1. The U.S. Center for Disease Control (CDC) collects anthropometric (weight, height etc..) data on large samples of US youth, both male and female, and uses these data to create growth charts, which essentially characterize the distributions of these measures by age and sex. For example, for 18 years old males, the mean body mass index (BMI) is 21.9 (kg/m^2) with a standard deviation (SD) of 3.2 (kg/m^2). Physicians (and patients) can use these data to figure out how individual BMI values compare relative to the age and sex specific distribution. Suppose you are a physician and you are screening patients at a health fair. The following describes some of the men you have screened.

   You may assume the distribution of BMI values for 18 year-old males is a normal distribution.

   Male 1 had a BMI of 26.7. His BMI was above average by how many SDs?

   - ○ 2
   - ○ 1
   - ○ 0.5
   - ◉ 1.5

2. The U.S. Center for Disease Control (CDC) collects anthropometric (weight, height etc..) data on large samples of US youth, both male and female, and uses these data to create growth charts, which essentially characterize the distributions of these measures by age and sex. For example, for 18 years old males, the mean body mass index (BMI) is 21.9 (kg/m^2) with a standard deviation (SD) of 3.2 (kg/m^2). Physicians (and patients) can use these data to figure out how individual BMI values compare relative to the age and sex specific distribution. Suppose you are a physician and you are screening patients at a health fair. The following describes some of the men you have screened. *You may assume the distribution of BMI values for 18 year-old males is a normal distribution.*

- Male 2 had a BMI of 23.5. His BMI was above average by how many SDs?

- ○ 1.5
- ◉ 0.5
- ○ 1
- ○ 2

3. The U.S. Center for Disease Control (CDC) collects anthropometric (weight, height etc..) data on large samples of US youth, both male and female, and uses these data to create growth charts, which essentially characterize the distributions of these measures by age and sex. For example, for 18 years old males, the mean body mass index (BMI) is 21.9 (kg/m^2) with a standard deviation (SD) of 3.2 (kg/m^2). Physicians (and patients) can use these data to figure out how individual BMI values compare relative to the age and sex specific distribution. Suppose you are a physician and you are screening patients at a health fair.

Not surprisingly, perhaps, the actual distribution of BMI values among 18 year old males is right skewed (slightly, not heavily so). Given this fact, what additional summary statistics would be necessary to properly estimate the interval in the previous question?

- (●) 2.5th and 97.5th percentiles
- ( ) 25th and 75th percentiles
- ( ) 5th and 90th percentiles
- ( ) median

4. Approximately what percentage of observations in a normal distribution fall within +/- 2 standard deviations from the mean of the distribution?

- ○ 5%
- ○ 2.5%
- ○ 97.5%
- ◉ 95%

5. Approximately what percentage of observations in a normal distribution fall outside of the interval defined by +/- 1 standard deviation from the mean of the distribution?

- ○ 68%
- ○ 16%
- ○ 5%
- ◉ 32%

6. What is the utility of a z-score for any single observation in a data distribution?

- ○ The z-score converts the distribution from which the observation is taken into a normal distribution, regardless of the shape of the distribution from which the observation was taken.
- ○ The z-score reduces the distance between the given observations and the mean of its distribution.
- ◉ The z-score converts the distance between the observation and its distribution's mean from the units of the original data to a standardized measure of distance that has interpretability when dealing with normally distributed data.
- ○ The z-score converts the distance between the observation and its distribution's mean from standardized units to units of the original data.