

Math 110
Exam 1
Fall 2005

Show all work in a neat and organized fashion. Clearly indicate your answers.
100 points possible.

The following formulas may or may not be useful.

$$A = PB$$

$$\text{Sales tax amount} = \text{tax rate} \times \text{item's cost}$$

$$\text{Discount amount} = \text{discount rate} \times \text{original price}$$

$$\text{Percent increase} = \frac{\text{amount of increase}}{\text{original amount}}$$

$$\text{Percent decrease} = \frac{\text{amount of decrease}}{\text{original amount}}$$

$$\text{Simple interest formulas: } I = Prt \quad A = P(1 + rt)$$

0. (20 pts.) The take-home Excel problems are worth 20 points total.
1. (5 pts.) Express $\frac{9}{40}$ as a percent.
2. (5 pts.) Express 36.2% as a decimal.
3. (5 pts.) 240 is 30% of what?
4. (5 pts.) 120 is what percent of 750?
5. (5 pts.) Suppose 6% of the Hispanic population in the United States is Cuban. If the Cuban-American population is 2,104,200, what is the U.S. Hispanic population?
6. (5 pts.) For the following problem, change the numbers somewhat, so that you can solve the new problem *in your head*, without a calculator. Then solve your changed problem in your head. *Explain* what you did. (Do not solve the actual problem, just your changed problem.)

A charity has raised \$284,000, with a goal of raising \$760,000. What percent of the goal has been raised?
7. (5 pts.) An exercise machine with an original price of \$1260 is on sale at 18% off. What is the exercise machine's sale price?
8. (5 pts.) Mowgli earned an annual salary of \$67,385 in 2003. Mowgli's annual salary in 2004 was \$54,290. Find the percent decrease in annual earnings for Mandy from 2003 to 2004.

9. (5 pts.) Suppose that you put money in a rather risky investment recommended by your financial advisor. During the first year, your investment decreases by 35% of its original value. During the second year, your investment increases by 45% of its first-year value. Your advisor tells you that there must have been a 10% overall increase of your original investment. Is your financial advisor using percentages properly? Explain why or why not.

10. (5 pts.) You borrow \$15,900 at a simple interest rate of 8% for 90 days. How much simple interest will you owe for the use of the money. (Assume 360 days in a year.)

11. (5 pts.) You borrow \$48,000 at a simple interest rate of 15% for 3 years. Find the loan's future value.

12. (5 pts.) You borrow \$11,000 for 6 months. The loan's future value is \$11,790. Determine the loan's simple interest rate, to the nearest tenth of a percent.

13. (5 pts.) Determine the amount you must invest to have a future value of \$56,000 at a simple interest rate of $9\frac{1}{2}\%$ after 3 months.

14. (10 pts.) You borrow \$8000 on a 14% discounted loan for a period of three years.

(a) What is the loan's discount?

(b) What is the net amount of money you receive?

(c) What is the loan's actual interest rate, to the nearest tenth of a percent?

15. (5 pts.) A bank offers a CD that pays a simple interest rate of 4.65%. How much must you put in this CD now in order to have \$4000 for a home repair project in 8 months?