

QUIZ 1 (CHAPTERS 1-4)**MATH 119 – SPRING 2013 – KUNIYUKI
105 POINTS TOTAL, BUT 100 POINTS = 100%****Show all work, simplify as appropriate, and use “good form and procedure” (as in class).****Box in your final answers!****No notes or books allowed. A scientific calculator is allowed.**

Check one:

Can you easily print files from the class website?

 Yes. I can print exam solutions. No. Give me exam solutions in class.

- 1) (6 points). A college has 32 course sections in math. A frequency table for the numbers of students in the sections is given below. Fill out the relative frequency column. Write out the entries as decimals rounded off to three decimal places.

Number of students	Frequency	Relative Frequency
20-29	4	
30-39	10	
40-49	9	
50-59	6	
60-69	3	

- 2) (8 points). A police officer measures the speed (in mph) of 15 cars that pass by her on a highway. Do a stem-and-leaf plot (or stemplot) of the speeds (in mph). Here are the speeds:

75 54 57 47 81 51 78 84 49 61 60 67 72 90 54

3) (33 points total). We are tracking the weekly sales of cell phones at a megastore over a five-week period. The weekly sales are listed below:

110 108 115 108 119

- a) (4 points). Find the mean of these weekly sales. Show work!

- b) (4 points). Find the median of these weekly sales.

- c) (4 points). Find the mode of these weekly sales.

- d) (4 points). Find the midrange of these weekly sales.

- e) (4 points). Find the range of these weekly sales.

- f) (13 points). Find the sample standard deviation of these weekly sales. Treat the data set as a sample data set, not a population data set. Round off your final answer to one decimal place. Show all work!

- 4) (3 points). Based on our discussion in class, which of the measures of spread below tends to be more sensitive to outliers? Box in one:

The range

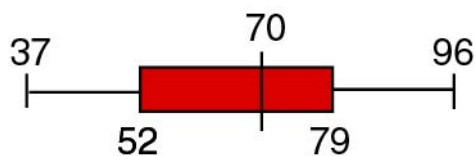
The standard deviation

- 5) (6 points). Cartman's report card for last term is below.

Class	Number of units	Grade
English	4	C
Math	5	D
Physical Ed.	3	F

What was Cartman's grade point average (GPA) for last term rounded off to two decimal places? Use the point scheme discussed in class, where 4.0 represented a straight-A record, 3.0 for B, 2.0 for C, 1.0 for D, and 0.0 for F.

- 6) (4 points total; 2 points each). Let's say a large population data set is approximately normally distributed.
- About what percent of the data will lie within one standard deviation of the mean?
 - About what percent of the data will lie within two standard deviations of the mean?
- 7) (4 points). According to an AAPA census, the mean number of days of paid vacation time offered for physicians' assistants is 17 days. The standard deviation is 6.6 days. If J.D. is a physician's assistant who is offered 5 days of paid vacation time, what is J.D.'s z score? Round off to two decimal places.
- 8) (2 points). The fourth decile (D_4) corresponds to which percentile?
- 9) (2 points). The scores on a test (in points) in a large class are summarized by the boxplot (also known as a "box-and-whisker" plot) below. Pat scores 52 points on the test. At what percentile does Pat score?



10) (5 points). A and B are events such that $P(A) = 0.7$, $P(B) = 0.4$, and $P(A \text{ and } B) = 0.3$. Find $P(A \text{ or } B)$.

11) (4 points total; 2 points each). A standard six-sided die is rolled once. Consider the following events:

Event A: The die comes up an even number.

Event B: The die comes up a "3."

a) Are the two events mutually exclusive (that is, disjoint)? Box in one:

Yes

No

b) Are the two events independent? Box in one:

Yes

No

FOR THE FOLLOWING PROBLEMS, IF YOUR FINAL ANSWER IS A PROBABILITY, YOU MUST WRITE IT AS EITHER:

• **AN EXACT FRACTION OF THE FORM $\frac{\text{INTEGER}}{\text{INTEGER}}$, OR**

• **AN EXACT DECIMAL OR AN EXACT PERCENT, OR**

• **A DECIMAL OR PERCENT ROUNDED OFF TO THREE SIGNIFICANT DIGITS. AVOID ROUNDING OFF INTERMEDIATE RESULTS.**

12) (5 points). The state of Denial has millions of athletes. Seventy percent of the athletes in Denial are taking the steroid Hulk. Four athletes in Denial are randomly selected. What is the probability that all four selected athletes are **not** taking Hulk?

13) (6 points). A red die and a green die are rolled, and a fair coin is flipped. The dice are standard six-sided dice. What is the probability that all of the following happen: the red die comes up "odd," the green die comes up a "3," and the coin comes up "heads"? (Your answer will be one number, not three.)

14) (7 points). A paper bag has five blue M&Ms, four green M&Ms, and two yellow M&Ms. You randomly select three M&Ms one-by-one without replacement (meaning that M&Ms are not returned to the bag after they are taken out). What is the probability that you pick a green M&M first, a blue M&M second, and another green M&M third? (Your answer will be one number, not three.)

15) (10 points total). A snack foods company is conducting a taste test between Liver Chips and Crunchy Broccoli Chips. The marketers for the company are interested in, among other things, the different reactions among people of different ages. The information for the 150 people who took the taste test is in the table below. (Ages are in years.)

	Prefer Liver Chips	Prefer Crunchy Broccoli Chips
Age 11-30	35	5
Age 31-50	40	20
Age 51-70	20	30

Let's say we randomly select someone who took the taste test.

a) What is the probability that the person's age is in the 51-70 category **or** the person prefers Crunchy Broccoli Chips?

b) Assume that we now know that the person is in the 11-30 age range. What is the probability that the person prefers Liver Chips, **given that** the person is in the 11-30 age range?