MA 111 Review for Exam 4

Exam 4 (given in class on Friday, October 30) will cover Unit 4: Percent and Percent Change. Use the packet provided in class (*Case Studies for Quantitative Reasoning*) as a study tool.

Can you work each homework and quiz problem *correctly* and *quickly*, providing explanations and justifications, without looking at the notes?

Have you carefully studied the material in the handout?

Have you carefully studied the slides on the website?

You should be familiar with the following key ideas:

- Understand what percent means.

- Know what the base of a percent is, and be able to identify the base of a percent in context.

- Be able to find different variables in a percentage calculation (e.g., use the base and the result to find the percent).

- Be able to express a percentage as another fraction. For instance, express a tax rate in dollars per $1000 income.

- Understand how changes in numbers can be measured by percents (percent change).

- Know how to increase or decrease a number by a percentage.

- Understand the difference between an absolute change in percentage and a relative change in percentage (in the latter case you are calculating a percent change in percent).

- Be able to interpret a short passage and analyze the given information about percents.

Practice Problems

You may also see part A of the exercises for Chapter 10 (pages 392–393) in our regular textbook for additional practice questions.

1. Express each of the following percentages as a decimal.

   (a) 43%
   (b) 1.5%
   (c) 250%
   (d) 0.13%

2. If your score on a test was 62 points out of 70, express the score as a percentage.

3. What is 37% of 56?

4. 78 is what percent of 52?

5. 123 is 17% of what?

6. Out of a class of 35 students, 28 students passed the midterm exam. What percentage of the class failed the midterm?

7. If your income in one year is $65000 and you pay $10000 in income tax, what is the tax rate?

8. If you buy a book that costs $19.95, and the sales tax is 6%, what amount do you owe?

9. If you read that the income tax is $230 per $1000 in income, what is the tax rate as a percent?

10. Refer to the previous problem. At that tax rate, if you owed $34500 in income tax, how much was your income?

11. In 2000, tuition at UK was $6550. In 2001, tuition increased by 7%. How much was tuition at UK in 2001?

12. A computer that usually sells for $830 is on sale for 15% off. How much does the computer cost?

13. One year ago, a gallon of gas sold for $2.82. Now the price of a gallon of gas is $2.63. By what percent has the price decreased over the past year?

14. The population of Pleasantville this year is 5,900. This is a 3% increase over last year's population. What was the size of the population of Pleasantville last year?

15. (a) If 300 is decreased by 5%, what is the result?

    (b) If 300 is decreased by 15% and then the result is increased by 10%, what is the final result?

16. In 2008 the freshman class had 3000 students and 42% of the freshman class were enrolled in a math class. In 2009 the freshman class had 3500 students and 51% of the freshman class were enrolled in a math class.

    (a) What is change in the number of students in the freshman class who were enrolled in a math class?

    (b) What is the percent change in the number of students in the freshman class who were enrolled in a math class?

    (c) What is the change in the percent of students in the freshman class who were enrolled in a math class?

    (d) What is the percent change in the percent of students in the freshman class who were enrolled in a math class?

17. The town council decides to reduce the sales tax from 6% to 5%. By what percent did the sales tax decrease?

18. In a poll taken in September, Governor Jane Citizen was favored by 49% of the respondents. In a poll taken in October, Gov. Citizen was favored by 55% of the respondents. How many percentage points did Gov. Citizen gain from September to October? By what percent did the favorable responses increase?