

Semester 1 Exam Review 2012-2013

Review Unit

1. What is the value of $\frac{10^2 + 8 \cdot 7}{3(14 \cdot 2 - 15)}$?

- a. $\frac{52}{23}$
 b. 4
 c. $\frac{187}{39}$
 d. $\frac{826}{39}$

$$\frac{100 + 56}{3(28 - 15)}$$

$$\frac{156}{3(13)} = \frac{156}{39}$$

$$= 4$$

Choose the statement below that is true about the given numbers.

2. Column A Column B
 $45 \div (9 - 4) + 3$ $45 \div 9 - 4 + 3$

- a. The number in column A is greater.
 b. The number in column B is greater.
 c. The two numbers are equal.
 d. The relationship cannot be determined from the given information.

3. Column A Column B

$$3^{12} \quad 3^3 \cdot 3^4 = 3^7$$

- a. The number in column A is greater.
 b. The number in column B is greater.
 c. The two numbers are equal.
 d. The relationship cannot be determined from the given information.

4. Simplify: $-\frac{1}{2} \cdot (-32) \div \left(\frac{6}{5}\right)$

5. Simplify: $\frac{3}{5} + 48 \div 4^2$

$$\frac{3}{5} + 48 \div 16$$

$$\frac{3}{5} + 3 = 3\frac{3}{5} = \frac{18}{5}$$

6. Evaluate $\frac{qr}{q+r}$ when $q = 8$ and $r = 13$.

- a. 1 b. $\frac{104}{21}$ c. $\frac{813}{21}$ d. $\frac{39}{7}$

7. Simplify $7 \times 7 + 15 - 6 \div 2$.

$$49 + 15 - 3$$

$$61$$

- a. 50 b. 61 c. 53.5 d. 29

8. Simplify $(7 \cdot 6^2 - 7 \cdot 3^2) \div (4 + 3)$.

- a. 27 b. 243 c. 189 d. 261

9. Evaluate $6y + 7 - 3x$ when $y = 3$ and $x = 4$.

$$6(3) + 7 - 3(4)$$

$$18 + 7 - 12$$

$$\boxed{13}$$

10. Order the numbers from least to greatest.

$$\frac{3}{2}, -10, 0, \frac{2}{3}, -\frac{5}{4}, 1$$

11. Find the difference: $(-10) - (-7)$

$$-10 + 7 = \boxed{-3}$$

12. Find the change in temperature from -13°C to 15°C

- a. -28°C c. -2°C
 b. 2°C d. 28°C

13. Simplify the expression $(-7) + 6 + [-(2 - 3)]$.

$$-7 + 6 + [-(-1)]$$

$$-1 + 1 = \boxed{0}$$

14. Evaluate the expression $17 - (-x) - |-10|$ when $x = 3$.

15. Identify the product that will be negative.

- a. $(2)(3)(4)(5)$ e. $(2)(-3)(-4)(5)$
 b. $(-2)(-3)(-4)(-5)$ **d. $(-2)(-3)(-4)(5)$**

16. Find the product $(-8) \cdot |-10|$.

Find the quotient:

17. $12 \div \left(-\frac{4}{9}\right)$ $3 \cancel{2} \cdot \frac{-9}{4} = -27$

- a. $\frac{1}{27}$ b. $\frac{3}{9}$ c. $\frac{9}{4}$ **d. -27**

18. $8 \div 2\frac{2}{3}$

- a. 3 b. $21\frac{1}{3}$ c. $\frac{2}{3}$ d. $\frac{3}{64}$

Solve the equation:

19. $8x - 9 = x + 9$
 $7x - 9 = 9$ $x = \frac{18}{7}$
 $7x = 18$
a. $\frac{18}{7}$ b. $\frac{18}{7}$ c. $\frac{7}{18}$ d. $\frac{1}{8}$

20. $x - 7 = -2x - 5$

21. $5 - 6\left(2x + \frac{7}{4}\right) = 3x - \frac{5}{2}$ $5 - 12x - \frac{21}{2} = 3x - \frac{5}{2}$
 $10 - 24x - 21 = 6x - 5$
 $-11 - 24x = 6x - 5$
 $-6 = 30x$
 $\frac{-6}{30} = \frac{30x}{30}$
 $x = -\frac{1}{5}$

22. $5x + 14 - 2x = 9 - (4x + 2)$

$\frac{-6}{30} = \frac{30x}{30}$

23. $\frac{18}{x-2} = \frac{4}{3}$ $54 = 4(x-2)$
 $54 = 4x - 8$ **$x = 15.5$**
 $\frac{62}{4} = \frac{4x}{4}$

24. $\frac{3}{x-4} = \frac{5}{x}$

25. $14.2y - 12.5 = 6.4y - 13.7$
 $7.8y = 26.2$
 $y = 3.36$

26. One video rental club charges \$25 to become a member and \$2.50 to rent each video. Another charges no membership fee, but charges \$3.25 to rent each video. How many videos must you rent to make the first club the better deal?

27. Valerie sold 42 tickets to the school play and Mark sold 24 tickets. What is the ratio of the number of tickets Valerie sold to the number of tickets Mark sold?

- a. 7 to 4** c. 24 to 42 $\frac{42}{24} = \frac{7}{4}$
 b. 6 to 4 d. 6 to 7

28. Two machines can complete 5 tasks every 4 days. Let t represent the number of tasks these machines can complete in a 31-day month. Which proportion can you use to find the value of t ?

- a. $\frac{31}{10} = \frac{t}{4}$ c. $\frac{5}{4} = \frac{t}{31}$
 b. $\frac{4}{31} = \frac{t}{5}$ d. $\frac{4}{5} = \frac{t}{31}$

29. A bus travels 300 miles on 12 gallons of gas. At this rate, how many gallons will it need to travel 650 miles?

$\frac{300}{12} = \frac{650}{x}$ $300x = 7800$
 $x = 26$

- a. 25 gallons c. 5.5 gallons
b. 26 gallons d. 28 gallons

30. A cyclist can travel 29.6 miles in 2 hours. At this rate, how far can the same cyclist travel in 45 minutes?

- a. 14.8 miles c. 11.1 miles
 b. 22.2 miles d. 16.2 miles

31. In 2 hours a candymaker can produce 80 boxes that each contain 10 pieces of candy. How many pieces of candy does the candymaker produce in 6 hours?

$$80 \cdot 10 = 800 \text{ pieces} \quad \frac{2}{800} = \frac{6}{x} \quad 2x = 4800 \quad x = 2400$$

- a. 480 pieces c. 4800 pieces
 b. 2400 pieces d. 600 pieces

32. What percent of 12 is 6?

- a. 0.5% b. $\frac{1}{2}\%$ c. 2% d. 50%

33. Of every 5 hot dogs Martha sold, 3 had sauerkraut. What percent of the hot dogs sold had sauerkraut?

$$\frac{x}{100} = \frac{3}{5} \quad 5x = 300 \quad x = 60$$

- a. 6% b. $\frac{3}{5}\%$ c. 60% d. 0.6%

34. The art students at Ridley High School designed T-shirts, caps, and sweatshirts featuring the school mascot. The art students sold them at football and basketball games. The table below shows how many of each item were sold. Approximately what percent of the sweatshirts sold were sold to non-students?

	T-shirts	Caps	Sweatshirts
Students	356	278	249
Non-Students	212	412	373

- a. 22% b. 40% c. 57% d. 60%

35. Solve $y = \frac{5}{8}b + 10$ for b .

$$8(y - 10) = \left(\frac{5}{8}b\right) \cdot 8$$

$$\frac{8y - 80}{5} = \frac{5b}{5}$$

$$\frac{8}{5}y - 16 = b$$

- a. $b = -\frac{8}{5}y + 16$ c. $b = \frac{5}{8}y - 10$

- b. $b = \frac{8}{5}y - 16$ d. $b = -\frac{5}{8}y + 10$

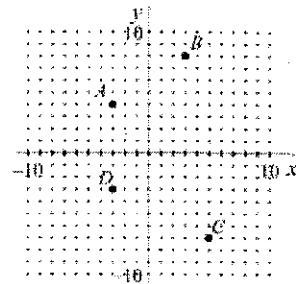
36. Solve $10q + 15r = 49$ for q .

37. Solve $-9p - 5m = 60$ for p .

$$\frac{-9p}{-9} = \frac{5m + 60}{-9}$$

$$p = -\frac{5}{9}m - \frac{10}{3}$$

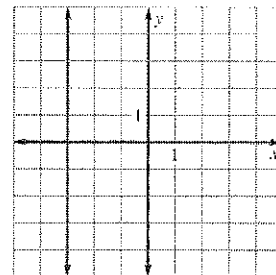
38. Name the coordinates of the points A, B, C, and D.



39. Find the slope of the line passing through the points A(-1, 1) and B(4, -5). $m = \frac{-6}{5}$

- a. $-\frac{6}{5}$ b. $\frac{4}{3}$ c. $\frac{3}{4}$ d. $-\frac{5}{6}$

40. Determine the slope of the line graphed:



41. Find the slope and y-intercept of the line with the equation $-9x + 3y = 54$.

$$\frac{3y}{3} = \frac{9x + 54}{3} \quad y = 3x + 18$$

- a. $m = 3, b = 18$ c. $m = -3, b = -18$
 b. $m = 18, b = 3$ d. $m = -18, b = -3$

42. Rewrite the equation $8x - 3y - 5 = 0$ in slope-intercept form.

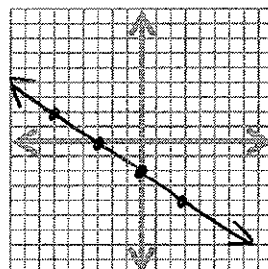
43. Write the equation

$$y - 2 = -\frac{2}{3}(x + 6)$$

in slope-intercept form and graph:

$$y - 2 = -\frac{2}{3}x - 4$$

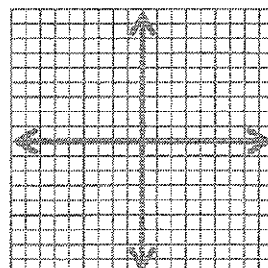
$$y = -\frac{2}{3}x - 2$$



44. Write the equation

$$3x - y - 2 = 0$$

in slope-intercept form, and graph:

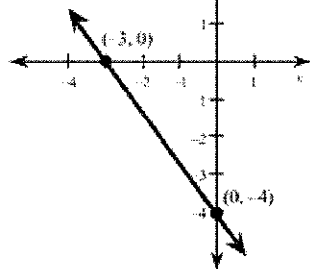


45. Determine if the line $-7x + 6y = 3$ is parallel to the line $y = \frac{7}{6}x + 1$.

$\frac{6y}{6} = \frac{7x}{6} + \frac{3}{6}$
 $y = \frac{7}{6}x + \frac{1}{2}$

Parallel

46. Write an equation of the line shown on the graph.



47. Write an equation, in slope-intercept form, that passes through point $(-4, -3)$ with slope 3.

3. $-3 = 3(-4) + b$
 $-3 = -12 + b$
 $9 = b$ $y = 3x + 9$

- a. $y = 3x + 9$ c. $y = -3x + 9$
 b. $y = 3x - 15$ d. $y = -3x - 15$

48. Write an equation of a line that passes through the point $(3, -2)$ with a slope of $\frac{3}{2}$.

49. Write an equation of the line that passes through $(-5, -1)$ and is parallel to the line $y = 4x - 6$.

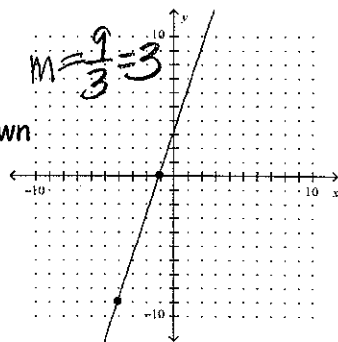
$-1 = 4(-5) + b$
 $-1 = -20 + b$
 $19 = b$ $y = 4x + 19$

- a. $y = 4x + 19$ c. $y = -5x + 19$
 b. $y = 4x - 6$ d. $y = -5x - 6$

50. Write an equation of the line that goes through the point $(3, 7)$ and is perpendicular to the line $y = -3x + 6$.

- a. $y = \frac{1}{3}x + 6$ c. $y = 3x + 2$
 b. $y = -\frac{1}{3}x + 6$ d. $y = -3x + 16$

51. Which of the following lines is NOT parallel to the line shown in the graph?



- a. $y = -3x + 3$
 b. $y - 3x = 9$ $y = 3x + 9$
 c. $-12x + 4y = 9$ $y = 3x + \frac{9}{4}$
 d. $3x - y = 3$ $y = 3x - 3$

52. Which pair of lines could be perpendicular when graphed?

- a. $y = 3, x = 5$ c. $y = 2x, y = \frac{1}{2}x$
 b. $x = 4, y = x$ d. $y = 3, y = x$

53. An equation of Line A is $y = 5x + 2$.

a. Write an equation of the line that passes through $(7, -3)$ that is parallel to Line A.

$-3 = 5(7) + b$
 $-3 = 35 + b$
 $-38 = b$ $y = 5x - 38$

b. Is the line $y = -\frac{1}{5}x - 38$ perpendicular to Line A? Does it also pass through $(7, -3)$? *Yes, ⊥*

Justify your answer

$-3 = -\frac{1}{5}(7) - 38?$ $-3 \neq -\frac{197}{5}$
 $-3 = -\frac{7}{5} - 38?$
 $-3 = -\frac{7}{5} - \frac{190}{5}$

$(7, -3)$ is NOT on $y = -\frac{1}{5}x - 38$

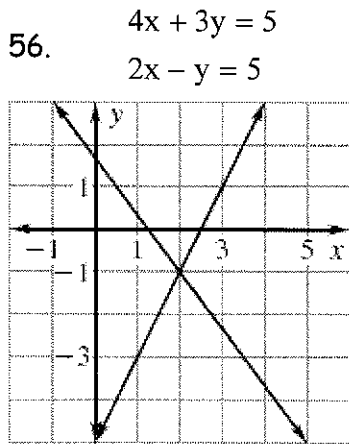
54. Write the equation of the line through $(-3, 5)$ and $(-3, 7)$

55. Write the equation of the line through $(-4, 2)$ and $(2, -1)$

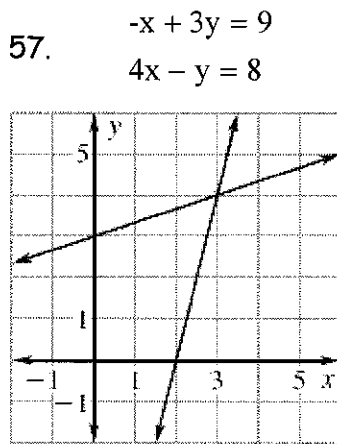
$-1 = -\frac{1}{2}(2) + b$
 $m = \frac{-1-2}{2-(-4)} = \frac{-3}{6} = -\frac{1}{2}$ $-1 = -1 + b$
 $0 = b$ $y = -\frac{1}{2}x$

Chapter 7

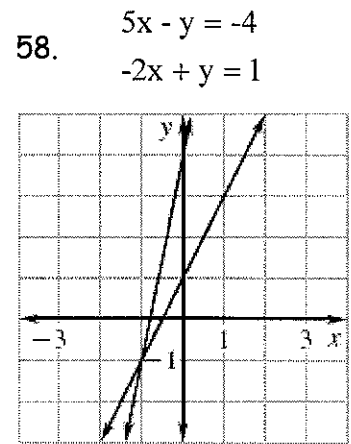
Use the graph to solve each linear system.



Solution _____



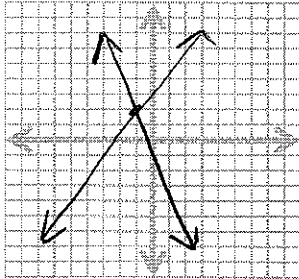
Solution (3, 4)



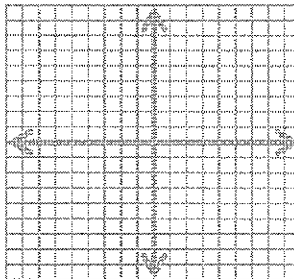
Solution _____

Sketch a graph of a system of linear equations with each number of solutions.

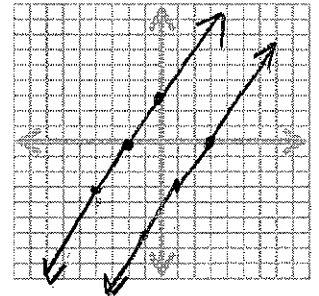
59. One solution



60. Infinitely many solutions



61. No solution



Determine whether the given ordered pair is a solution to the linear system.

62. $(-4, -6)$

$$\begin{aligned} 3x - y &= 6 \\ -x + 2y &= 8 \end{aligned}$$

63. $(-4, 3)$

$$\begin{aligned} 4x + 3y &= -12 \\ x + 2y &= -6 \end{aligned}$$

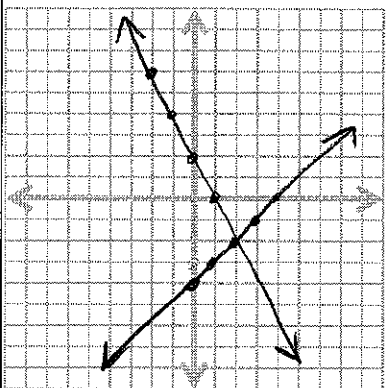
$4(-4) + 3(3) = -12?$
 $-16 + 9 = -12?$
 $-7 \neq -12$
No!

64. $(4, -3)$

$$\begin{aligned} -3x + 2y &= -18 \\ 6x - y &= 27 \end{aligned}$$

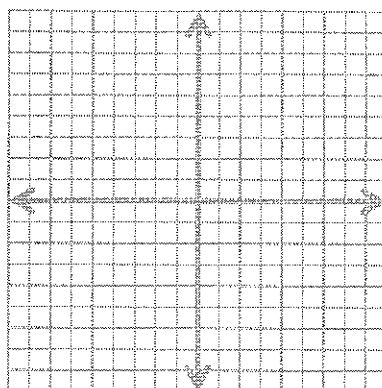
Solve each system of equations by GRAPHING.

65. $y = -2x + 2$
 $y = x - 4$



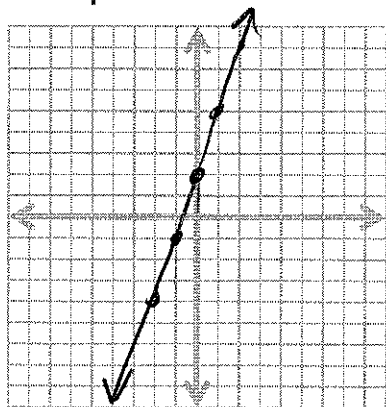
Solution (2, -2)

66. $2x + y = -4$
 $x - y = -8$



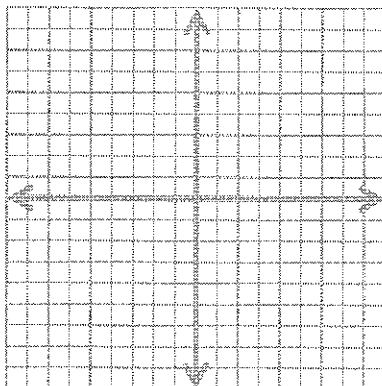
Solution _____

67. $-3x + y = 2$
 $-6x + 2y = 4$
 $2y = 6x + 4$
 $y = 3x + 2$



Solution Infinite Soln.

68. $2x + 2y = -4$
 $y = -x + 2$



Solution _____

Solve each system of equations using SUBSTITUTION.

69. $2y = -3x + 14$
 $y = x + 2$

$2(x+2) = -3x + 14$
 $2x + 4 = -3x + 14$
 $5x = 10$
 $x = 2$
 $y = 2 + 2 = 4$
(2, 4)

70. $4x - 2y = 24$
 $x = y + 5$

Solve each system of equations using SUBSTITUTION.

71. $-4x + y = -2 \rightarrow y = 4x - 2$
 $3x + 2y = -4$

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

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

$$11x = 0$$

$$x = 0$$

$$y = 4(0) - 2$$

$$y = -2$$

$$\boxed{(0, -2)}$$

72. $x - 5y = -26$
 $6x + y = -1$

Solve each system of equations using ELIMINATION.

73. $\begin{array}{r} 2x - 4y = 10 \\ -2x + 6y = -4 \\ \hline \end{array}$

$$2y = 6$$

$$y = 3$$

$$2x - 4(3) = 10$$

$$2x - 12 = 10$$

$$2x = 22$$

$$x = 11 \quad (11, 3)$$

74. $6x - 7y = -4$
 $-4x - 7y = 26$

75. $\begin{array}{r} 4(-3x - y) = -15(4) \\ 8x + 4y = 48 \\ + -12x - 4y = -60 \\ \hline \end{array}$

$$-4x = -12$$

$$x = 3$$

$$-3(3) - y = -60$$

$$-9 - y = -60$$

$$-y = -51 \quad y = 51$$

$$\boxed{(3, 51)}$$

76. $2x + 7y = 2$
 $5x - 2y = 83$

Define variables and set up a system of equations to represent each situation. **DO NOT SOLVE THE SYSTEM.**

77. The cost of 2 pounds of oranges and 3 pounds of bananas is \$4.65. The cost of 2 pounds of oranges and 8 pounds of bananas is \$8.40. Find the cost of 1 pound of oranges.

$$x = \text{cost/lb. oranges}$$

$$y = \text{cost/lb. bananas}$$

$$2x + 3y = 4.65$$

$$2x + 8y = 8.40$$

78. A radio station is raising money for charity. Listeners can pledge \$10 to dedicate a song or \$25 to wish someone Happy Birthday. 42 listeners make one pledge each, and the station collects \$630. How many listeners pledge \$25 to wish someone Happy Birthday?

79. A school replaces some band uniforms. They order 16 new jackets and 20 new hats. Later, 3 new members join the band and the school orders 3 more jackets and 3 more hats. The first order costs \$1080 and the second order costs \$189. What is the price of 1 hat?

$$x = \text{cost of 1 jacket}$$

$$y = \text{cost of 1 hat}$$

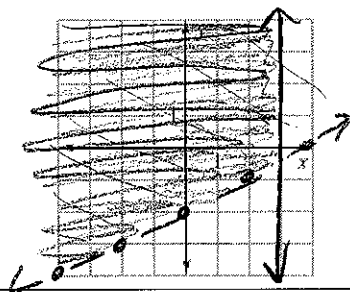
$$16x + 20y = 1080$$

$$3x + 3y = 189$$

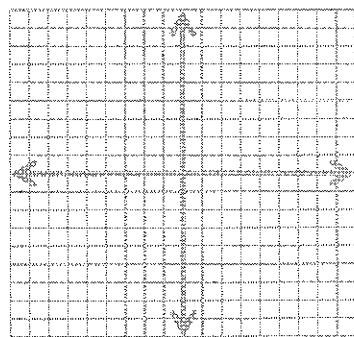
80. Annie and Sarah go to a pick-your-own apple orchard. Annie picks 4 more than twice as many apples as Sarah picks. Together, they pick 67 apples. How many apples did they each pick?

Solve each system of linear inequalities. Show your solution area clearly!

81. $y > \frac{1}{2}x - 2$
 $x \leq 3$



82. $4x - 4y \geq -16$
 $-x + 2y \geq -4$



Chapter 8

Simplify each expression. Write each expression using positive exponents.

83. $x^3 \cdot x^1 \cdot x^4 \cdot x^2$
 x^{10}

84. $y^{-4} \cdot y^6 \cdot y^{-5}$

85. $(4xy)^0$
 1

86. $(-4)^2(x)^3$

87. $\left(\frac{2}{3}\right)^0$ 1	88. $(-8)^{-2}$
89. $(3x^8)^7$ $3^7 x^{56} = 2187x^{56}$	90. $(2x^2y)(-3xy)^3$
91. $\frac{-8n^4p^3}{4n^7p}$ $\frac{-2p^2}{n^3}$	92. $\frac{(5x^2yz)^3}{25xy^3}$
93. $(2x^2y)^2(5xyz^3)$ $2^{-2}x^{-4}y^{-2} \cdot 5x^1y^1z^3$ $2^{-2} \cdot 5x^{-3}y^{-1}z^3 = \frac{5z^3}{2^2x^3y} = \frac{5z^3}{4x^3y}$	94. $-3 \cdot (3x^{-1}y^3)^{-2}$
95. $\left(\frac{3x^4}{4y}\right)^3 \cdot \frac{2y}{x^5}$ $\frac{3^3x^{12}}{4^3y^3} \cdot \frac{2y}{x^5} = \frac{27x^{12}}{64y^3} \cdot \frac{2y}{x^5}$ $= \frac{27x^7}{32y^2}$	96. $\frac{-8y(3x^2)^3}{x^{-5}y^3}$

Write each number in scientific notation.

97. 12,556,000

1.256×10^7

98. 66,005

99. 0.000007509

7.509×10^{-6}

Write each number in standard form.

100. 7.43×10^{-3}

101. 8.205×10^4

102. 1.002×10^{-5}

82,050.

Evaluate each expression. Write your answer in scientific notation.

103. $(2.5 \times 10^6)(6 \times 10^{-3})$
 15×10^3
 1.5×10^4

104. $(1.2 \times 10^{-8})(4.6 \times 10^5)$

105. $\frac{1.2 \times 10^4}{1.6 \times 10^{-3}}$
 $.75 \times 10^7$
 7.5×10^6

106. $\frac{1.2 \times 10^{-9}}{4 \times 10^{-7}}$

107. $(4 \times 10^8)^3$
 64×10^{24}
 6.4×10^{25}

108. $(3.2 \times 10^{-2})^4$

109. The lengths of several insects are shown in the table. List the *insects* in order from smallest length to greatest length.

Insect	Length (millimeters)
Fringed ant beetle	2.5×10^{-1}
Walking stick	555 5.55×10^2
Parasitic wasp	1.4×10^{-4}
Elephant beetle	1.67×10^2

1.4×10^{-4} , 2.5×10^{-1} , 1.67×10^2 , 5.55×10^2
 Parasitic Wasp, Ant beetle, Elephant beetle,
 Walking stick

Order the following numbers from largest to smallest.

110. $\frac{3}{5}$; -0.54 ; 0.61 ; $\frac{-4}{7}$

111. $\sqrt{36}$; 6.1×10^{-1} ; 63 ; $6\% \rightarrow .06$
 6×10^0 ; 6.1×10^{-1} ; 6.3×10^1 ; 6.0×10^{-2}
 63 , $\sqrt{36}$, 6.1×10^{-1} , 6.0×10^{-2}

Order the following numbers from least to greatest.

112. $34,000,000$; 3.5×10^6 ; 3.95×10^{-5} ; $340,000,000$

113. 0.125 ; -2.1 ; $\frac{-1}{2}$; 1.2×10^{-2}
 $.012$

-2.1 , $-\frac{1}{2}$, 0.125 , 1.2×10^{-2}