **32.** _____

$0.3x^2 - 0.21x - 0.14 = 0$

33. Simplify $(2i)^2 - (3i)(i^2)$. **33.** _____

34. Perform the indicated operations and simplify. **34.** _____

$(3 - 2i)(4 - i) + (-2 - 5i)$

35. Solve the equation. **35.** _____

$4x^2 + x + 1 = 0$

36. Is the relation a function? If so, find its inverse. **36.** _____

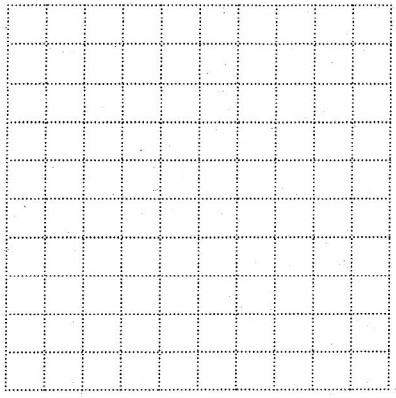
$(-2,\ 4), (-1,\ 3), (1,\ 2), (2,\ 1)$

37. $f(x) = 1 - 3x;\ g(x) = \frac{1}{3}x + 1.$ **37.** _____

Find $f(x) \cdot g(x)$ and $f(g(x))$.

38. Find the inverse of the function and graph both on the same coordinate axes.

$f(x) = -\frac{1}{3}x - 1$



38. *Use graph at left.*

39. Evaluate $f(3)$.

$$f(x) = \begin{cases} x^2 - 3, & x \leq 2 \\ 3x - 5, & x > 2 \end{cases}$$

39. _____

40. Write $f(x) = |3x - 6|$ as a compound function.

40. _____

41. How is the graph of $f(x) = (x - 1)^2$ obtained from the graph of $g(x) = x^2$?

41. _____

42. Find the first four values of the recursive function.

$f(1) = 3;\ f(n) = f(n - 1) + 2n$

42. _____

43. Find the mean, median, and mode of the data given below.

10, 5, 8, 7, 7, 9, 6, 11, 7, 10, 12

43. _____