MAT 1272 – Prof Kan

Review Sheet for Test 3

1) Owners of smartphones spend, on average, 3 hours a day looking at their phones, with a
   standard deviation of .5 hours. Assume the data are normally distributed.
   a) Find the z-score associated with someone who spends 3.23 hours looking at her phone.
   b) What is the probability that a randomly selected individual spends between 2.2 and 2.8
      hours looking at their phone?
   c) What is the probability that a randomly selected individual spends more than 2.4 hours
      looking at their phone?
   d) What is the probability that a randomly selected individual spends less than 1.9 hours
      looking at their phone?
   e) Find the lowest amount of time someone spends looking at their phone and is in the top
      17% of the data set.

2) The following data shows the height, x, in inches, and the weight, y, in pounds of 12
   individuals.

Height, x	62	76	54	58	80	65	66	70	72	69	71	73
Weight, y	119	203	103	112	245	150	139	170	175	181	197	189

   a) Find r, the correlation coefficient.
   b) Describe what kind of relationship there is between height and weight.
   c) Calculate the equation of the regression line.
   d) Using the regression equation, predict the weight for a person that is 68 inches tall.

3) The following data shows the box office gross for 20 Marvel movies, in millions of dollars.
   312 164 678 411 389 858 700 214 180 206 334 259 312 426 623 120 201 741 210 699
   a) Construct a frequency distribution using 6 classes
   b) Draw a histogram for the frequency distribution in a)
   c) Draw a frequency polygon for the frequency distribution in a)

4) 72% of girls age 2-6 are fans of Disney princesses. If you randomly surveyed 18 girls
   age 2-6,
   a) what is the probability that exactly 14 of them are fans of Disney princesses?
   b) what is the probability that at least 9 of them are fans of Disney princesses?

5) A box of toys contains 7 Transformers, 8 Barbies, and 10 Hot Wheels. If you were to
   select 6 toys at random, what is the probability that you select 1 Transformer, 2 Barbies,
   and 3 Hot Wheels?

6) A lottery has 30 numbers. In how many different ways can 6 numbers be selected if the
   order of selection is important?

7) 15, 10, 12, 14, 23, 13, 20, 19, 25, 11
   a) Find the range, mean, median, mode, and standard deviation of the sample data set.
      Round to the nearest hundredth.
   b) What percent of scores are 1 standard deviation away from the mean?

8) The heights of men in the United States are normally distributed with a mean of 69.9 inches and a standard deviation of 3 inches. What is the tallest a man can be and fall in the bottom 20%?

9) The table below shows a table in which people were asked what kind of smartphone and computer they own. Assume a person owns only one of each.

	Apple	HP	Lenovo
Iphone	68	32	45
Android	10	27	51

a) Find the probability that a person owns an HP computer.
b) Given that a person owns an Apple laptop, find the probability that they also own an iphone.
c) What is the probability that a person owns an Android phone or owns a Lenovo computer?
d) Are the categories own an Iphone and own an Android mutually exclusive? Why?
e) What is the probability that a person does not own an iphone?

10) A probability distribution table is shown below.

x	2	3	4	5	6
P(x)	.10	.19	.29		.05

a) Find the probability x equals 5.
b) Find the probability x is at least 4.
c) Find the mean of the probability distribution
d) Find the standard deviation of the probability distribution

11) A car has color options of white, black, silver, and blue. Drive options are RWD and AWD. Trim levels are EX, Prestige, and Select. How many different cars can be made?

12) Suppose that the distance of fly balls hit to the outfield (in baseball) is normally distributed with a mean of 250 feet and a standard deviation of 50 feet. We randomly sample 49 fly balls.
a) Find the probability that mean of the sample is less than 239 feet?
b) Find the probability that mean of the sample is more than 266 feet?