

MidTerm Review: Ch 7-9

Multiple Choice

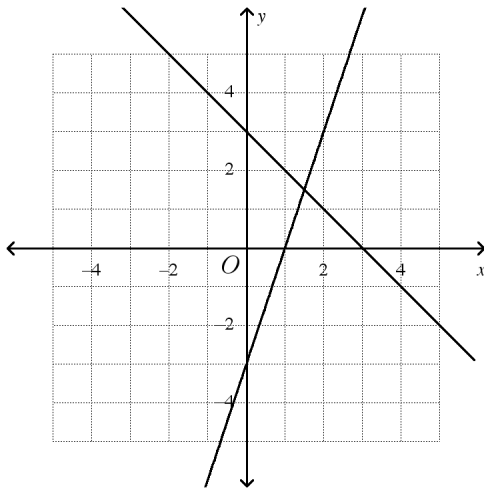
Identify the letter of the choice that best completes the statement or answers the question.

_____ 1. Which graph represents the following system of equations?

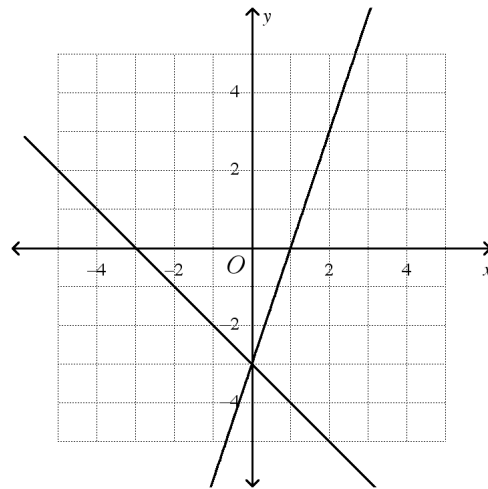
$$y = 3x + 3$$

$$y = -x - 3$$

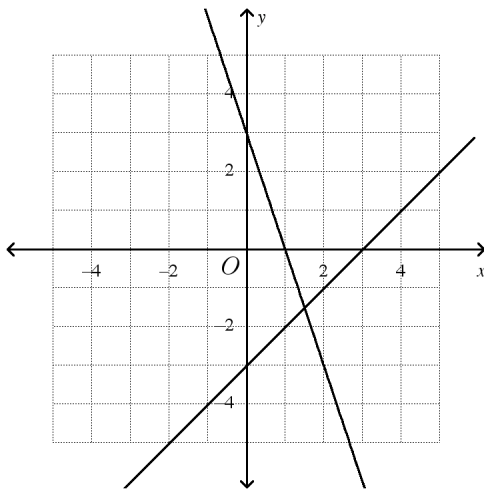
a.



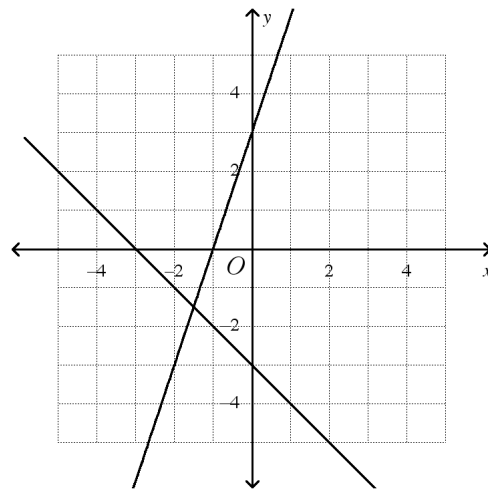
c.



b.



d.



_____ 2. Which number is NOT written in scientific notation?

- a. 3×10^{-8} b. 6.7×10^3 c. 8.7×10^{-5} d. 25.67×10^{-2}

_____ 3. Which number is written in scientific notation?

- a. 7.8×10^{-5} b. 3.4×100^2 c. 0.84×10^6 d. -5×10^{-12}

_____ 4. Which list shows the numbers in order from least to greatest?

- a. $5.4 \times 10^4, 5.4 \times 10^3, 4.5 \times 10^4$ c. $5.4 \times 10^3, 5.4 \times 10^4, 4.5 \times 10^4$
 b. $5.4 \times 10^3, 4.5 \times 10^4, 5.4 \times 10^4$ d. $4.5 \times 10^4, 5.4 \times 10^3, 5.4 \times 10^4$

Short Answer

5. Tom has a collection of 30 CDs and Nita has a collection of 18 CDs. Tom is adding 1 CD a month to his collection while Nita is adding 5 CDs a month to her collection. Write and graph a system to find the number of months after which they will have the same number of CDs. Let x represent the number of months and y the number of CDs.
6. Find a solution to the following system of equations.
- $$\begin{aligned} -5x + y &= -5 \\ -4x + 2y &= 2 \end{aligned}$$
7. Solve the following system of equations by graphing.
- $$\begin{aligned} -4x + 3y &= -12 \\ -2x + 3y &= -18 \end{aligned}$$
8. What is the solution of the system of equations?
- $$\begin{aligned} y &= 3x + 7 \\ y &= x - 9 \end{aligned}$$

Graph each system. Tell whether the system has *no solution*, *one solution*, or *infinitely many solutions*.

9. $y = 5x - 4$
 $y = 5x - 5$
10. The length of a rectangle is 3 centimeters more than 3 times the width. If the perimeter of the rectangle is 46 centimeters, find the dimensions of the rectangle.

Solve the system of equations using substitution.

11. $y = 2x + 3$
 $y = 3x + 1$
12. $y = x + 6$
 $y = -2x - 3$
13. $y = 4x + 6$
 $y = 2x$
14. $3x + 2y = 7$
 $y = -3x + 11$
15. Sharon has some one-dollar bills and some five-dollar bills. She has 14 bills. The value of the bills is \$30. Solve a system of equations using elimination to find how many of each kind of bill she has.

Solve the system using elimination.

16. $2x - 2y = -8$
 $x + 2y = -1$

17. $5x + 8y = -29$
 $7x - 2y = -67$

18. $3x - 4y = 9$
 $-3x + 2y = 9$

19. By what number should you multiply the first equation to solve using elimination?
 $-3x - 2y = 2$
 $-9x + 3y = 24$

Graph the inequality.

20. $y < 4x - 2$

21. $3x - 7y < -21$

22. $y > -5x + 3$

23. Find a solution of the linear inequality.
 $y \geq 4x - 5$

24. You have \$47 to spend at the music store. Each cassette tape costs \$5 and each CD costs \$10. Write and graph a linear inequality that represents this situation. Let x represent the number of tapes and y the number of CDs.

Solve the system of linear inequalities by graphing.

25. $y \leq -x - 1$
 $y \geq 2x + 4$

Simplify the expression.

26. $(-8.6)^0$

27. $(4)^{-2}$

28. $7a^{-5}b^3$

29. $5^{-3} \cdot 7^0$

30. $2k^8 \cdot 3k^3$

31. $a^5 \cdot 3b^9 \cdot 6a$

32. $(k^2)^4$

33. $(x^9)^0(x^7)^2$

34. $(5k^2)^3$

35. $(-5g^5h^6)^2(g^4h^2)^4$

36. $\frac{3^7}{3^5}$

37. $\frac{x^{14}}{x^7}$

38. $\frac{x^5}{x^9}$

39. $\frac{m^{-6}n^{-3}}{m^{-13}n^{-1}}$

40. Evaluate $9x^2y^{-2}$ for $x = -3$ and $y = 2$.41. Evaluate $\frac{1}{2^{-2}x^{-3}y^5}$ for $x = 2$ and $y = -4$.

42. Chase scored 14 points on Monday, and he doubled his score each day thereafter. How many points did he score on Thursday?

Write the number in scientific notation.

43. 8,670,000,000

44. 0.0805

Write the number in standard notation.45. 9×10^4 46. 9.07×10^{-2} **Simplify the expression. Write the answer using scientific notation.**

47. $8(8.8 \times 10^{12})$

48. $(9 \times 10^7)(7 \times 10^9)$

Find the common ratio of the sequence.

49. 2, -10, 50, -250, ...

50. -164, -82, -41, -20.5, ...

51. Find the next three terms of the sequence 3, 9, 27, 81, ...

Determine whether the sequence is *arithmetic* or *geometric*.

52. $-2, 10, -50, 250, \dots$
53. Write the polynomial in standard form.

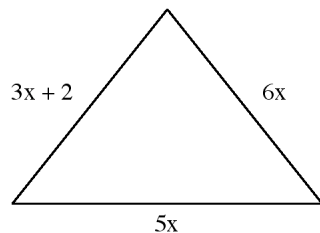
$$4g - g^3 + 3g^2 - 2$$

Find the degree of the monomial.

54. $6x^8y^5$
55. Match the expression with its name.

$$6x^3 - 9x + 3$$

56. Write the perimeter of the figure.



not to scale

Simplify the difference.

57. $(-7x - 5x^4 + 5) - (-7x^4 - 5 - 9x)$
58. $(4w^2 - 4w - 8) - (2w^2 + 3w - 6)$
59. Simplify the sum.

$$(4u^3 + 4u^2 + 2) + (6u^3 - 2u + 8)$$

Simplify the product.

60. $8x^2(4x^2 + 4y^6)$
61. $7a^3(5a^6 - 2b^3)$

Factor the polynomial.

62. $40w^{11} + 16w^6$

63. Find the GCF of the terms of the polynomial.

$$8x^6 + 32x^3$$

Simplify the product using FOIL.

64. $(4x + 3)(2x + 5)$

65. Simplify the product FOIL.

$$(5h - 5)(5h - 6)$$

66. Simplify.

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

Find the square.

67. $(8m + 7)^2$

Find the product.

68. $(j + 7)(j - 7)$

69. $(2n + 2)(2n - 2)$

70. $(4p - 6)(4p + 6)$

71. $(4m^2 - 5)(4m^2 + 5)$

72. Order 34×10^2 , 1.2×10^7 , 8.11×10^{-3} , and 435 from least to greatest.

73. Solve the equation. Show your work.

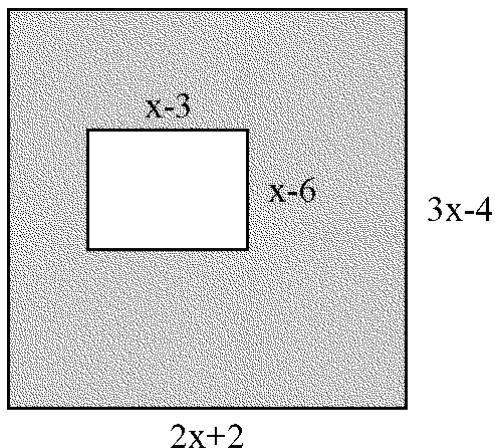
$$16^3 = 4^x$$

Essay

74. Niki has 8 coins worth \$1.40. Some of the coins are nickels and some are quarters.
- Let q = the number of quarters and n = the number of nickels. Write an equation relating the number of quarters and nickels to the total number of coins.
 - Write an equation relating the value of the quarters and the value of the nickels to the total value of the coins.
 - How many of each coin does Niki have?
75. Write the answer in scientific notation.

A virus has a volume of approximately 4.7×10^{-14} cubic centimeters. Calculate the estimated volume of 4.1×10^{16} viruses. Show your work.

76. Find the area of the shaded region. Show all your work.



Other

77. Without solving, what method would you choose to solve the system: *graphing*, *substitution*, or *elimination*? Explain your reasoning.

$$y = 4x + 5$$
$$6x + 11y = 13$$

78. Tickets to a local movie were sold at \$6.00 for adults and \$4.50 for students. There were 240 tickets sold for a total of \$1,155.00.
- Write a system of equations to model the situation.
 - Solve the system to find the number of adult tickets sold and the number of student tickets sold.
 - Explain the method you used to solve the system.

79. Without graphing, decide whether the system has *one solution*, *no solution*, or *infinitely many solutions*. Explain.

$$y = -3x + 4$$
$$y = 3x + 8$$

80. Explain how to write $\frac{8a^9}{125a^6}$ as an expression with only one exponent.