Name _____ Class _____ Date _____

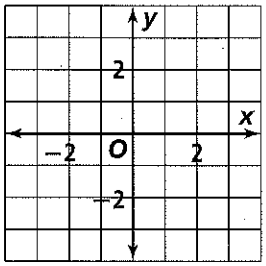
Quarter 3 Test — Form B

Chapters 7–9

Solve each system by graphing.

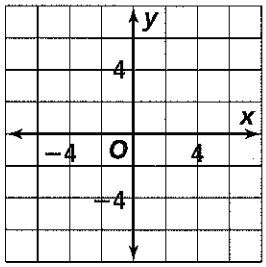
1. $y = -\frac{1}{2}x + 3$

$y = 3x - 4$



2. $y < 6x + 1$

$y \geq -2x - 3$



3. Solve the system using any method.

$-x + 2y = -2$

$3x + 6y = 12$

Write a system of equations to model each situation. Solve by any method.

4. Martin charges \$30 for private tutoring and \$22 for a group tutoring session. One day in February, Martin earned \$378 from 15 students. How many students of each type did Martin tutor?

5. A collection of nickels and dimes is worth \$1.85. There are 22 coins in all. How many of each coin are there?

Simplify each expression.

6. $\frac{a^4b^{-5}}{ab^3}$

7. $6x \cdot 5y^4 \cdot 3x^7$

8. $(x^{-3})^6(9xy^2)^3$

9. Write 0.000000724 in scientific notation.

10. Write the following in order from least to greatest. 0.039×10^7, 319, 39.1×10, 3.19×10^5.

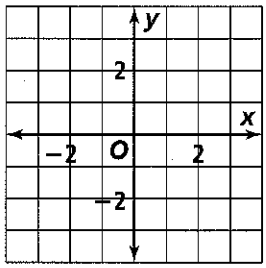
11. Which equation could you use to find the next term in the pattern 4, 8, 16, 32, . . . ?

A. $A(n) = 4^{n-1}$ **B.** $A(n) = 4(2)^{n-1}$

C. $A(n) = 4 \cdot 2n$ **D.** $A(n) = 4n^2$

12. Evaluate $y = 5 \cdot 2^x$ for $x = 1, 2$, and 3.

13. Use a table to graph the function $y = 0.1 \cdot 3^x$ with domain $\{-2, -1, 0, 1, 2\}$.



Name _____ Class _____ Date _____

Quarter 3 Test (continued) Form B

Chapters 7–9

Simplify. Write each answer in standard form.

14. $(7x^3 - 3x^2 + 4) - (x^2 + 2)$

15. $(8x^5 + 6x^4 - 3x^2 - 5) + (7x^4 + 3x^2 - 2)$

Simplify each product. Write in standard form.

16. $5x(6x^5 - 3x^2)$

17. $(x - 8)(x - 9)$

18. $(2x + 3)(x^2 - 2x + 1)$

19. Write an expression for the situation as a product. Then, write in standard form. The height of a box is 5 in. less than its width w. The length of the box is 4 in. more than 5 times its width. What is the volume of the box in terms of w?

Factor each expression.

20. $x^2 + 2x - 24$

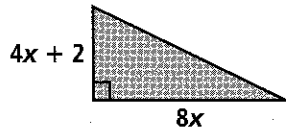
21. $x^2 - 324$

22. $12x^7 + 6x^4 - 30x^2$

23. $2x^2 - 2x - 12$

24. $5x^2 + 10x - x - 2$

25. Write an expression for the area of the shaded region. Write your answer in simplest form.



26. **Open-Ended** Write a trinomial with degree 7.

Solve.

27. Which value of b will make the graphs of $y = 2x + b$ and $y = x + 6$ intersect at $(-1, 5)$?

28. What would the value of n be, when $(x + n)^2$ are the factors of $x^2 + 8x + 16$?

29. A seniors group would like to take a trip. They have both buses and vans. If they take 2 buses and 2 vans they can transport 28 people. If they take 1 bus and 5 vans they can transport 30 people.

a. How many people can be transported in each type of vehicle?

b. Write a combination of cars and vans to transport the whole group of 68 seniors, taking the least number of full vehicles.

30. **Writing** Is $(-2, 1)$ a solution of $y \leq 4x + 3$? Explain why or why not.