| BIG PICTURE of this UNIT:	- How do we analyze and then make conclusions from a data set? - How do I present my data and the outcomes of my analysis? - How do I use data & statistics to make decisions? - How do I decide on the validity/reliability of my data? Of my analysis? Of my conclusions? Of my decision?

Part 1 - Skills Practice and Review

1. Mr Rawlings class average from his 40 IM2 students on the last Trig quiz was 92%, while our IM2 class average from the 22 of you was 84%. What is the average score of all IM2 students who wrote the quiz?

2. A triangle has the coordinates of A(3,6), B(9,16) and C(13, -4). Midsegments are drawn to connect sides AB and AC. Show that

   a. this midsegment is parallel to side BC;
   b. this midsegment is half the length of side BC.
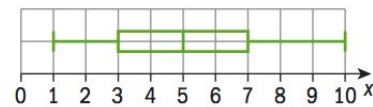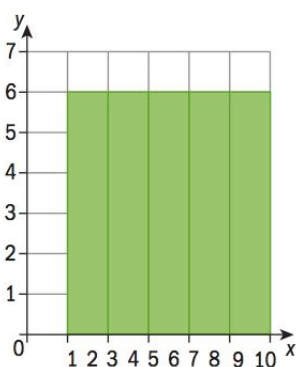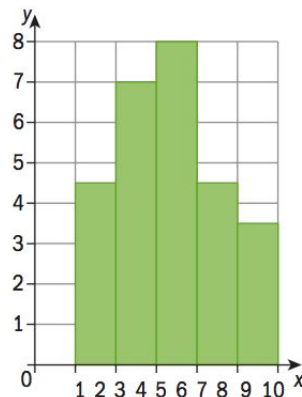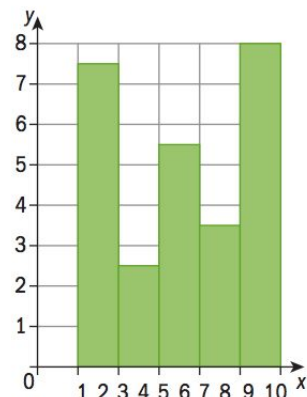
3. Match each box plot with the correct histogram.
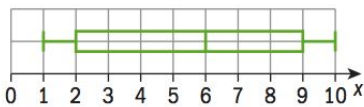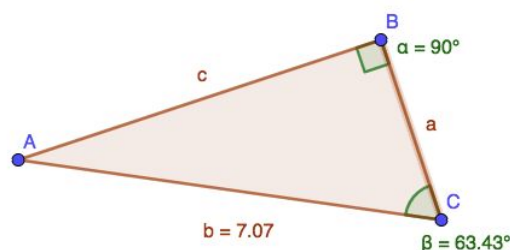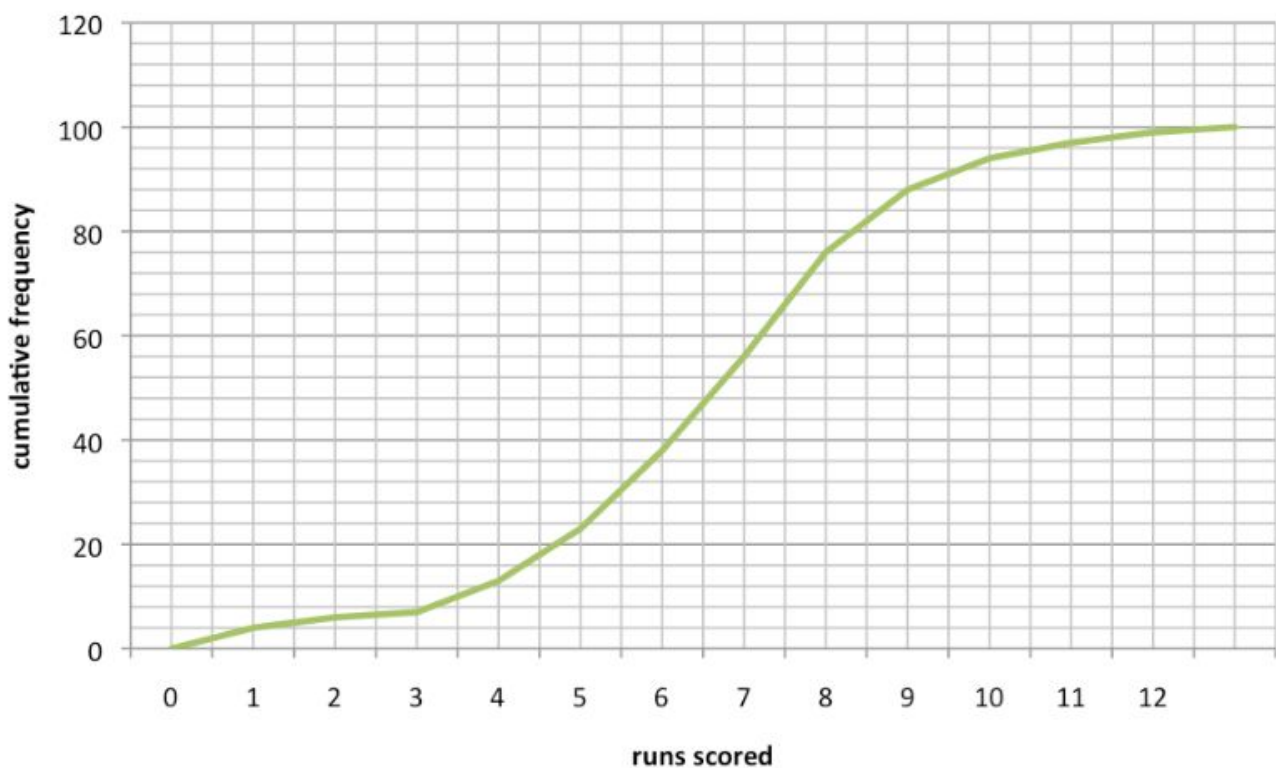

4. Solve ΔABC

# Part 2 - Application Problems with Visual Representations of Data

1. Mr. Davis has compiled the number of runs scored by his CAC Varsity baseball teams over the past ten years.

   a. Complete the following table, using the information presented in the CFG.
   b. Use the table to prepare a histogram.
   c. Use the table or the CFG to answer the following analysis questions:

      i. 43% of the time, the CAC baseball teams scored _____?_____ runs.
      ii. In _____?_____ % of the games, the team scored at least 5 runs

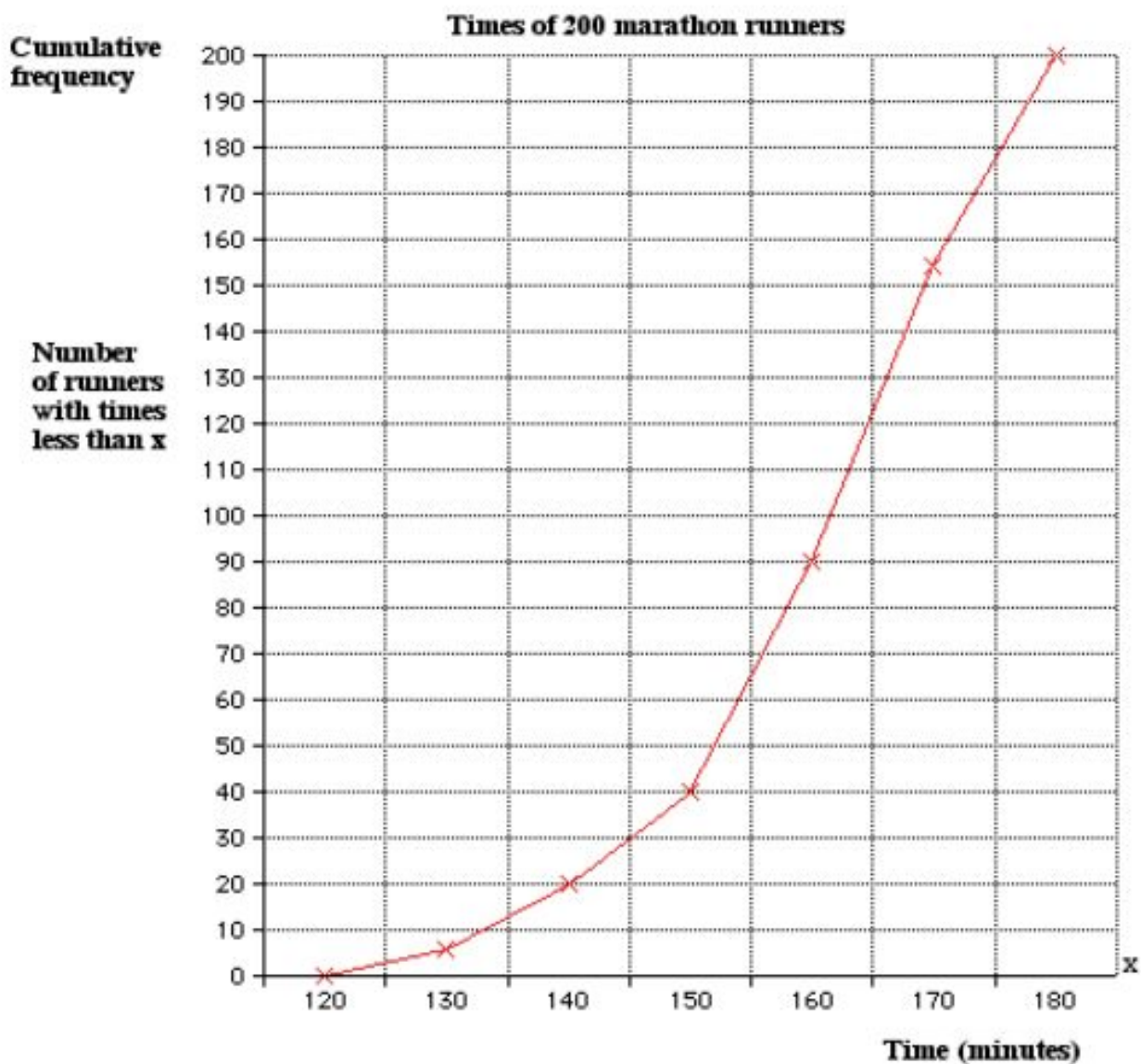| Runs in Baseball Game	number	cum. Freq.	Histogram
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

cumulative frequency distribution

2. The cumulative frequency graph below gives the results of 120 students on a test.

   a. Use the CFG to find the min, max, Q_1, median, Q_3.

   b. What was the minimum mark that was attained by the top 10% of the students?

   c. Find the number of students who scored more than 75 on the test.

   d. Prepare a BW plot given your work in Question (a).

   e. Complete a frequency table from the CFG.

   f. Make a histogram & a frequency polygon.

   g. Comment about skew of the data distribution.

   h. Use your frequency table to estimate mean.
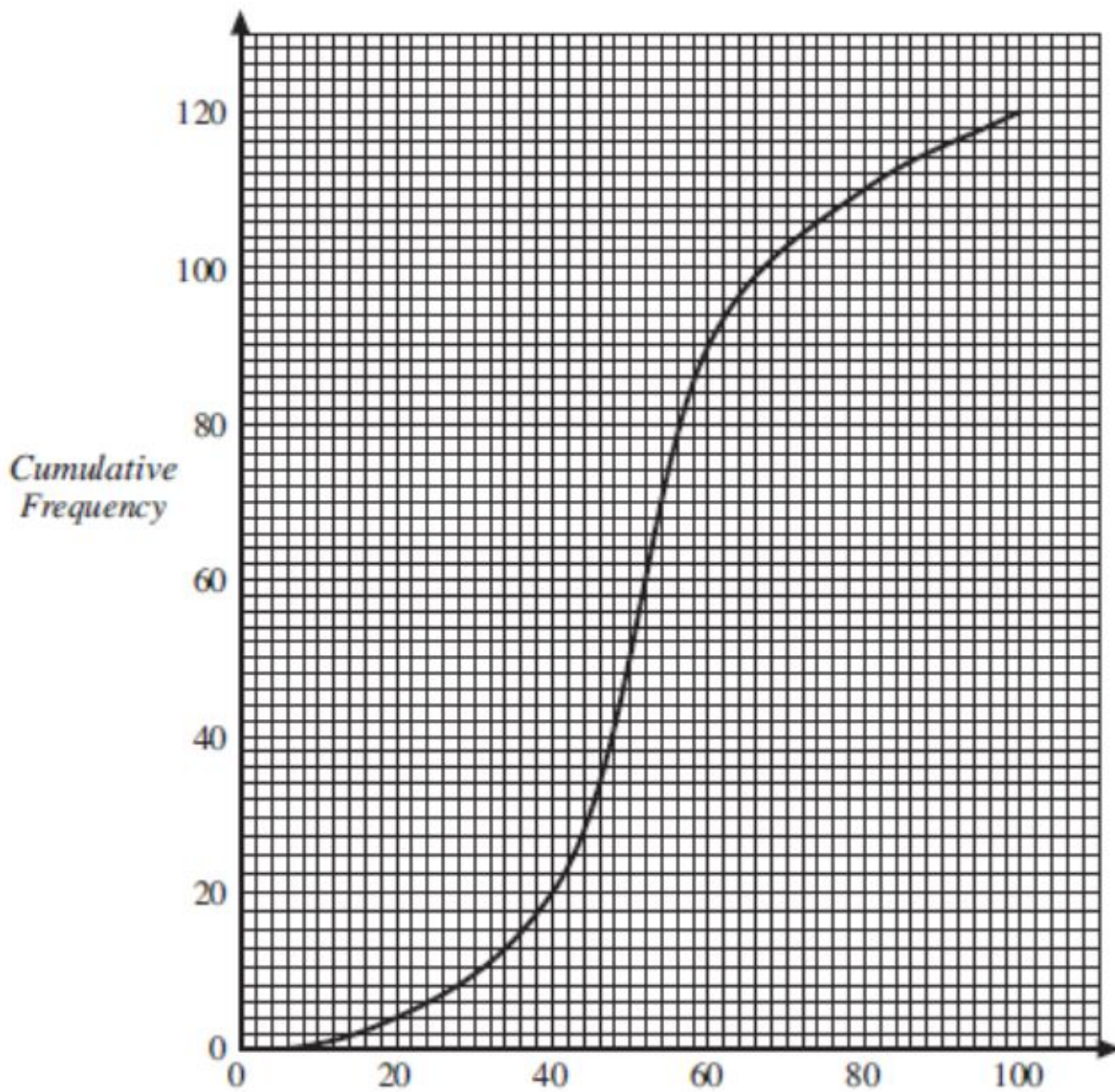
3. Here is a CFG showing you the top 100 finishing times in a 42 km marathon race.

   a. Use the CFG to find median finishing time.

   b. Find the minimum time which was attained by the top 15% of the finishers.

   c. Find the number of runners who finished in more than 165 minutes in the race.

   d. Find the min, max, Q_1, median, Q_3 and hence prepare a BW plot.

   e. Complete a frequency table from the CFG.

   f. Make a histogram & a frequency polygon.

   g. Comment about skew of the data distribution.

   h. Use your frequency table to estimate mean.

Times of 200 marathon runners

Cumulative frequency

Number of runners with times less than x

Time (minutes)

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

a. Construct a histogram, a frequency polygon and a cumulative frequency graph for this data set (Use graph paper for preparing this graph!!)

b. Estimate the median mark of these 108 college applicants using your CFG.

c. Students who score above a 125 do not need to take a summer Math Foundations program. Use your CFG to determine how many students do NOT need to enroll in this Foundations program?

d. Use your CFG to prepare a BW plot.

e. 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?
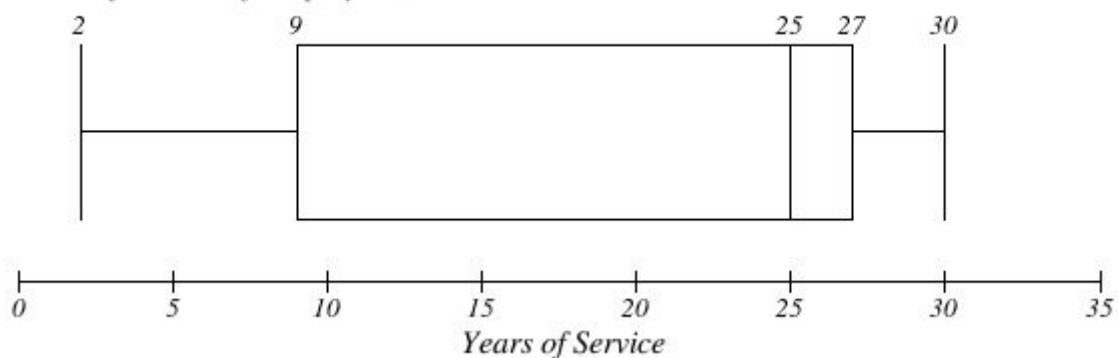

CAC Scores on Math Entrance Exams
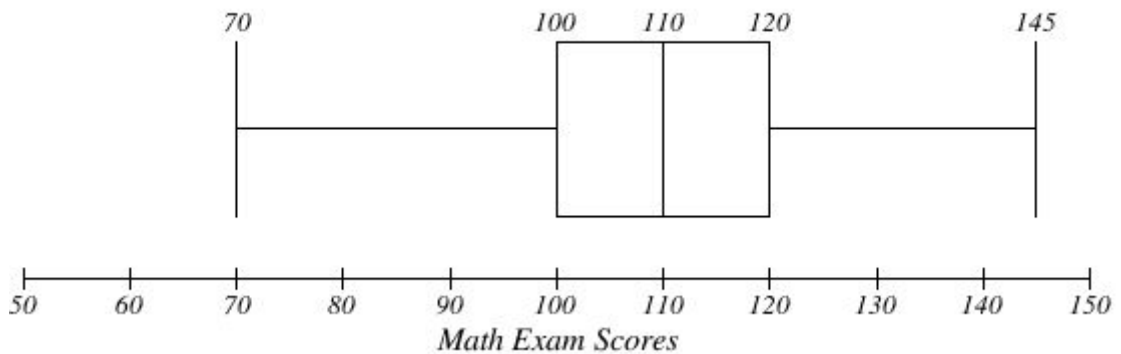
5. For 75 employees of Cairo American College, the following distribution of years of service was obtained.
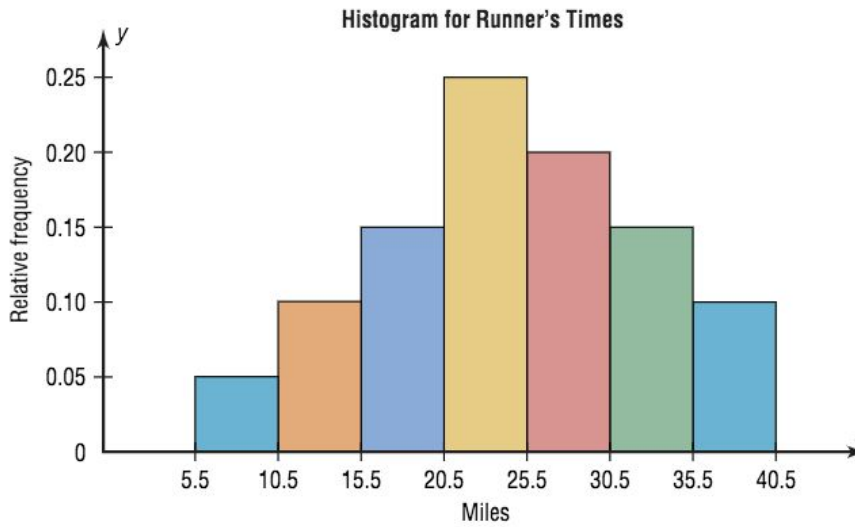
Years of Service	$0 \leq x < 5$	$5 \leq x < 10$	$10 \leq x < 15$	$15 \leq x < 20$	$20 \leq x < 25$	$25 \leq x < 30$
frequency	21	25	15	0	8	6

a. Construct a histogram, a frequency polygon and a cumulative frequency graph for this data set (Use graph paper for preparing this graph!!)

b. Describe the skew of the data set. Offer a reason to explain why the distribution is skewed as it is.

c. Estimate the median years of service of these 75 employees using your CFG.

d. Employees who have worked at CAC for more than 13 years are eligible for a 10% pay increase. Use your CFG to estimate how many employees are eligible for this pay increase.

e. Use your CFG to prepare a BW plot.

f. Compare your BW plot to the following results from employees at Rothwell High School (the school at which I taught before moving overseas). How would you compare the years of service of employees at both schools?
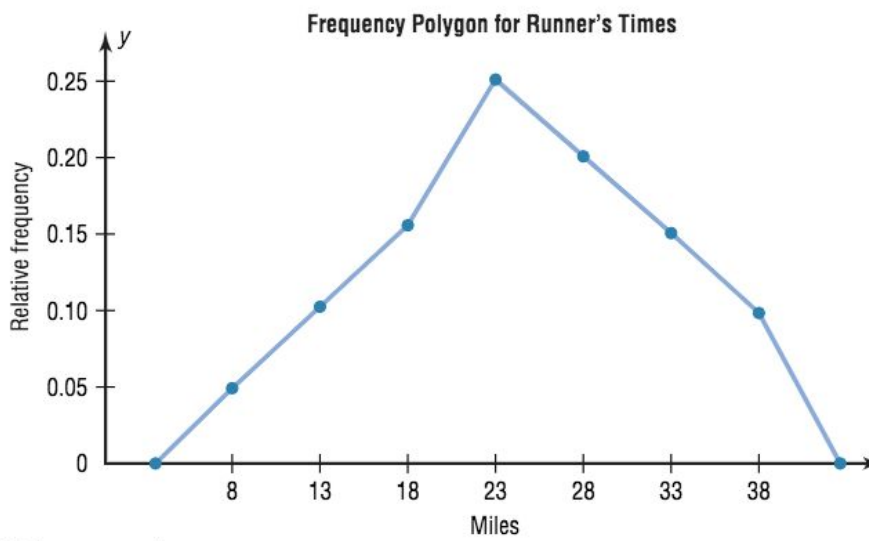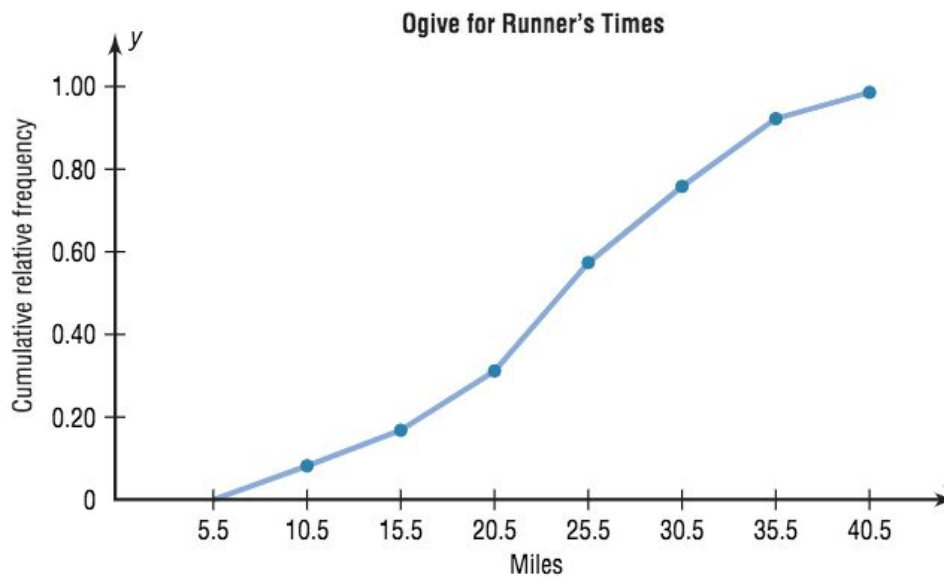
Years of Service of Employees at RHS

Years of Service
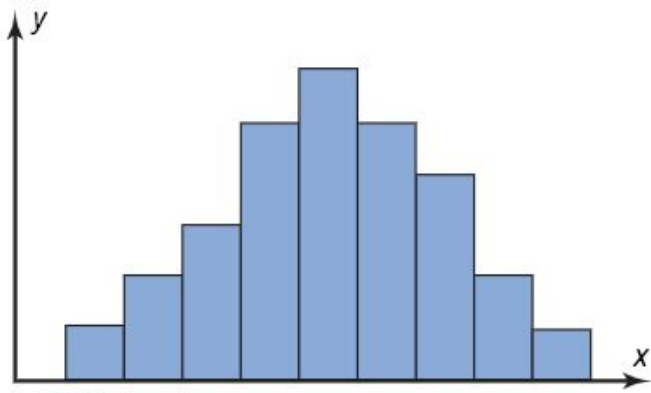
Summary of key ideas - visualizations for data sets

Histogram for Runner's Times

(a) Histogram

Frequency Polygon for Runner's Times

(b) Frequency polygon

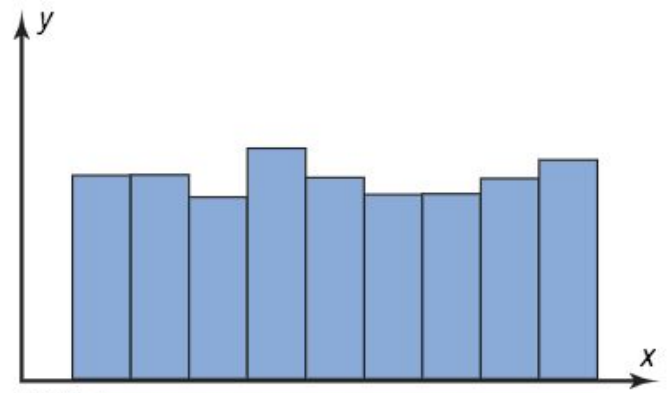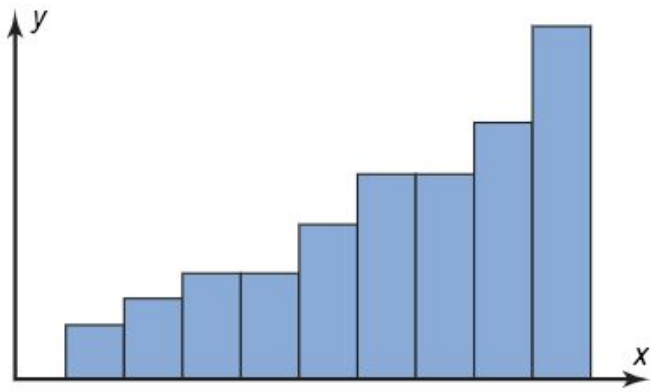**Ogive for Runner's Times**

(c) Ogive

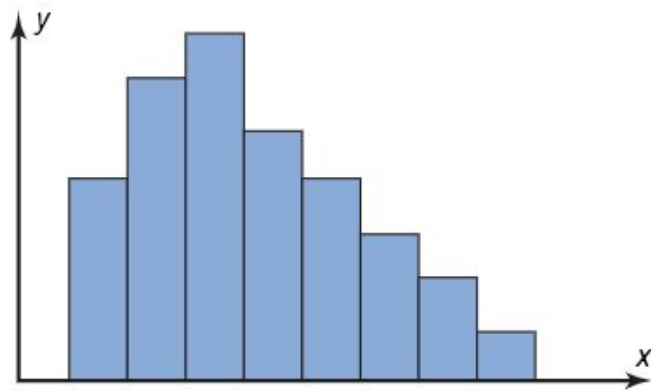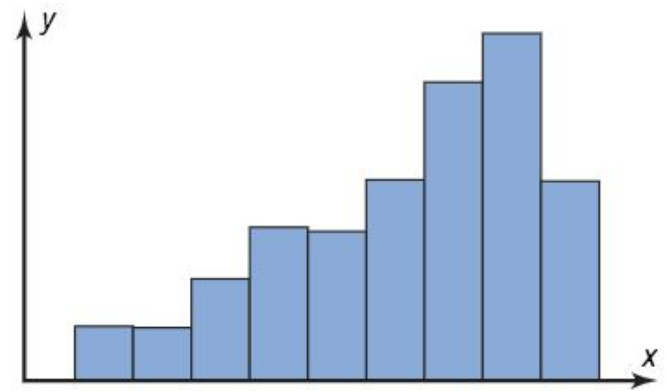Summary of Key Ideas - Shapes of Distributions

(a) Bell-shaped

(b) Uniform

(c) J-shaped
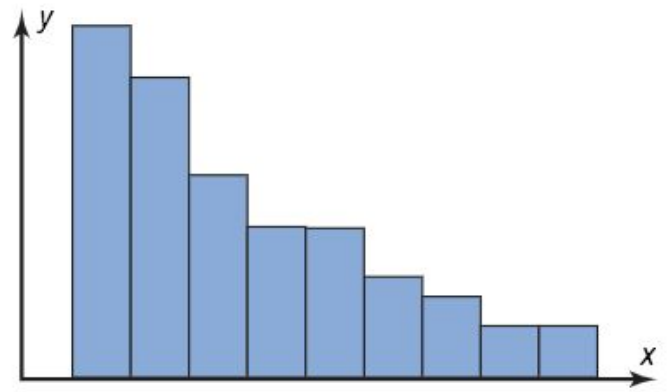
(d) Reverse J-shaped

(e) Right-skewed

(f) Left-skewed

(g) Bimodal

(h) U-shaped