Stat C1000 Final Practice.
Show all calculations when appropriate. This is __not__ homework; do __not__ turn in.

1. The data set below are the times in minutes people had to wait in grocery store lines.

Lane at Safeway	4.2	5.4	5.8	6.2	6.7	7.7	7.7	8.5	9.3	10.0

Find the given statistics for:
a. The mean
b. The median
c. The mode(s), if any.
d. The midrange
e. The range
f. Standard deviation

2. A die with 12 sides is rolled. What is the probability of rolling a number less than 11?

3. The table below shows the soft drink preference of people in three age groups. If one of the 255 subjects is randomly selected, find the probability that the person is over 40 years of age given that they drink root beer.

Age	Cola	Root beer	Lemon-lime
Under 21 years	40	25	20
Between 21 and 40	35	20	30
Over 40 years	20	30	35

4. The number of students using the Open Math Lab per day is found in the distribution below.

X	30	40	50	60	70
P(X)	0.04	0.08	0.5	0.21	0.17

a. Find the mean, variance, and standard deviation for the probability distribution above.
b. A instructor stated that 95 students used the Lab in one day. Is this a believable claim?

5. Suppose the probability of randomly selecting a left-handed person is 0.1.
a. Verify that this is a binomial distribution (check all requirements).
b. In a class of 35 students, what is the mean number of left-handed students?
c. Find the standard deviation.

6. Find the value of a (a z-score) such that:
a. $P(z > a) = 0.65$
b. $P(-a < z < a) = 0.90$

7. A government agency wishes to assess the rate of unemployment in a particular county. A poll is conducted, and 500 randomly selected persons are interviewed and 41 are found to be unemployed. Compute a 95% confidence interval for the proportion of unemployed in the county. Interpret your result.

8. For a simple random sample of 40 particular brand vehicles, the mean gas mileage was 20 miles per gallon with a (sample) standard deviation of 1.5 miles per gallon.
a. Construct a 99% confidence interval for the mean gas mileage of similar vehicles.
b. Is it possible that the mean gas mileage is greater than 23 miles per gallon? Explain.

9. The company Drug Test Success provides a "1 – Panel – THC" test for marijuana usage. Among 300 tested subjects, results from 27 subjects were wrong (either a false positive or a false negative). Use a 0.05 significance level to test the claim that less than 10% of test results are wrong.

10. The heights are measured for the simple random sample of supermodels Crawford, Bundchen, Pestova, Christenson, Hume, Moss, Campbell, Schiffer, and Taylor. They have a mean height of 70.0 in. and a standard deivation of 1.5 in. Use a 0.01 significance level to test the claim that the supermodels have heights with a mean that is greater than the mean height of 63.6 in. for the women in the general propulation.

11. In a study of police gunfire reports during a recent year, it was found that among 540 shots fired by New York City police, 182 hit their targets; and among 283 shots fired by Los Angeles police, 77 hit their targets. We want to use a 0.05 significance level to test the claim that New York City police and Los Angeles police have the same proportion of hits. Test the claim by using a hypothesis test.

12. Use the data below to find the equation of the regression line.

x	1	2	3	4
y	5	6	7	8

Where $b_1 = \dfrac{(n)(\sum xy) - (\sum x)(\sum y)}{(n)(\sum x^2) - (\sum x)^2}$ and $b_0 = \dfrac{(\sum y)(\sum x^2) - (\sum x)(\sum xy)}{n(\sum x^2) - (\sum x)^2}$ (or use TI-84.)
and the equation of the regression line is $\hat{y} = b_0 + b_1 x$. (or use TI-84.)

Key:

1. a. 7.15; b. 7.2; c. 7.7; d. 7.1; e. 5.8; f. 1.82;
2. 5/6
3. 0.4
4. a. 53.9, 97.8, 9.9; b. 73.7, not believable
5. a. varied; b. 3.5; c.1.8
6. a. a = −0.385; b. a = 1.645
7. $0.058 < p < 0.106$. Various interpretation.
8. a. $19.4 < \mu < 20.6$; b. Yes, but unlikely.
9. $z = -0.58$ or p-value = 0.281, fail to reject H_o, conclude …
10. t = 12.80, C.V. = 2.896, reject H_o, conclude …
11. $z = 1.91$ or p-value = 0.056, fail to reject H_o, conclude …
12. $\hat{y} = 4 + 1x$