Class Activity

For problems 1 and 2, use technology like WolframAlpha unless you wish to inflict pain upon yourself.

1. Given the symmetric data sets:

$$S_1 = \{14, 15, 15, 15, 16, 16, 16, 17, 17, 17\}$$

$$S_2 = \{12, 13, 14, 15, 16, 16, 16, 17, 18, 19\}$$

   (a) Calculate the mean ($\bar{x}$) for both data sets.

   (b) Compute the standard deviation (s) for both data sets.

   (c) Compare the means and standard deviations of S_1 and S_2. Which data set has a larger mean? Which data set has a larger standard deviation?

2. Given the skewed data sets:

$$T_1 = \{1, 2, 2, 3, 3, 4, 5, 7, 9, 20\}$$

$$T_2 = \{1, 1, 2, 3, 4, 5, 6, 8, 10, 15\}$$

   (a) Calculate the median ($\bar{x}$) for both data sets.

   (b) Compute the interquartile range (IQR) for both data sets.

   (c) Compare the medians and IQRs of T_1 and T_2. Which data set has a larger median? Which data set has a larger IQR?

3. For each of the following scenarios, determine which group (A or B) is expected to have greater variability. (Hint: Think about which group has a higher mean and the shape of the distributions.)

   i. **Scenario 1: High School Exam Scores**

      A. Students who studied for more than 20 hours for the exam.

      B. Students who studied for less than 2 hours for the exam.

   ii. **Scenario 2: Daily Commute Time**

      A. Residents of a rural village traveling to the nearest town.

      B. Residents of a densely populated city traveling to their workplaces within the city.

   iii. **Scenario 3: IQ Scores**

      A. General population.

      B. Population of college professors.

iv. **Scenario 4: Heights**

A. Members of a local basketball team.

B. Attendees of a random high school assembly.

v. **Scenario 5: Number of Books Read per Year**

A English literature professors.

B Engineering students.

vi. **Scenario 6: Weekly Exercise Duration**

A. Members of a college athletic team.

B. Members of a college chess club.

vii. **Scenario 7: Number of Movies Watched per Month**

A. Film studies students.

B. Medical students during their residency.