

**MONTGOMERY COLLEGE MATH DEPARTMENT
MA 090 FINAL REVIEW**

NOTE: A CALCULATOR IS ALLOWED DURING THE FINAL EXAM.

ROUNDING

Round to the given place value.

		a) hundreds	b) tens	c) whole number	d) tenths	e) thousandths
1.	5281.7851					
2.	19,845.6597					

ORDER OF OPERATIONS

Simplify.

- | | | |
|------------------------------------|---|---|
| 3. $6(4 + 2 \cdot 3) - 7(4^2 - 9)$ | 4. $84 \div 2 \cdot 3 - 3^2$ | 5. $84 \cdot 2 \div 3 + (-3)^2$ |
| 6. $(3 + 4)^2 - 9^2$ | 7. $3 + 4(-1 + 7) \div 2^3$ | 8. $\frac{10(-1) - (-2)(-3)}{2[-18 \div (5 - 2)^2]}$ |
| 9. $(-10.12) + 5.76 \div 4.8$ | 10. $5(-3.75) - (-12.4)$ | 11. $(-2.2) + (-3.1)(-4.7)(-5.9)$ |
| 12. $-8.2 - 4.3^2$ | 13. $2.75 + 5.733(-1.8 + 7) \div 2.1^2$ | 14. $\frac{10.5(-0.5) - (-2.5)(-3.5)}{2[-8 \div (-1.3 - 2.7)]}$ |
| 15. $\frac{1}{5} - 2(7.8)$ | 16. $\frac{1}{4}(-9.6 - 5.2)$ | 17. $\frac{3}{4} - (9.6)(5)$ |

Insert either $<$, $>$ or $=$ between the pair of numbers to make a true statement.

- | | | |
|---------------------------------|---|----------------------------------|
| 18. -2.5 _____ -2.51 | 19. $ -9.7 $ _____ $ -14.7 $ | 20. $ -33.5 $ _____ $-(-33.5)$ |
| 21. $- -10.2 $ _____ $-(-10.2)$ | 22. $\frac{1}{3}$ _____ 0.3 | 23. 0.625 _____ $\frac{5}{8}$ |
| 24. $\frac{5}{9}$ _____ 0.557 | 25. $0.58\overline{3}$ _____ $\frac{6}{11}$ | 26. 65% _____ $\frac{13}{20}$ |

27. Write the given numbers in order from smallest to largest:

- a) $-\frac{29}{2}$, -14.8 , -14.7 ; b) $\frac{5}{12}$, 0.375 , $\frac{19}{48}$; c) 153% , 1.6 , $1\frac{1}{2}$

ALGEBRAIC EXPRESSIONS

Simplify.

- | | | |
|-------------------------|------------------------------|--------------------------------|
| 28. $-8a - 3t + 5a - t$ | 29. $3(5x - 2) + 4(3 - 7x)$ | 30. $7(2x + 3) - 6(3x - 1)$ |
| 31. $-2.5(2x - 5y - 4)$ | 32. $-5.7x - (-2.6x) + 6.9x$ | 33. $2(3x + 1.5) + 5(x - 2.2)$ |

34. $\frac{2x}{3} + \frac{x}{3}$

35. $2.5a - 0.5b - 4.4 + 4.1a + 1.5b - 3$

36. Evaluate the expression for $x = \frac{1}{4}$, $y = -2$:

a) $-x^2 - y$

b) $\frac{2-4x}{y}$

37. Evaluate the expression for $x = -0.5$ and $y = -1.5$: a) $x^2 - 2y$

b) $\frac{6-2x}{x-y}$

FRACTIONS**Perform the following operations. Write answers in lowest terms. Show all work using FRACTIONS.**

38. $-\frac{7}{12} + \frac{5}{12} - \frac{1}{12}$

39. $\frac{2}{15} + \frac{3}{10}$

40. $\left(\frac{-7}{15}\right) \div \left(\frac{-2}{3}\right)$

41. $6 - 3\frac{2}{7}$

42. $-2\frac{7}{9} \cdot 1\frac{4}{5}$

43. $\frac{-4}{5} \div 4$

44. $\left(-\frac{2}{3}\right)^3$

45. $\frac{2}{3} - \frac{2}{9} - \frac{1}{6}$

Complete the chart. Simplify all fractions.

	Fraction	Decimal	Percent
46.			5.4%
47.		0.36	
48.		3.4	

AREA AND PERIMETER

49. Find the perimeter and area of each rectangle. Give correct units.

a) length is $\frac{1}{2}$ mile and width is $\frac{1}{4}$ mile b) length is 18.5 cm and width is 11.8 cm**EQUATIONS****Solve and check. If the equation is given in fractions, must use the fractions to solve the equations.**

50. $-4x - 3 = 5$

51. $2(3 - y) + 4y = -6$

52. $1 - 8x = -5 - 6x$

53. $9 - 3x = 14 + 2x$

54. $\frac{2}{3}t - 4 = 2$

55. $10 + \frac{1}{4}x = 5$

56. $\frac{x}{5} - 1 = \frac{7}{5}$

57. $-3.5x + 2.8 = -11.2$

58. $2(x - 1.3) = 5.8$

59. $2.1x + 5 = 1.6x + 10$

60. $6x + 8.65 = 3x + 10$

61. $4x + 7.6 = 2(3x - 3.2)$

62. $\frac{30}{10} = \frac{15}{x}$

63. $\frac{7}{x} = \frac{25}{100}$

64. $\frac{x}{24} = \frac{96}{60}$

65. $\frac{1}{2} - \frac{3}{5} = \frac{x}{10}$

Write the following as an equation and solve.

66. Five times the sum of a number and ten is thirty. Find the number.

67. The sum of five times a number and ten is thirty. Find the number.

68. Eight times a number subtracted from twelve is negative twelve. Find the number.

69. The quotient of a number and 8 is -12 . Find the number.

RATIO & PROPORTION

70. A package of 8 boxes of tissues costs \$9.99. Find the unit price. Round to the nearest cent.

71. Denise's car can travel 450 miles on 12 gallons of gas. She wants to take trip of 1000 miles. Approximately how much gas will her car use? Round your answer to the nearest tenth.

72. A 120 pound person should eat a minimum of 44 grams of protein each day. How much protein should a 180 pound person eat each day?

PERCENTS

73. Twelve is what percent of 60? 74. $62\frac{1}{2}\%$ of 40 is what number? 75. 15% of what number is 30?

76. A final exam consists of 120 questions, of which 70% are multiple choices. How many multiple choice questions are there?

77. Mrs. Brown paid a commission of $7\frac{1}{2}\%$ of the selling price to the real estate agent who sold her home. If the selling price was \$140,000 how much commission did Mrs. Brown pay?

78. Craig purchased a car for \$12,000. If he paid \$756 in sales tax, find the sales tax rate.

79. In 2000, the median household income in Rockville was \$68,074. From 2000 to 2003, the median household income increased by 7.6%. What was the median household income in 2003? Round to the nearest dollar.

80. There are 600 cars in a used car lot.

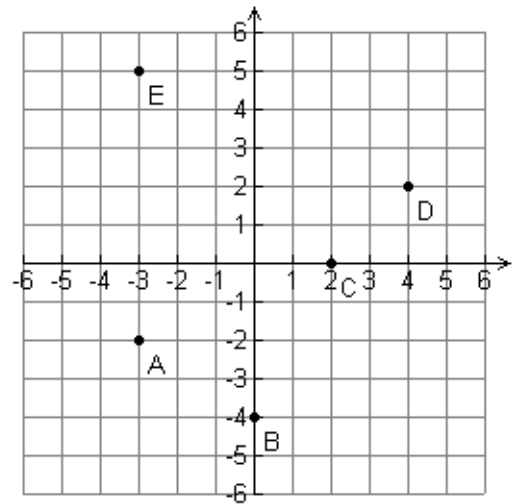
- If 21 of the cars in the lot are 2-door coupes, what percent is this?
- If 180 of the cars in the lot are silver, what fraction is this? Write fraction in lowest terms.
- If 150 of the cars in the lot are SUV's, what percent are not SUV's?

GRAPHS

81. Plot these points on the x - y plane on graph paper and state the quadrant each lies in.

A $(-4,3)$, B $(2,5)$, C $(-1,-4)$, D $(3,-3)$, E $(0,3)$, F $(3, 0)$

82. Determine the ordered pairs of the labeled points.



83. Graph the following linear equations on a rectangular coordinate system. Label three ordered pairs.

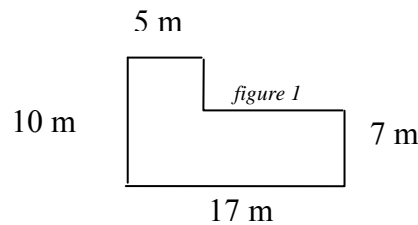
- a) $y = -2x + 3$ b) $y = \frac{1}{3}x - 2$ c) $y = -x$
 d) $2x + 3y = -12$ e) $x = 5$ f) $y = -5$

84. Complete each ordered-pair solution of the given equations.

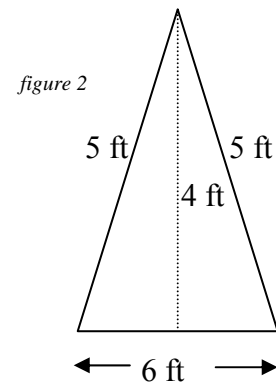
- a) $y = 5x + 1$; $(0, \quad)$, $(-1, \quad)$, $(\quad, 11)$ b) $x - y = -3$; $(\quad, 0)$, $(0, \quad)$, $(4, \quad)$

GEOMETRY

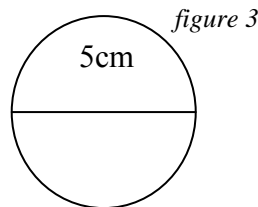
85. Find the perimeter and area of *figure 1*.
Give correct units.



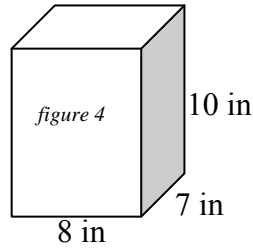
86. Find the perimeter and area of *figure 2*.
Give correct units.



87. Find the circumference and area of *figure 3*.
Use $\pi = 3.14$. Give correct units.



88. Find the volume of the *figure 4*.
Give correct units.



Polynomials

Perform the operations and simplify.

89. $(5x^2 - x + 7) + (3x^2 - x - 4)$ 90. $(5x^2 - x + 7) - (3x^2 - x - 4)$ 91. $(3x - 1)(2x + 1)$

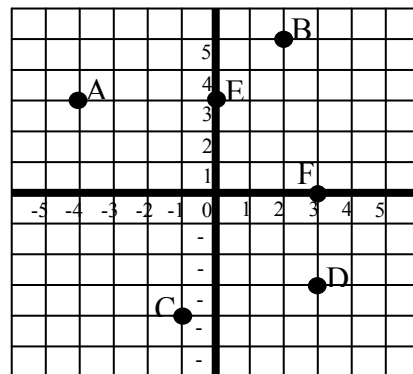
92. $(t - 3)^2$ 93. $-5x^3 + 7x^3$ 94. $(7a^5b^2)(2a^8b^4)$

95. Evaluate the polynomial $4x^2 - 5x + 1$ for $x = -3$.

ANSWERS – MA 090 FINAL EXAM REVIEW

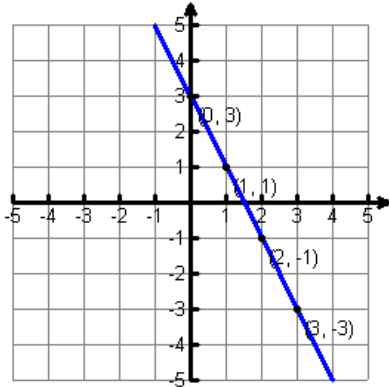
1. a) 5300 b) 5280 c) 5282 d) 5281.8 e) 5281.785 2. a) 19,800 b) 19,850 c) 19,846 d) 19,845.7
 e) 19,845.660 3. 11 4. 117 5. 65 6. -32 7. 6 8. 4 9. -8.92 10. -6.35 11. -88.163
 12. -26.69 13. 9.51 14. -3.5 15. -15.4 16. -3.7 17. -47.25 18. > 19. < 20. = 21. <
 22. > 23. = 24. < 25. > 26. = 27. a) -14.8, -14.7, $-\frac{29}{2}$ b) 0.375, $\frac{19}{48}$, $\frac{5}{12}$ c) $1\frac{1}{2}$, 153%, 1.6
 28. $-3a - 4t$ 29. $-13x + 6$ 30. $-4x + 27$ 31. $-5x + 12.5y + 10$ 32. $3.8x$ 33. $11x - 8$ 34. x
 35. $6.6a + b - 7.4$ 36. a) $\frac{31}{16}$, $1\frac{15}{16}$, or 1.9375 b) $-\frac{1}{2}$ or -0.5 37. a) 3.25 b) 7 38. $-\frac{1}{4}$ 39. $\frac{13}{30}$
 40. $\frac{7}{10}$ 41. $\frac{19}{7}$ 42. -5 43. $-\frac{1}{5}$ 44. $-\frac{8}{27}$ 45. $\frac{5}{18}$ 46. $\frac{27}{500}$, 0.054 47. $\frac{9}{25}$, 36% 48. $\frac{17}{5}$, 340%
 49. a) $P = 1\frac{1}{2}$ mi or $\frac{3}{2}$ mi, $A = \frac{1}{8}$ mi² b) $P = 60.6$ cm, $A = 218.3$ cm² 50. -2 51. -6 52. 3 53. -1
 54. 9 55. -20 56. 12 57. 4 58. 4.2 59. 10 60. 0.45 61. 7 62. 5 63. 28 64. 38.4
 65. -1 66. $5(x + 10) = 30; x = -4$ 67. $5x + 10 = 30; x = 4$ 68. $12 - 8x = -12; x = 3$ 69. $\frac{x}{8} = -12; x = -96$
 70. \$1.25 per box 71. 26.7 gal 72. 66 g 73. 20% 74. 25 75. 200
 76. 84 multiple choice questions 77. \$10,500 78. 6.3% 79. \$73,248 80. a) 3.5% b) $\frac{3}{10}$ c) 75%

81. A quadrant II
 B quadrant I
 C quadrant III
 D quadrant IV
 E-on y-axis
 F-on the x-axis

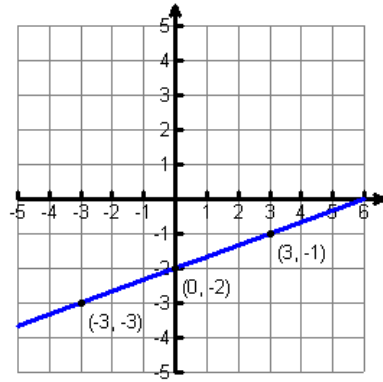


82. A(-3,-2), B(0,-4), C(2,0), D(4,2), E(-3,5)

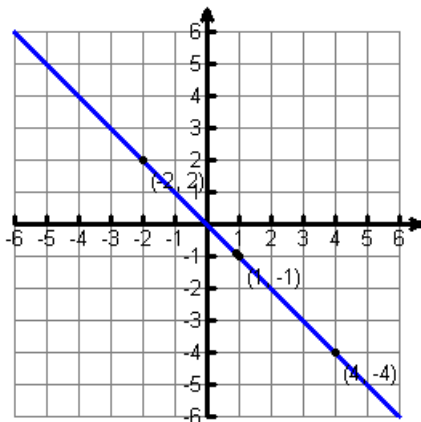
83. a)



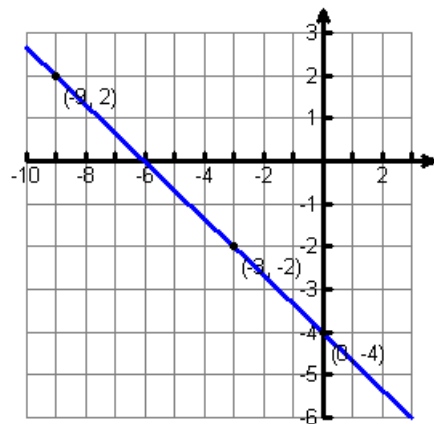
b)



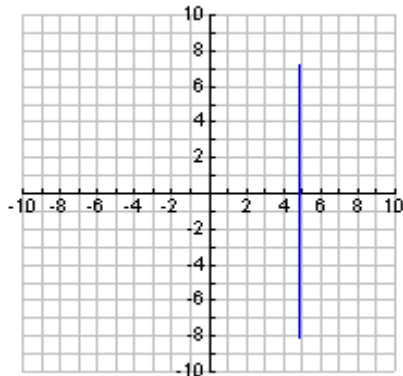
c)



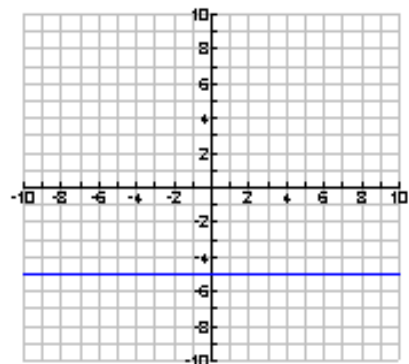
d)



(e)



(f)



84. a) (0,1), (-1,-4), (2,11) b) (-3,0), (0,3), (4,7) 85. $P = 54m$ $A = 134m^2$ 86. $P = 16$ ft $A = 12$ ft²

87. $C = 15.7$ cm; $A = 19.625$ cm² 88. 560 in³ 89. $8x^2 - 2x + 3$ 90. $2x^2 + 11$ 91. $6x^2 + x - 1$

92. $t^2 - 6t + 9$ 93. $2x^3$ 94. $14a^{13}b^6$ 95. 52