

## Learning Center

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### Study Guide for Mat 050 Final Exam

I. Perform the indicated operations.

a)  $136 - (-32) - 8$

e)  $9(-2) - 8(-8)$

b)  $-2/7 + 3/4$

f)  $1/4 - (3/8)^2$

c)  $4 [ 18 - (12 - 40) ]$

g)  $24 \div 2 [8 - 3(4 - 2)]$

d)  $-9^2$

h)  $-4^3 - 2^3$

2. Write as a decimal:  $5/12$

3. Write as a percent:  $0.3$

4. Write as a fraction in simplest form:  $32\%$

5. The daily low temperature for 5 days is -4, 6, 16, -1, and 7. What is the average daily low temperature?

6. Candidate Brown received 72% of the 4200 votes in an election. How many votes did she receive?

7. In a nationwide poll about two shampoos, 2000 people were surveyed. 648 people said they preferred Brand A to Brand B. What percent of the people surveyed preferred Brand A?

8. A pump can empty a 1500 liter tank in 45 minutes. At the same rate, how long will it take to empty a 1000 liter tank?

9. Evaluate:  $a^2 - 3b$  when  $a = -4$  and  $b = 2$

Simplify.

10.  $-15x^2 + 19x^2 + 3x^3$

11.  $\frac{2}{5}(-15x)$

12.  $5n - (-6 - 5n)$

13.  $-6[3x - 8(x + 6)]$

14.  $-3x + 7[x - (5 - x)]$

15. Because traffic congestion has gotten worse in most cities and many people's lives have become more hectic, the value of mail order sales in the United States has been on the rise. In 1988 mail order sales were 123 billion dollars. In 1995 mail order sales were 220 billion. Assume that the relationship between the year and the mail order sales is linear. (Let  $x$  be the year and  $y$  be the sales in billion of dollars. Assume that 1988 is Year 0.) Find the equation of the line. Predict the sales in billions of dollars for 2001.

16. Solve using the quadratic formula.

a)  $x^2 + 4x + 3 = 0$

b)  $3x^2 - x = 2$

17. Find the vertex of each parabola. Is it a maximum or minimum point?

a)  $y = x^2 - 4x + 2$

b)  $y = -x^2 + 2x + 3$

18) Solve the following equations.

a)  $n + (-2) = 18$

b)  $\frac{3}{5}x = 12$

c)  $2x - 5 = -11$

d)  $n - 2 = 6 - 3n$

e)  $6 - 4(3a - 2) = 2(a + 5)$

f)  $\frac{x}{2} + \frac{x}{6} = 12$

19) a) Find the slope of a line containing the points (0,4) and (3,7)

b) Find the slope of the line:  $3x - y = 4$

c) Find the equation of the line which has a slope of 2 and passes through (1,5).

20) **Graph these equations on the attached page.**

a) Graph the line with a slope of 2 and passes through (-3, 2)

b)  $y = 3x - 5$

c)  $2x + 3y = 6$

d)  $y = x^2 - 1$

e)  $y = x^2 + 4x - 2$

21) **Solve each problem showing all your work.**

a) A software retailer uses a markup rate of 40%. Find the selling price of a computer game that costs the retailer \$25.

b) A hardware store uses a markup rate of 40% on all items. The selling price of the lawn mower is \$105. Find the cost.

c) A ring regularly sells for \$450. Find the sale price if the discount is 20%.

d) A stereo system regularly sells for \$425 is on sale for \$318.75. Find the discount rate.

- e) If \$2000 is deposited today at 6% simple interest. How much interest will be earned in 6 months?
- f) If \$4000 is deposited at 8% simple interest, what will be the total amount in the account 3 years from now?
- g) Assume \$3500 is invested and earns \$525 in interest. Assuming simple interest and a rate of 10%, how long was the money invested?
- h) Find the future value if \$600 is invested for 20 years at 9% compounded semiannually.
- i) How much should be deposited now at 12% compounded quarterly in order to have \$4000 in 5 years?