Premedical course

MINITAB practical 5a

1. Generate 100 replicates of observations from a binomial distribution with n = 10 trials and a probability of success in each trial of p = 0.2. What is the mean number of successes per set of 10 trials? What is the standard deviation? How do these compare respectively to np and $\sqrt{np(1-p)}$? What is the shape of the distribution of the number of successes? Suppose you carried out a small study on 10 people and 6 of them died; would that be compatible with a death rate of 20% in the population?

2. Generate 1000 replicates of observations from a binomial distribution with n = 100 trials and a probability of success in each trial of p = 0.2. What is the mean number of successes per set of 100 trials? What is the standard deviation? How do these compare respectively to np and $\sqrt{np(1-p)}$? What is the shape of the distribution of the number of successes? Suppose you carried out a study on 100 people and 30 of them died; would that be compatible with a death rate of 20% in the population? Use two different aproaches to answer the final question.

Premedical course

MINITAB practical 5b

1. Find the mean and standard deviation of the following data. Then find the mean of each row, and find the mean and standard deviation of these means. What is the relationship between the two standard deviations you have found? Why is that so? Draw stem-and-leaf plots of the original data and of the means. What do you notice? Explain.

4.6572	0.3480	2.6020	3.1409
2.5076	1.9075	6.1086	3.6170
4.0424	1.6708	1.8920	11.1775
2.0657	5.1282	4.5202	1.2177
1.6586	2.3327	6.5971	2.5030
11.0051	7.3452	6.4271	3.0669
2.8779	6.7447	9.6181	5.7995
3.8630	6.2629	0.5248	7.2097
1.2786	4.3307	0.6722	6.9323
3.2698	3.6903	2.4160	4.5485
1.9277	4.6205	4.5321	9.0706
3.0997	6.7783	8.2282	2.6798
2.4835	1.0214	3.9808	2.3483
4.6465	2.5932	5.6515	4.2144
7.1381	1.0502	5.4970	2.5832
8.6565	4.7865	0.4817	9.1800
2.2698	7.8114	8.9912	2.3889
1.2594	2.6762	7.3695	4.0065
8.4424	5.5811	2.5452	6.1598
1.7759	3.7319	5.6210	3.0142
5.9349	13.2573	3.7299	2.1751
2.0629	2.1565	16.2943	5.5919
2.0438	1.5905	2.9722	0.9561
2.2511	1.5956	2.9760	1.4859
3.1750	1.8129	1.4513	8.3075
9.7542	2.0166	1.2334	9.5053
4.9154	4.3205	2.3509	1.1446
2.2938	3.7543	4.0534	2.4130
2.0304	2.5636	2.5018	1.2852
3.5066	5.0571	3.6901	7.9375

If you do not wish to type the data into Minitab you may generate it as follows:

```
MTB > Base 314159.
MTB > Random 30 c1-c4;
SUBC>   Chisquare 4.
```

2. The data above have been generated from a χ^2 distribution with 4 degrees of freedom. What can you say about the mean of this distribution? Now generate 1000 observations from this distribution. Now what can you say about the mean?