First Review for Math 23 Summer 2006

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1. Classify each of the following data according to the *level of measurement* (that is state whether it is nominal, ordinal, interval, or ratio):
   (a) The telephone numbers in a telephone directory.
   (b) The scores of a class in an exam.
   (c) Absolute temperatures (that is temperatures measured in Kelvin degrees).
   (d) Motion Picture Association of America Ratings Description (G, PG, PG-13, R, NC-17).
   (e) Average Monthly precipitation in inches for New York, NY.
   (f) Average Monthly temperature (in degrees Fahrenheit) for New York, NY.

2. The numbers of motor vehicle occupants killed in crashes in 1989 are listed in the following table.

Vehicle	Killed
Car	25,063
Trucks	9,409
Motorcycles	3,141
Other	474

   Display this data in a bar graph and in a pie chart.

3. Construct the histogram and relative frequency histogram for the following data. Use five classes. Use the middle point of each class as the class mark.

48	53	50	53	56
46	54	54	55	54
47	59	50	56	56
51	53	57	52	49
51	60	50	49	57
49	54	56	52	52

4. A consumer testing service obtained the following mileage (in miles per gallon) in five test runs for three different types of compact cars:

	First Run	**Second Run**	**Third Run**	**Fourth Run**	**Fifth Run**
Car A	28	32	28	30	34
Car B	31	29	31	29	31
Car C	29	32	28	32	30

   (a) If the manufacturer of Car A wants to advertise that their car performed the best in this test, which "average" (mean, median or mode) should be used to support their claim?
   (b) What "average" should the manufacturer of Car B use to claim that their car performed best?
   (c) What "average" should the manufacturer of Car C use to support a similar claim?

5. Calculate the range, mean, median, first and third quartiles, interquartile range, mode, variance, and standard deviation for the following data. Draw the box-and-whisker plot.

   47 59 50 56 56 51 53 57 52 49

6. Florida's age distribution has mean value $\mu = 39.2$ and standard deviation $\sigma = 24.8$ (measured in years). Use Chebyshev's theorem to find an interval such that
   (a) the age in years of at least 75% of Florida's population is contained within that interval,
   (b) the age in years of at least 88.9% of Florida's population is contained within that interval,
   (c) the age in years of at least 93.8% of Florida's population is contained within that interval.
   (d) the age in years of at least 96% of Florida's population is contained within that interval.
7. Given the Box-and-Whisker plot in Figure 1 find the range, mean, median, first and third quartiles, and the interquartile range.

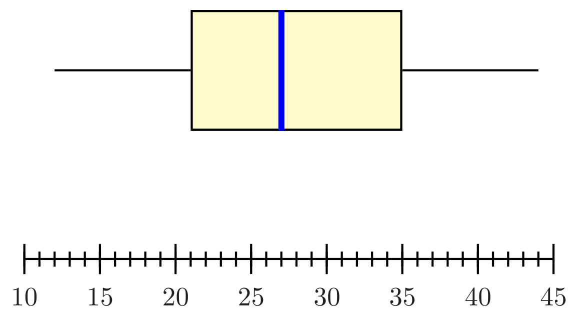

Figure 1: Box-and-Whiskers plot

8. Match the histograms with the Box-and-Whiskers plots: