Part I: Probability

- *How can I calculate the intersection (and) of events?*
- *How can I calculate the union (or) of events?*
- *How can I calculate probability given a condition?*
- *How can I calculate if events are independent or dependent?*
- *How can I create a two way frequency table or complete one when given information?*
- *Do I know what a complement and mutually exclusive events are?*

1. A survey is carried on students and teachers, asking them whether they prefer football or croquet? Complete the following two way table and answer the questions below.

	Football	Croquet	Total
Students	33		
Teachers		1	69
Total		55	

(a) Someone from the survey is picked at random. What are the chances they are a teacher and prefer croquet?

(b) Someone who prefers football is picked at random. What is the probability they are a teacher?

2. In a study to determine frequency and dependency of color blindness relative to females and males, 1000 people were chosen at random and the following results were recorded:

	Female [F]	Male [F']	Total
Color Blind [C]	2	24	26
Normal [C']	518	456	974
Total	520	480	1000

(a) What is the probability that a person is a woman, given that the person is color-blind?

(b) What is the probability that a person is color-blind, given that the person is a male?

(c) Are the events color-blindness and male independent?

(d) Are the events color-blindness and female independent?

Part II: Statistics
- *What is a bell curve/normal distribution?*
- *What is standard deviation and mean?*
- *How can I use a bell curve to calculate the percentage for an event?*

1. Answer the following questions using the data below:
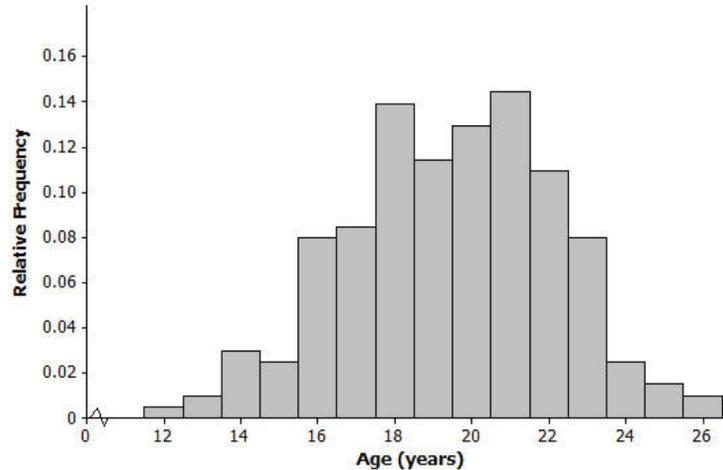
(a) Is the mean of the age distribution closer to 15, 20 or 25 years?
(b) Is the standard deviation of the age distribution closer to 3, 6, or 9 years?
(c) Would you describe this distribution of air conditioner ages as approximately symmetric or as skewed?

2. The heights of 16 year old teenage boys are normally distributed with a mean of 66 inches and a standard deviation of 3. If Jabari is 72 inches tall, which of the following is closest to his height's percentile rank?

(1) 85th (2) 67th (3) 98th (4) 93rd

3. The standard deviation of a population characteristics measures

(1) The difference between the maximum and minimum values.
(2) The difference between the third quartile and first quartile values.
(3) The average distance a data value is away from the mean.
(4) The average distance a data value is away from the median.

4. The lengths of songs on the radio are normally distributed with a mean length of 210 seconds. If 38.2% of all songs have lengths between 194 and 226 seconds, then the standard deviation of this distribution is

(1) 16 seconds (2) 32 seconds (3) 8 seconds (4) 64 seconds