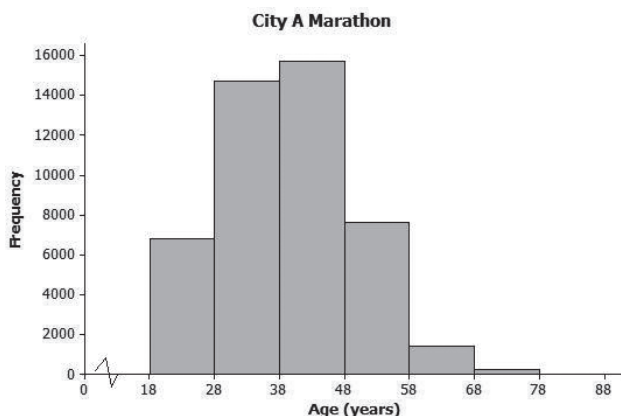NAME: _____ PERIOD: _____ DATE: _____

Homework Problem Set

1. A large city, which we will call City A, holds a marathon. Suppose that the ages of the participants in the marathon that took place in City A were summarized in the histogram below on the left.

A. Make an estimate of the mean age of the participants in the City A marathon.

    Around 40 years

B. Make an *estimate* of the standard deviation of the ages of the participants in the City A marathon. Which has a larger standard deviation?

    8-15 years
    City B has larger Standard Deviation

A smaller city, City B, also held a marathon. However, City B restricts the number of people of each age category who can take part to 100. The ages of the participants are summarized in the histogram above to the right.

C. Approximately what was the mean age of the participants in the City B marathon? Approximately what was the standard deviation of the ages?

    Mean: around 50 yrs. old
    Standard Deviation: 20 yrs. old

D. Explain why the standard deviation of the ages in the City B marathon is greater than the standard deviation of the ages for the City A marathon.
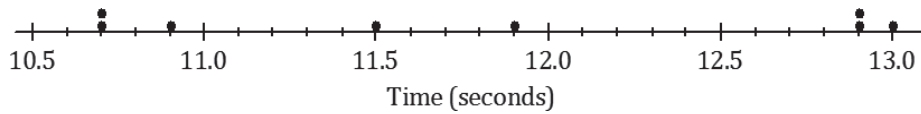
    The data points are spread out & not a cluster around the mean.

2. At a track meet, there are three men's 100-meter races. The times for eight of the sprinters are recorded to the nearest $\frac{1}{10}$ of a second. The results of the three races for these eight sprinters are shown in the dot plots below.
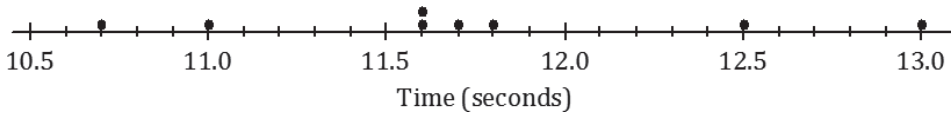
Race 1
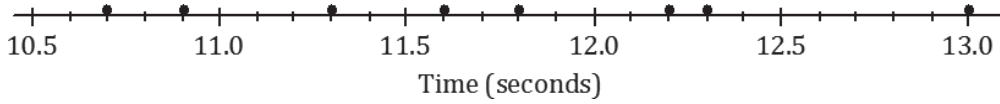
Race 2

Race 3

A. Remember that the size of the standard deviation is related to the sizes of the deviations from the mean. Without doing any calculations, indicate which of the three races has the smallest standard deviation of times. Justify your answer.

Race 3 because 4 of the 8 points are clustered around the mean

B. Which race had the largest standard deviation of times? (Again, don't do any calculations!) Justify your answer.

Race 2 because the data points are furthest away from the mean.

C. Roughly what would be the standard deviation in Race 1? (Remember that the standard deviation is a typical deviation from the mean. So, here you are looking for a typical deviation from the mean, in seconds, for Race 1.)

Around 0.5 – 10 seconds

D. Use your calculator to find the mean and the standard deviation for each of the three races. Write your answers in the table below to the nearest thousandth.

	Mean	Standard Deviation
Race 1	11.725	0.767
Race 2	11.813	1.013
Race 3	11.738	0.741

E. How close were your answers for Parts A − C to the actual values?

Answers will vary.