Name_____

# MATH 1010 UNIFORM FINAL EXAM

May 7, 2005

**The final will be two parts. Part I is multiple choice. Choose the best answer. On problems where you are directed to show your work, the correct set up will get you one point. There are 100 possible points.**

**Part II is short answers. Please answer completely.**

**Make sure your name is on this page also.**

# PART I . MULTIPLE CHOICE

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

1) *You should brush your teeth every day because brushing your teeth is very important.* 1) _____
This argument is an example of which of the following fallacies? {2pts}

A) Hasty generalization
B) Circular reasoning
C) False cause
D) Diversion (red herring)

2) *A television commercial shows two people who fall in love while wearing a certain brand of blue jeans.* 2) _____
This is an example of which of the following fallacies? {2pts}

A) Limited choice
B) Appeal to emotion
C) Hasty generalization
D) Appeal to ignorance

3) Suppose the potatoes at a store in the Netherlands are priced at 0.42 guilders per kilogram, where one dollar is worth 1.91 guilders. What is the price of the potatoes in dollars per pound? Show your set up. {3 pts} 3) _____

Set up here:

A) \$0.10 per pound B) \$0.48 per pound C) \$0.36 per pound D) \$1.77 per pound

4) The after-tax price of a bicycle is \$237.42. If a 7% sales tax was charged, what was the pre-tax price of the bicycle? Show your set up. {3 pts} 4) _____
Set up here:

A) \$254.04 B) \$220.80 C) \$226.95 D) \$221.89

5) The population of a town increased from 55,370 to 162,240 in one decade. What was the percent change of the population? Show your set up. {3 pts} 5) _____
Set up here:

A) 93% B) 193% C) 66% D) 293%

6) Suppose that the population of a city was 1000 at the beginning of one year. If the population increased by 10% that year and by 7% the following year, what was the population at the end of the two years? Show your set up. {3 pts} 6) _____
Set up here:

A) 1287 B) 1170 C) 1177 D) 1017

7) How many years would it take a worker making $16.00 per hour to earn $8,000,000, assuming she works 260 8-hour days per year? Show your set up. {3 pts} 7) _____
Set up here:

A) 80 years B) 240 years C) 2740 years D) 57 years

8) Suppose that you invest $5873 in an account that earns interest at an APR of 4.4%, compounded monthly. Determine the accumulated balance after 7 years. Show your set up. {3 pts} 8) _____
Set up here:

A) $8145.35 B) $8155.75 C) $7986.90 D) $8160.99

9) Suppose that your savings account earns interest at an APR of 7.4%, compounded quarterly. Determine the annual percentage yield (APY), to the nearest hundredth of a percent. Show your set up. {3 pts} 9) _____
Set up here:

A) 7.68% B) 7.40% C) 7.61% D) 7.66%

10) Suppose that you want to have a $90,000 retirement fund after 35 years. How much will you need to deposit now if you can obtain an APR of 14.2%, compounded daily? Assume that no additional deposits are to be made to the account. Show your set up. { 3 pts} 10) _____
Set up here:

A) $625.49 B) $862.84 C) $642.38 D) $624.88

11) Suppose you set up a new IRA (individual retirement account) that pays an APR of 7.3%, compounded monthly. If you contribute $150 per month for 15 years, how much will the IRA contain at the end of that time? Show your set up. {3pts} 11) _____

Set up here:

A) $48,804.25 B) $47,307.74 C) $46,869.47 D) $48,214.79

12) Suppose you want your daughter's college fund to contain $125,000 after 14 years. If you can get an APR of 7.8%, compounded monthly, how much should you deposit at the end of each month? Show your set up. {3 pts} 12) _____

Set up here:

A) $412.50 B) $398.54 C) $476.83 D) $406.64

13) A random sample of high school students found that 17% chose History as their favorite subject with a margin of error of 6%. Which of the following can be stated with 95% confidence? { 2 pts} 13) _____

A) The actual percentage of high school students whose favorite class is History is between 11% and 23%.

B) The actual percentage of high school students whose favorite class is History is between 11% and 17%.

C) The actual percentage of high school students whose favorite class is History is between 17% and 23%.

D) The actual percentage of high school students whose favorite class is History is 17%.

14) In a study to determine which airline has the friendliest flight attendants, which of the following is the best sample? { 2 pts} 14) _____

A) Shoppers at a grocery store

B) All airline passengers traveling on a certain day

C) Flight attendants at several airlines

D) All business travelers traveling in a certain week

15) *The Acme Soda Company wants to know if their soda tastes better than Cooky Cola.* 15) _____
This question would best be answered by which of the following types of studies. {2pts}

A) Single-blind experiment

B) Case-control study

C) Double-blind experiment

16) Which of the following quantities of interest would be the most difficult to define? {2 pts} 16) _____

A) The paint with the best looking finish

B) How water resistant a brand of paint is

C) The levels of lead in various brands of paint

D) The least expensive brand of paint

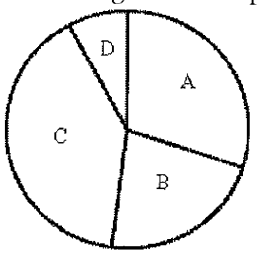
17) *A telephone poll in the New York metropolitan area asks which film should win the Academy Award for best picture this year.* 17) _____
This study may suffer from what type of bias? {2 ptss}

A) Selection bias B) No bias C) Participation bias

18) The following table describes the age distribution of U.S. senators in 1994. 18) _____

| Under 50 | 50–59 | 60–69 | 70 and over |
|---|---|---|---|
| 30 | 40 | 22 | 8 |

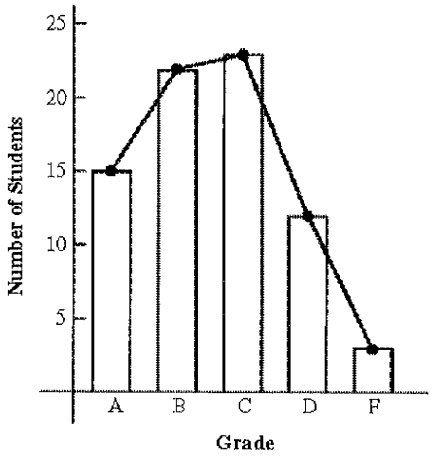
Which region of this pie chart represents the number of senators between the ages of 50 and 59?




{2 pts}

A) A B) B C) D D) C

19) The following bar graph shows the grades Ms. Muckluck gave the students in her English classes last year. 19) _____




How many students were in Ms. Muckluck's classes last year? {3pts}

A) 75 B) 45 C) 57 D) 23

20) Which of the following describes a statistical graph that plots three or more related quantities simultaneously? { 2 pts} 20) _____

A) Multiple bar graph
B) Pictograph
C) Three dimensional graph
D) Contour map

21) Which of the following statements describes an exponential relationship? {2 pts} 21) _____

A) The value of this rental property can be depreciated at the rate of $4300 per year.
B) The population of a certain city is increasing at the rate of 600 people per year.
C) The price of a widget is increasing at the rate of 34% per year.
D) The number of dogs is increasing at the rate of 40 dogs per year.

22) Suppose a chess board has one grain of wheat on the first square, two grains on the second square, four grains on the third square, eight grains on the fourth square, and so on. How many grains are on the 10th square? {3 pts} 22) _____

A) $2^8$ B) $2^9$ C) $2^{10}$ D) $2^{11}$

23) Suppose you deposit $900 in a bank account that has a doubling time of 21 years. To the nearest $100, what will your balance be after 38 years? Show your set up. {3pts} 23) _____

Set up here:

A) $2700 B) $1600 C) $3200 D) $4300

24) If the half-life of a drug in the bloodstream is 9 hours, how much drug is left in the bloodstream 2( hours after a 260 milligram dose? Show your set up. {3 pts} 24) _____

Set up here:

A) 190 milligrams B) 117 milligrams C) 32 milligrams D) 56 milligrams

25) Suppose that a savings account increases its value by 4.7% per year (APY). Use the approximate doubling time formula to estimate the doubling time of the account. 25) _____

Show your set up. {3 pts}

Set up here:

A) 14 years B) 15 years C) 13 years D) 16 years

## PART II. SHORT ANSWER

Please answer the following questions on **probability**. You may leave your answer as a fraction or decimal. Please round, if necessary, all decimal answers to four places.

26. What is the probability that a four child family will have exactly 2 girls? {2 pts}

26. _____

27. What is the probability if you choose a single card from the deck it will be a queen or spade? {2 pts}

27. _____

28. What is the probability of obtaining a sum of 5 when you roll a pair of dice? {2 pts}

28. _____

29. You have 3 yellow, 7 green and 5 blue marbles. Find the following probabilities:

a. You are choosing a marble at random, what is the probability it is not green? {2 pts}

29a _____

b. You are choosing 2 marbles (without replacement) what is the probability they are both yellow? {3 pts}

29b _____

30. Suppose that one out of every four people eat breakfast in the morning. What is probability that of the next eight people that you meet (at random), *at least* one has eaten breakfast? {2pts}

30 _____

**COUNTING PROBLEMS**: Determine the number of ways possible:

31. A corporate bank account code consists of a letter of the alphabet followed by five numerical digits

a. How many possible ways can this be done if repetition is permitted? {2 pts}

31a _____

b. If you can not have repetition? { 2pts}

31b _____

32. A crime victim is asked to pick out of a lineup of nine people, the person she thinks did the crime and the person who drove the getaway car. How many outcomes of this identification are possible?{2 pts}

32. _____

33. How many ways can you choose a combination of four spices from 17 to use in seasoning your soup? {2 pts]

33. _____

34. Create a Venn diagram for the following. Two hundred people were surveyed. Of these 95 had lung cancer, 85 smoked and 65 had lung cancer and smoked. Create a Venn Diagram. Label the circles and put the appropriate numbers in them. Then answer the following questions.

Venn diagram: {2 pts}

a. How many non-smokers are there? {2 pts}

34a _____

b. How many are non-smokers with lung cancer?{2 pts}

35b _____

c What is the probability a person is smoker or has lung cancer? {2pts}

34c _____

d. What are the odds for lung cancer?{2pts}

34d _____

**<u>This last problem deals with unit conversions.</u>**

35. You are carpeting a room which is 12 feet by 19 feet, and carpet sells for $18.95 per square yard.

a. How much will you pay for the carpet if you can not buy a fraction of a square yard? {2pts}

35a _____

b. How much will you totally pay if the tax rate is 6.7%? {2 pts}

35b_____