

BRONX COMMUNITY COLLEGE
of the City University of New York

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

MATH 23
Fall 2014

Midterm Examination
Day (1.5 Hours)

1. (20 points) For the sample data $X = \{3, 17, 22\}$
 - (a) Find the sample mean \bar{x} .
 - (b) Find the sample standard deviation s .
 - (c) Would you say that the data is consistent with the mean? Explain.
2. (20 points) The following data relates pension contribution (x) in thousands of dollars to the percent of taxable income (y).

x	5	10	3.5
y	2.5	1	3

- (a) Draw the scattered plot of the set of data.
 - (b) Using the graph would you estimate the correlation to positive, negative or zero? Explain your answer.
3. (20 points) The following probability distribution represents the claim sizes (x) for an auto insurance policy.

x	1	2	3
P(x)	.2	.3	.5

- (a) Sketch the graph of the distribution.
 - (b) Calculate the expected value of the distribution.
 - (c) Calculate the standard deviation.
4. (20 points) The following table represents the distribution of students at a local school:

	Male	Female
Junior	25	30
Senior	18	15

Find the probability that a randomly selected student is:

- (a) A female (F).
- (b) A junior (J).
- (c) A junior and a senior (J and S). How do you call this type of event?
- (d) A junior or a senior (J or S). How do you call this type of event?
- (e) Junior and female (J and F).

- (f) A junior or a female (J or F).
 - (g) Are the events “F=the selected student is a female” and “J=the selected student is a junior” mutually exclusive? Explain.
5. (20 points) An entrance exam requires two tests: Math and English. The probability of passing the English test is .67 and the probability of passing the Math test for student that already passed the English is .89.
- (a) What is the probability of passing both tests?
 - (b) If the probability of passing the Mathematic test (without any conditions) is .. What is the probability of passing Math for students that already passed English?
 - (c) Are the events “E=passing the English exam” and “M=passing the Math Exam” independent? Explain your answer.