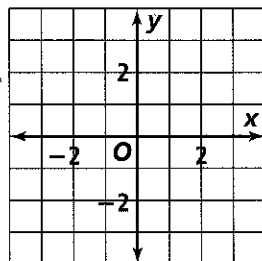# Quarter 3 Test

Form A

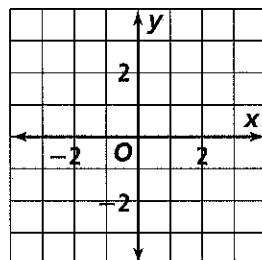*Chapters 7–9*

Solve each system by graphing.

1. $y = -x + 5$
   $y = 2x - 4$

2. $y > 5x + 1$
   $y \leq -x + 3$

3. Solve the system using any method.
   $6x - 18y = 60$
   $9x + 2y = 32$

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

4. Lisa charges $25 for private tutoring and $18 for a group tutoring session. One day in January, Lisa earned $265 from 12 students. How many students of each type did Lisa tutor?

5. A collection of quarters and nickels is worth $1.25. There are 13 coins in all. How many of each coin are there?

Simplify each expression.

6. $\dfrac{a^5 b^{-3}}{a^2}$

7. $4y^3 \cdot 7x^2 \cdot 9y^9$

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

9. Write 3,463,000,000 in scientific notation.

10. Write the following in order from least to greatest. $4.72 \times 10^5, 42.7 \times 10^2, 472, 0.0427 \times 10^7$.

11. Which equation could you use to find the next term in the pattern $6, 18, 54, 162, \ldots$?
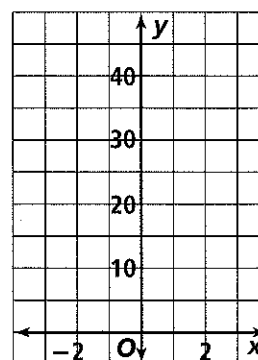   **A.** $A(n) = 6n^2$ **B.** $A(n) = 6 \cdot 3n$
   C. $A(n) = 6^{n-1}$ **D.** $A(n) = 6(3)^{n-1}$

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

13. Use a table to graph the function $y = 3 \cdot 4^x$ with domain $\{-2, -1, 0, 1, 2\}$.

Quarter 3 Test (continued)   Form A

Simplify. Write each answer in standard form.

14. $(4x^3 + 3x^2 - 5x) - (x^3 - 11x^2 + 8)$

15. $(5x^4 - 3x^3 + 6x) + (3x^3 - 11x^2 - 8x)$

Simplify each product. Write in standard form.

16. $3x(4x^4 - 5x)$

17. $(x - 5)(x + 6)$

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

19. Write an expression for the situation as a product. Then, write in standard form. The height of a box is 4 in. less than its width *w*. The length of the box is 6 in. more than 8 times its width. What is the volume of the box in terms of *w*?
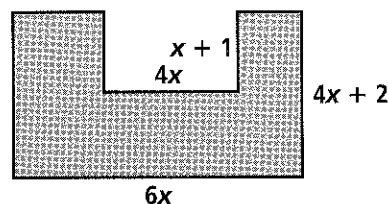
Factor each expression.

20. $x^2 + 5x - 6$

21. $x^2 - 625$

22. $8x^8 - 4x^4 + 12x^2$

23. $4x^2 - 16x - 84$

24. $2x^2 + 5x - 8x - 20$

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 5.

Solve.

27. Which value of *b* will make the graphs of $y = \frac{1}{2}x + 1$ and $y = -3x + b$ intersect at $(2, 2)$?

28. What would the value of *n* be, when $(x - n)^2$ are the factors of $x^2 - 12x + 36$?

29. An eighth grade class has planned a field trip to a local museum. If they take 4 vans and 1 car they can transport 28 students. If they take 2 vans and 5 cars they can transport 32 students.

   a. How many people can be transported in a van and in a car?

   b. Write a combination of cars and vans to transport the whole class of 40 students, taking the least number of full vehicles.

30. Writing Is $(3, 10)$ a solution of $y \geq 5x - 8$? Explain why or why not.