Class Exercises for **2.b. Variability**

1. Data collected from hospital records reveal that the age of first hospitalization for psychosis for a sample of patients are:

18, 20, 21, 22, 23, 23, 24, 28, 28, 29, 32, 37, 39

a. Calculate the variance for this dataset using the formula below.
   1. Take the distance ("deviation") of each score from the mean
   2. Square each distance to get rid of the sign (because some deviations will be negative)
   3. Add up all the resulting "squared deviations" to get Sum of Squares (SS)
   4. Divide by the number of scores

$$SD^2 = \frac{\Sigma(X - M)^2}{N}$$

M =___		
Scores: X	Score - Mean: X-M	(Score-Mean)^2: (X-M)^2
	Sum: Σ(X-M)^2 =	

$$SD^2 = \frac{\Sigma(X - M)^2}{N}$$

SD^2= ____

b. Calculate the standard deviation for this dataset using the formula below.

$$SD = \sqrt{SD^2}$$

SD= ____

c. Explain what the standard deviation means in words for this dataset.

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d. If the standard deviation were twice as large, what would this mean for the shape of the distribution?

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2. The number of years of education for <u>most</u> members of the sample in the study of psychosis onset were:
6, 7, 9, 10, 11, 12, 12, 13, 13, 13, 15, 16

a. Calculate the variance for this dataset using the formula below.

$$SD^2 = \frac{\Sigma(X - M)^2}{N}$$

$$SD^2 = \frac{\Sigma(X - M)^2}{N}$$

SD^2= ____

b. Calculate the standard deviation for this dataset using the formula below.

$$SD = \sqrt{SD^2}$$

SD= ____

c. If the shape of this distribution were more symmetrical, would the standard deviation be smaller or larger?

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d. We are often interested in summarizing the central tendency of a dataset with one summary statistic: for example, the mean. For which dataset would you feel more comfortable making statements regarding central tendency: one with a <u>small</u> standard deviation or one with a <u>large</u> standard deviation?

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