

MATH A UNIT 3 REVIEW

INSTRUCTIONS:

Show all of your work on separate paper, do not write answers on this review sheet. Number each problem in order on your paper and box your answers. Follow directions for each problem.

I. Solve each system of equations by Graphing (*include a scale*). (See sections 4.1 – 4.3)

$$1) \begin{cases} x + 2y = 2 \\ x - y = 2 \end{cases}$$

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

$$3) \begin{cases} x + 2y = 5 \\ 3x + 6y = 6 \end{cases}$$

II. Solve each system of equations by the Substitution Method. (See sections 4.1 – 4.3)

$$4) \begin{cases} 2x - 5y = -1 \\ 3x + y = 7 \end{cases}$$

$$5) \begin{cases} 2x - y = 10 \\ -4x - y = 4 \end{cases}$$

$$6) \begin{cases} 4x - 3y = -5 \\ 2x + y = -5 \end{cases}$$

III. Solve each system of equations by the Addition (aka Elimination) Method. (See sections 4.1 – 4.3)

$$7) \begin{cases} 2x - 5y = -1 \\ 3x + y = 7 \end{cases}$$

$$8) \begin{cases} 5x - 3y = 6 \\ 2x + 5y = -10 \end{cases}$$

$$9) \begin{cases} 6x - 5y = 9 \\ -2x + 3y = -7 \end{cases}$$

IV. Do the following problems. (See section 4.4)

- 10) One Snickers bar and two Reese's Peanut Butter Cups contain 737 calories. Two Snickers bars and one Reese's Peanut Butter Cup contain 778 calories. Find the caloric content of each candy bar.
- 11) A restaurant purchased eight tablecloths and five napkins for \$106. A week later, a tablecloth and six napkins were bought for \$24. Find the cost of one tablecloth and the cost of one napkin, assuming the same prices for both purchases.
- 12) Health experts agree that cholesterol intake should be limited to 300 milligrams or less each day. Three ounces of shrimp and 2 ounces of scallops contain 156 milligrams of cholesterol. Five ounces of shrimp and 3 ounces of scallops contain 45 milligrams of cholesterol less than the suggested maximum daily intake. Determine the cholesterol content in an ounce of each item.

V. Perform the indicated operation. (See section 5.1)
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13) $(-x^2 + x - 9) - (-x^2 - x + 2)$

14) $-(-a^3 - a^2 + 10) - (-a^2 - a - 3) + (3a^3 - 4a - 1)$

15) $\left(-m^2 - m - \frac{1}{2}\right) - (3 - m^2 - m) - \left(3m^2 - \frac{2}{3}m - 1\right)$

16)
$$\frac{y^3 + 2y^2 - 7y - 3}{-y^3 - 6y^2 - 8y + 11}$$

17)
$$\frac{7y^5 - 3y^3 + y^2}{2y^3 - y^2 - 4y - 3}$$

18)
$$\frac{\frac{1}{4}x^4 - \frac{2}{3}x^3 - 5}{-\frac{1}{2}x^4 + \frac{1}{5}x^3 + 4}$$

VI. Find each product. (See sections 5.2 – 5.4)
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19) $-a^2(2a^2 + 6a - 13)$

20) $14a(-2a^3 + a^2 - 3a - 10)$

21) $(2p - 5)(3p + 2)$

22) $(x - 3)(2x - 1)$

23) $(3x - 1)(x - 3)$

24) $(2x - 3)^2$

25) $(x - 7y)^2$

26) $(2x + y)(2x - y)$

27) $(4x - 5y)(4x + 5y)$

VII. Find each quotient. (See section 5.5)

28) $\frac{-8x^2y^5}{-2xy^3}$

29) $\frac{18a^{13}b^7c^2}{-3a^4b^7c}$

30) $\frac{-64x^3y^{12}}{16xy^2}$

31) $\frac{-4p^{22}v^2}{10p^{22}v^2}$

32) $\frac{-20x^4 + 4x^3 - 8x^2}{-4x^2}$

33) $\frac{18a^3b^2 - 6a^2b^2 + 90ab^2}{-6ab^2}$

34) $\frac{10a^3b^6 - 20a^2b^{10} + 3a^2b^6}{5a^2b^6}$

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VIII. Use long division to find each quotient. (See section 5.6)

35) $\frac{x^3 - 6x^2 + 9x - 5}{x - 4}$

36) $\frac{a^3 - 2a^2 + 3}{a - 1}$

37) $\frac{2x^3 - 7x^2 - x - 6}{2x - 1}$

IX. Convert each number in scientific notation to a number in decimal notation. (See section 5.7)

38) 4.32×10^{-3}

39) 2.19×10^7

40) 3.75×10^{-2}

X. Convert each number in decimal notation to a number in scientific notation. (See section 5.7)

41) 443,000,000

42) 0.00089

43) 0.2345

XI. Perform each computation without using a calculator. Write your answer in scientific notation. (See section 5.7)

44) $(4.0 \times 10^2)(3.0 \times 10^{-4})$

45) $(8.0 \times 10^{-3})(8.0 \times 10^{-3})$

46) $\frac{3.6 \times 10^9}{7.2 \times 10^{-15}}$

XII. Simplify each expression. Write answers with positive exponents only. (See sections 5.5, 5.7)

47) -3^{-4}

48) 4^{-2}

49) $9^0 - 5x^0$

50) $-2^0 + (-2x)^0$

51) $\frac{7^{-2}}{2^{-4}}$

52) $\frac{3^{-3}}{9^{-2}}$

53) $\frac{4}{7x^{-5}}$

54) $\frac{2}{5y^{-3}}$

55) $x^{-8} \cdot x^3$

56) $a^{-4} \cdot a^{11}$

XIII. Simplify each expression. Write answers with positive exponents only. (See section 5.7)

57) $\frac{3x^5 \cdot x^8}{7x^3}$

58) $\frac{9x^3 \cdot x^9}{2x^7}$

59) $\left(\frac{-2y^4}{3x^5}\right)^2$

60) $\left(\frac{5t^5}{r^2}\right)^4$

61) $(x^{-4} \cdot y^2)^{-3}$

62) $(a^3 \cdot b^{-5})^{-4}$

63) $(-3x^{-8})(6x^5)$

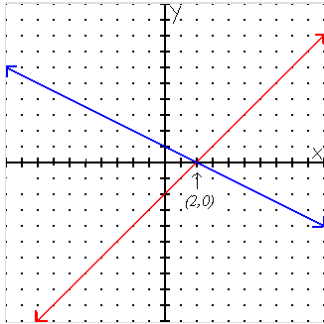
64) $(-7x^3)(2x^{-12})$

65) $(3x^{-4})^{-2}(5x^2)^3$

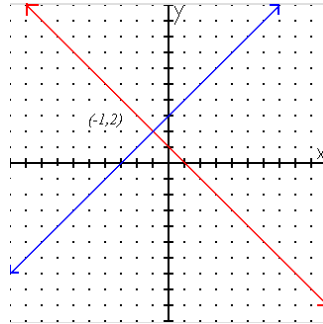
66) $(4z^{-3})^{-3}(4z)^2$

MATH A UNIT 3 REVIEW *Answers*

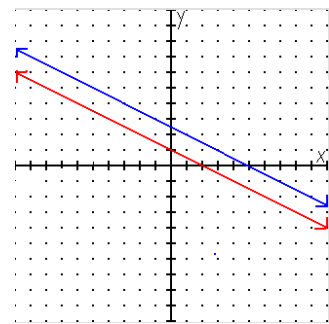
1) (2, 0)



2) (-1, 2)



3) No solution



4) (2, 1)

5) (1, -8)

6) (-2, -1)

7) (2, 1)

8) (0, -2)

9) (-1, -3)

10) Snickers contains 273 calories and Reese's contains 232 calories

11) A tablecloth costs \$12; a napkin costs \$2

12) Shrimp contains 42 mg cholesterol; scallops contain 15 mg cholesterol

13) $2x - 11$

14) $4a^3 + 2a^2 - 3a - 8$

15) $-3m^2 + \frac{2}{3}m - \frac{5}{2}$

16) $-4y^2 - 15y + 8$

17) $7y^5 - y^3 - 4y - 3$

18) $-\frac{1}{4}x^4 - \frac{7}{15}x^3 - 1$

19) $-2a^4 - 6a^3 + 13a^2$

20) $-28a^4 + 14a^3 - 42a^2 - 140a$

21) $6p^2 - 11p - 10$

22) $2x^2 - 7x + 3$

23) $3x^2 - 10x + 3$

24) $4x^2 - 12x + 9$

25) $x^2 - 14xy + 49y^2$

26) $4x^2 - y^2$

27) $16x^2 - 25y^2$

28) $4xy^2$

29) $-6a^9c$

30) $-4x^2y^{10}$

31) $-\frac{2}{5}$

32) $5x^2 - x + 2$

33) $-3a^2 + a - 15$

34) $2a - 4b^4 + \frac{3}{5}$

35) $x^2 - 2x + 1 - \frac{1}{x-4}$

36) $a^2 - a - 1 + \frac{2}{a-1}$

37) $x^2 - 3x - 2 - \frac{8}{2x-1}$

38) 0.00432

39) 21,900,000

40) 0.0375

41) 4.43×10^8

42) 8.9×10^{-4}

43) 2.345×10^{-1}

44) 1.2×10^{-1}

45) 6.4×10^{-5}

46) 5.0×10^{23}

47) $-\frac{1}{81}$

48) $\frac{1}{16}$

49) -4

50) 0

51) $\frac{16}{49}$

52) 3

53) $\frac{4x^5}{7}$

54) $\frac{2y^3}{5}$

55) $\frac{1}{x^5}$

56) a^7

57) $\frac{3x^{10}}{7}$

58) $\frac{9x^5}{2}$

59) $\frac{4y^8}{9x^{10}}$

60) $\frac{625t^{20}}{r^8}$

61) $\frac{x^{12}}{y^6}$

62) $\frac{b^{20}}{a^{12}}$

63) $-\frac{18}{x^3}$

64) $-\frac{14}{x^9}$

65) $\frac{125x^{14}}{9}$

66) $\frac{z^{11}}{4}$