BIG PICTURE of this UNIT:	● How do we analyze and then make conclusions from a data set? Or from a scenario in which probabilities are being considered? ● How do I visually present my data and the outcomes of my analysis? How can we visualize events and outcomes when considering probability events? ● How do I use data & statistics & probabilities to make decisions? ● How do I decide on the validity/reliability of my data? Of my analysis? Of my conclusions? Of my decision?

1. You have 3 BW plots of throwers and are being presented with the task of making a decision as to which two throwers deserve to be selected for the CAC ISSA team. The event in question is shot put.

   ○ From your group's thinking about the graphs, you will record:

      i. Initial thoughts that arise from the data sets and the context
      ii. Initial conclusions that arise from the data sets and the context
      iii. Initial questions that arise from the data sets and the context

   ○ Rotate one spokesman to another group and share thoughts, conclusions, questions. Use post-it notes to add new ideas. Then, let's consolidate as a class on ideas
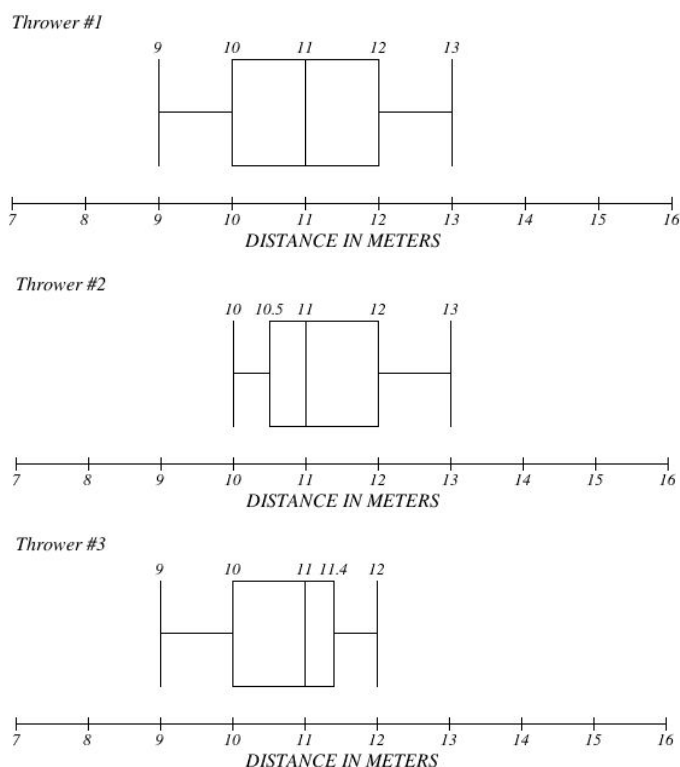
2. Here is some data about membership at 2 local golf courses.

Below are the ages of 15 members of Dunes Golf Club.

20, 20, 21, 24, 27, 29, 33, 33, 36, 39, 50, 57, 60, 65, 65

a. Determine the minimum age
b. Determine the maximum age
c. Calculate the range of the age
d. Determine the lower quartile age
e. Determine the median age
f. Determine the upper quartile age

Below are the ages of members of Katameya Golf Club.

18, 23, 25, 27, 27, 37, 38, 45, 47, 49, 49, 50, 50, 58, 61, 66, 69

a. Determine the minimum age
b. Determine the maximum age
c. Calculate the range of the age
d. Determine the lower quartile age
e. Determine the median age
f. Determine the upper quartile age

(i) Which golf club has more younger members?
(ii) Which golf club has more older members?
(iii) What can you say about the age profile of each golf club in general?

3. Here are the marks scored by 15 students in their quadratic functions test

75 82 69 82 95 80 74 77 60 51 68 84 90 100 45

a. Find the median, quartiles and interquartile range for these data

b. In a probability test the following summary data was collected

Minimum	Lower Quartile	Median	Upper Quartile	Maximum
60	72	78	84	98

c. On the same axis draw box plots for both tests.

d. Compare and contrast the results from the two tests. (Which test did they do better? Which test had more varied results?).

4. For 108 randomly selected college applicants from several of Cairo's "international" schools , the following frequency distribution for scores on Math entrance exams was obtained.

Math Entrance Exam Scores	$90 \leq x < 99$	$99 \leq x < 107$	$108 \leq x < 116$	$117 \leq x\ 125$	$126 \leq x < 134$
Frequency	2	66	43	28	9

- Construct a histogram and a frequency polygon for this data set
- Estimate the median mark of these 108 college applicants.
- Students who score above a 125 do not need to take a summer Math Foundations program. Determine how many students do NOT need to enroll in this Foundations program? Use your CFG to prepare a BW plot.
- Compare your BW plot to the following results from CAC students. How would you compare the performances of CAC students to other Cairo International school students?

CAC Scores on Math Entrance Exams

Math Exam Scores
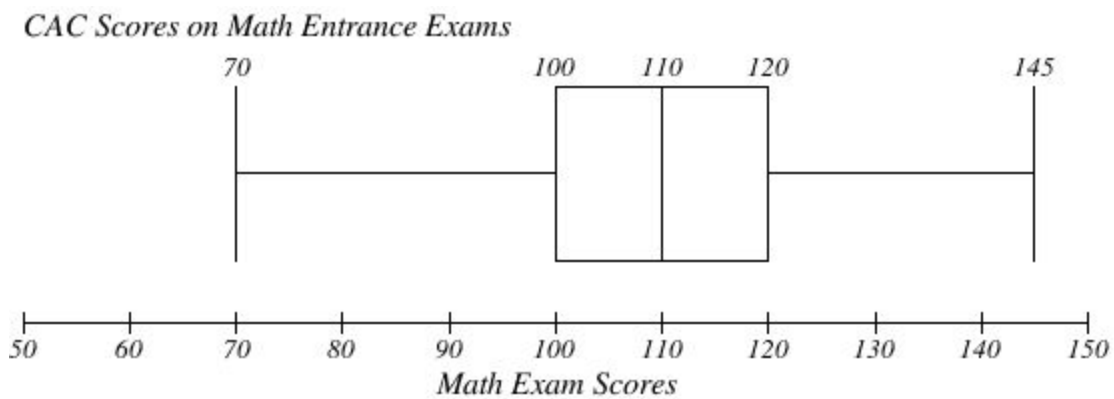
5. The data below shows the price of gas (to the nearest cent) at different locations for Shell and BP

SHELL: 130, 129, 132, 133, 136, 130, 129, 130, 130, 131, 133, 134, 140
BP: 131, 133, 133, 133, 132, 134, 138, 130, 133, 134, 135, 136, 137, 132, 135

a. Calculate the quartiles, median and interquartile range for each subject

b. Use your data to draw box plots for each subject

c. Comment on at least two aspects of your box plots to compare the IQs of the graduates.

6. This back-to-back stem and leaf diagram shows heart rates of two groups of students before and after they walk up the stairs.

			Before					After					
	8	8	4	3	2	6	8						
9	9	7	5	4	3	7	0	1	5	6	6	7	9
			3	2	0	8	0	0	1	4	8		
					0	9	2						
						10	0						

legend   6 | 7   = 67 beats per minute

a. Find the median and quartiles for these data.

b. Draw a box plot for each on the same scale

c. Compare the heart rates before and after the walk up the stairs.

7. Your job will be to create a data set that matches the mean, median, mode, and frequency table given. The mean is 34, the median is 31 and the mode is 25. Here is the frequency table:

Frequency Histogram > 19
- 20-29
- 30-19
- 40-49
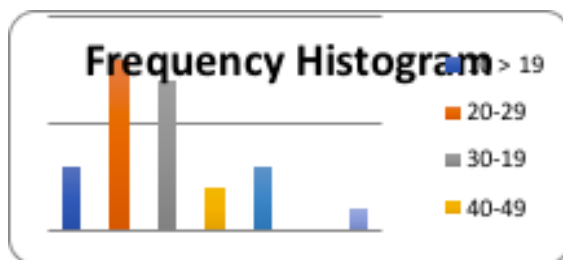
8. The heights of the ten members of the Jack & Semo's basketball team were measured. The heights, in cm, of his nine teammates are 180, 181, 183, 187, 188, 190, 193, 195, and 196. Jack's height is also a whole number. The coach of the team made a mistake when measuring Jack's height. After this mistake was corrected, both the mean and median of the heights increased by 0.5 cm. Find all possible correct values for Jack's height.

9. In MATHO, the game described below, what is the probability of winning? In the game of M A T H O, a marble is dropped into the maze at S. The marble will move down through the maze in the direction of the arrows. At any junction, the marble is equally likely to go in any of the possible downward paths. If the marble ends up in A, you lose. Otherwise, you win.
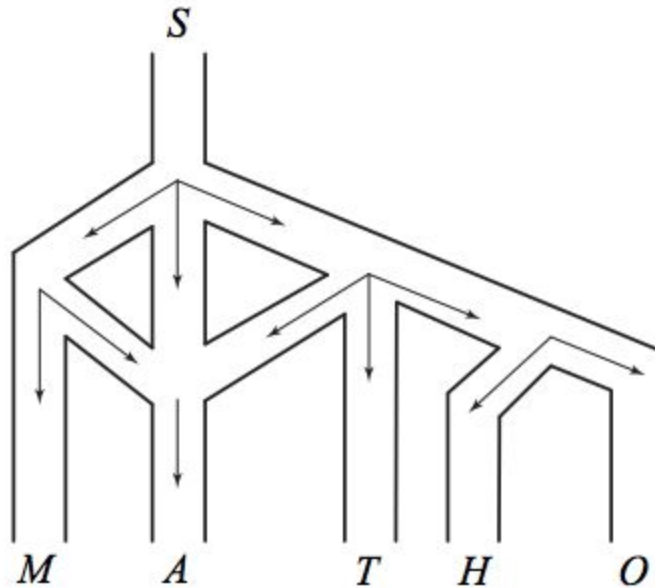
10. Which of the following is the better bet, if both games cost $1 to play?

- ○ GAME A: Getting two heads and two tails on four coins wins you $3   OR
- ○ GAME 2: You win $2 for every six that appears when three standard dice are rolled

11. The following information is known about the results of a recent math test:

- there were three questions on the test;
- each question was worth 1 mark;
- each question was marked either right or wrong (no part marks);
- 50% of the students got all 3 questions correct;
- 5% of the students got no questions correct; and
- the class average mark was 2.3 out of 3.

Determine the percentage of students who got exactly 1 question correct and the percentage of students who got exactly 2 questions correct.