

MATH 1010 Uniform Final Exam

NAME: _____

Circle Your Section Number:

1010-001
Olson
MW 1000-1115

1010-002
McKillip
TR 1130-1245

1010-003
McKillip
TR 530-645

DO NOT WRITE BELOW THIS LINE

Problem 1 (6 pts): _____

Problem 9 (8 pts): _____

Problem 2 (6 pts): _____

Problem 10 (16 pts): _____

Problem 3 (3 pts): _____

Problem 11 (9 pts): _____

Problem 4 (6 pts): _____

Problem 12 (8 pts): _____

Problem 5 (12 pts): _____

Problem 13 (3 pts): _____

Problem 6 (6 pts): _____

Problem 14 (3 pts): _____

Problem 7 (8 pts): _____

Problem 8 (6 pts): _____

TOTAL: _____

Math 1010 – Final Exam

December 11, 2004

The exam is open book and open notes; it will last three hours. Your solutions must be detailed and complete. Show *all* relevant work on the exam. The exam is worth 100 points.

1. (6 points) We have studied the following fallacies this semester: appeal to popularity, false cause, appeal to ignorance, hasty generalization, limited choice, appeal to emotion, personal attack, circular reasoning, diversion (red herring), straw man. For each argument below, state the fallacy used in the argument and give a brief explanation.

a. Four eye doctors in town recommend Krystal Kleer contact lenses. Therefore, all doctors in town recommend Krystal Kleer contact lenses.

b. After getting new dishes I started to sneeze. I must be allergic to the new dishes.

c. You should brush your teeth every day because brushing your teeth is very important.

2. (6 points) UNIT CONVERSION PROBLEMS. Show your conversions.

The present exchange rate for a German mark is \$0.59.

a. Which is larger one German mark or one dollar? b. How many German marks are there in one dollar?

3. (3 points) Knowing 24-karat is pure gold and 1 carat = .2 grams, solve the following: Suppose a necklace is made from 16-karat gold and weighs 66 grams. Find the weight, in carats, of the pure gold in the necklace.

4. (6 points) A room which 40 feet long and 12 feet wide is going to be carpeted. The carpet sells for \$27.99 per square yard.

a. How much will you pay for the carpet if you cannot buy a fraction of a square yard?

b. If the sales tax rate is 6.75% what amount in sales tax will you pay?

5. (12 points) Please answer the following questions involving percentages.

In May of 2004 there were 921 graduates at UCD and 1476 at Metro.

a. Find the absolute and relative change (nearest tenth %) comparing UCD to Metro.

b. If the number of graduates at UCD grew an additional 205% by 2012, how many graduates would they have in 2012?

c. If in 2005 the Metro graduates decrease 15% from 2004, what would be the number of graduates in 2005?

d. If in 2006 the number of graduates at UCD was 1345 and this was an increase of 25% over the 2005 graduates, how many graduates were there in 2005?

6. (6 points) The distance from the Earth to the Sun is about 150 million kilometers. A space ship can travel at the rate of 110 thousand km /hr.

a. Write the distance and the number of km/hr in scientific notation.

b. If the space ship was trying to reach the sun, how many days would it take? Show your work in scientific notation.

7. (8 points) A statistical study is conducted to determine whether or not drinking one drink a day will reduce stress in the patients at John Steinbeck's clinic.

a. What is the population for this study?

b. A sample consisting of 2200 females is selected for the study. Is this a good choice for a sample? Explain.

c. Should the study be an observational study or an experiment? If it is observational, is it case-control? If it is an experiment, describe the treatment and control groups.

8. (6 points) Suppose the results of the study in the previous problem lead to the following table.

	Stress level < 5	Stress level ≥ 5
Patients with one drink	750	420
Patients who did not drink	110	520

- a. What percentage of patients who had a drink had stress levels less than five?

- b. What would be the probability if a patient were chosen at random he would have one drink or have stress level < 5 ?

- c. What would the probability be for a patient chosen at random to have one drink and have stress level < 5 .

9. (8 points) At the beginning of 2003, Joe made a one-time deposit of \$9000 into a savings account that earns 3% interest compounded monthly. At the beginning of 2003, Molly began making monthly deposits of \$50 into an annuity (savings plan) that earns 3% compounded monthly. Assume that the interest rates remain fixed.

- a. What is Joe's balance after 10 years? What is the APY for his investment to the nearest hundredth percent?

- b. What is Molly's balance after 10 years? What amount of her balance is interest?

- c. If Molly wants to have \$50,000 in 10 years and can get an APR of 3% compounded monthly, what payments should she make at the end of each month to be able to do this?

10.(16 points) Please answer the following questions on probability and counting.

- a. What is the probability that if you flip a coin twice you'll get heads both times?

- b. What is the probability if you choose a card from the deck it will be a king or a diamond?

- c. A liberal arts class has 15 males and 22 females. Three people are selected at random from the class. What is the probability that the committee will consist of three women?

- d. Suppose that one of every five students currently enrolled at the UCD has math anxiety. What is the probability that of the next six students that you meet (at random), *at least* one has math anxiety?

Counting Problems

- e. A six character internet address must be four letters of the alphabet followed by a two-digit number. How many possible ways can this be done if repetition is permitted?
- f. No repetition?

- g. How many ways are there to determine the batting line up of 5 players from 7.

- h. How many ways can you choose six books to take on vacation from 24?

11. (9 points) Suppose there were 3100 students at UCD in 2001.

a. If the number is increasing at a steady rate of 20% year, how many people will there be 2006?
Is this linear or exponential growth?

b. If the number increases at a rate of 20 each year. How many will there be in 2006. Is this linear or exponential growth?

c. If the time for the population to double is 12 years, how many people will there be in 2015?

12. (8 points) Create a Venn diagram for the following. Three hundred people were surveyed. Of these 100 were coffee-drinker; 150 were male; and ninety were male coffee drinkers. Create a Venn Diagram. Label the circles and put the appropriate numbers in them. Then answer the following questions.

a. How many females are there?

b. How many are female coffee drinkers?

c. What is the probability a person is male or a coffee drinker?

d. What are the odds for a coffee drinker?

e. How many males do not drink coffee?

13 (3 points) The following table shows babies born during the first 20 days of January at Lutheran hospital. Construct a Relative Frequency Chart for it. Bin by tens (0-9, 10-19, etc.)

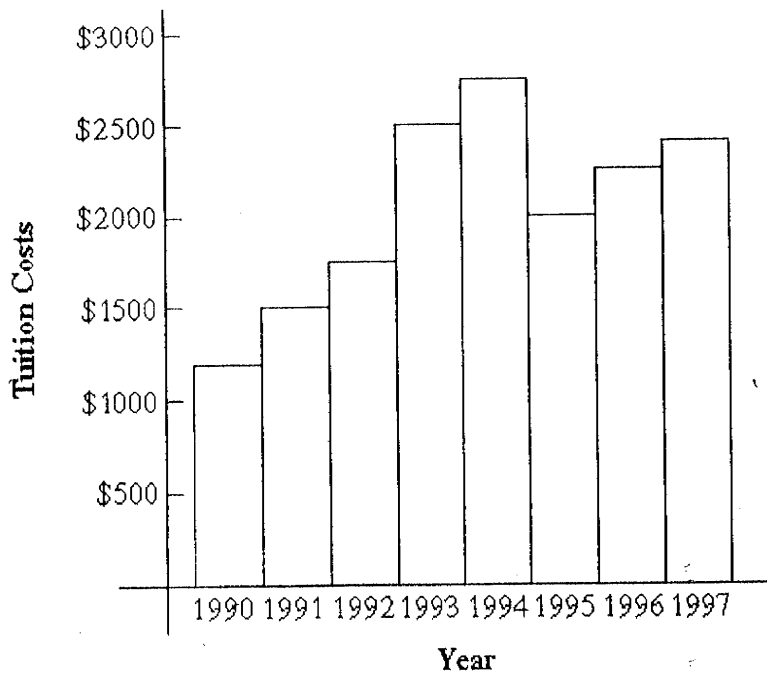
12	15	44	32	7	20	33	42	33	11
27	7	8	34	9	25	1	23	5	16

a. Construct a Relative Frequency Chart . Bin by tens (0-9, 10-19, etc.)

Data Item	Frequency	Relative Frequency	Cumulative Frequency

14. (3 points) Please choose the best answer for the following.

The following histogram shows how much money the Nelson family has spent on tuition between 1990 and 1997.



How much did the Nelsons spend on tuition between 1993 and 1995?

A) \$4750

B) \$7250

C) \$4500

D) \$2750