



FINAL EXAM

Name of Course: Data Management

Teacher: E. Meger

Course Code: MDM 4U

Date: 29 June, 2016

Length of Exam: 2 hours

Name of Student: _____ Mark: _____

Instructions:

1. This exam booklet includes a sheet of mathematical formulas. No other aids are allowed.
2. *Graphing calculators and calculators on cell phones are not allowed.* Students are not allowed to share calculators
3. Write solutions in the space provided and clearly *identify your answer* to each question.
4. *Show all your work.* Full marks may not be awarded for a question if insufficient work is shown or correct mathematical forms, conventions and vocabulary are not used.
5. Numerical answers must be represented in completely simplified exact form, unless otherwise instructed.
6. Sketch graphs in the space provided, or on graph paper included in this booklet.
7. Follow the recommended timing guidelines for each section to ensure you have sufficient time to complete the exam.

Mark Breakdown

Knowledge	/9 (20%)
Communication	/9 (20%)

Application	/13 (30%)
Thinking / Inquiry	/13 (30%)
Total Marks	/44 (100%)

1. [2K] A computer is assigned a 20 digit code when it logs onto a network. How many possible codes contain six 0s, five 1s, and nine 2s?

2. There are 12 assorted bagels in a paper bag. There are 6 poppyseed, 4 cinnamon, and 2 garlic bagels. A person brings 6 for a lunch meeting.

a. [1K] What are the chances that exactly 3 are poppyseed?

b. [1K] What is the expected number of poppyseed bagels at the lunch meeting?

3. [2A] There are 6 add-ons to help improve an internet browser. The computer lags if more than 3 add-ons are installed. How many ways can a person install add-ons such that the computer does not lag?

4. [2T] For the expression bellow, find the 17th and 29th terms:

$$\left(\sqrt{2}x^3 - 3y^2\right)^{34}$$

5. [2K] Which die has higher expectation:
- an 8-sided die with its faces numbered 3, 6, 9, and so on, up to 24

c. Sample Bias

8. People in the park are surveyed and the number of freckles found on their nose is recorded.

6 2 0 0 0 1 4 2 2 2 2 3 1

- a. [2A] Determine the mean, median, and mode for this data set
- b. [2A] Determine the Inter Quartile Range for this data set
- c. [2C] Create a box and whisker plot for this data set, label all quartiles.
- d. [1C] Determine a convenient interval size and create a frequency chart for this data set
- e. [1A] Determine the standard deviation for this data set

9. [2C] Identify a common cause in the following statement:

Ice cream sales decrease, as hockey equipment sales increase.

10. [2T] A manager interviews in random order five candidates for a promotion. What is the likelihood that the most experienced candidate will be interviewed first, followed by the second most experienced candidate?

11. [2A] When a checker reaches the opposite side, it becomes a “king”. From which starting square (A or B) does a checker have the most routes to become a king? Recall that checkers can travel only diagonally on the white squares, moving upward. The checker CANNOT step or jump over the X.

X

X

12. [2T] There are 900 employees at CantoCrafts Inc. Of these, 615 are female, 345 are under 35 years old, 482 are single, 295 are single females, 187 are singles under 35 years old, 190 are females under 35 years old, and 120 are single females under 35 years old. Use a Venn diagram to determine how many employees are married males who are at least 35 years old.

13. Of the members of a track-and-field club, 42% entered track events at the most recent provincial meet, 32% entered field events, and 20% entered both track and field events.

- a. [2K] Illustrate the club's entries with a Venn diagram.
- b. [2A] What is the probability that a randomly selected member of the club:
 - i. entered either a track event or a field event at the provincial meet?
 - ii. did not compete at the meet?

14. [3T] Laurie, an avid golfer, gives herself a 70% chance of breaking par (scoring less than 72 on a round of 18 holes) if the weather is calm, but only a 15% chance of breaking par on windy days. The weather forecast gives a 40% probability of high winds tomorrow. What is the likelihood that Laurie will break par tomorrow, assuming that she plays one round of golf?

15. [2T] Suki is enrolled in one data-management class at her school and Leo is in another. A school quiz team will have four volunteers, two randomly selected from each of the two classes. Suki is one of five volunteers from her class, and Leo is one of four volunteers from his. Calculate the probability of the two being on the team.

16. Suppose that the Toronto Blue Jays face the New York Yankees in the division final. In this best-of-five series, the winner is the first team to win three games. The games are played in Toronto and in New York, with Toronto hosting the first, second, and if needed, fifth games. The consensus among experts is that Toronto has a 65% chance of winning at home and a 40% chance of winning in New York.
- a. [1K] Construct a tree diagram to illustrate all the possible outcomes.
 - b. [2T] What is the chance of Toronto winning in three straight games?