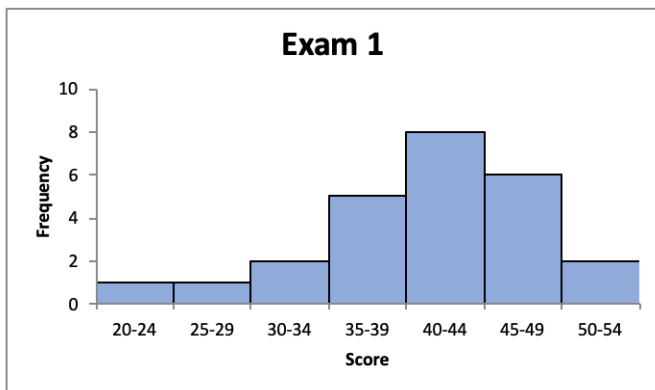


Math 146 2.2 - Histograms

A *histogram* is a graphical representation of a frequency distribution consisting of equal width bars whose heights represent the frequency. Recall the frequency distribution of the 25 Exam 1 scores from 2.1 Notes. A histogram of the data is:

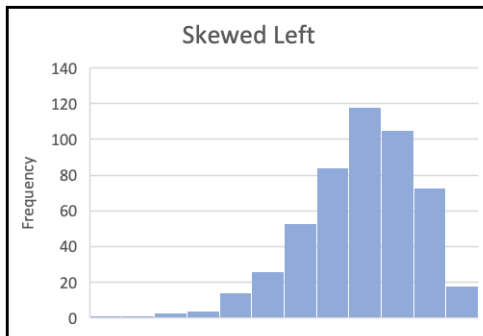
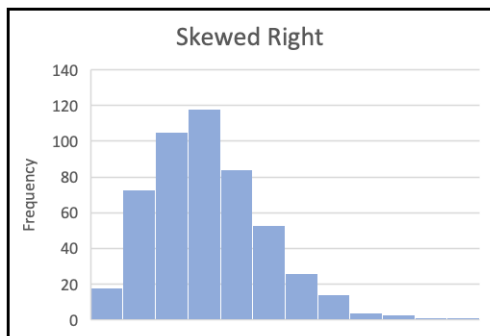
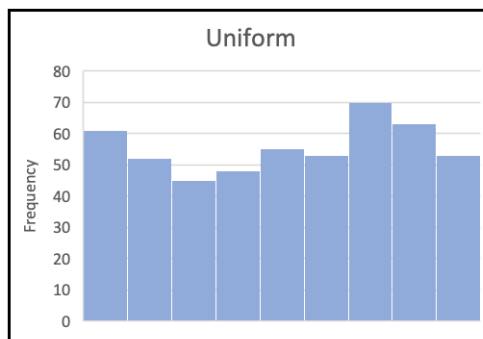
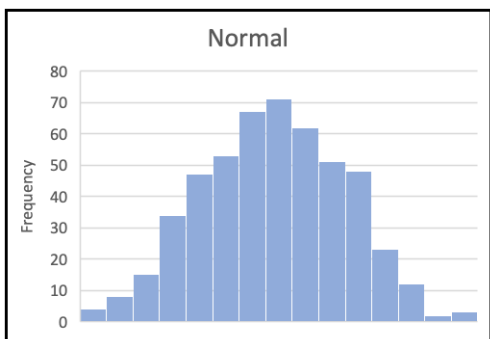
Score	f
20 – 24	1
25 – 29	1
30 – 34	2
35 – 39	5
40 – 44	8
45 – 49	6
50 – 54	2



Important Uses of a Histogram

- Visually displays the shape of the *distribution* of the data
- Shows the location of the *center* of the data
- Shows the *spread* of the data
- Identifies *outliers*

Common Distribution Shapes



- A **normal distribution** is roughly bell-shaped and symmetric.
- A **uniform distribution** is when the different values occur with approximately the same frequency
- A **skewed right** distributions has a longer tail to the right (frequencies are more clumped left)
- A **skewed left** distribution has a longer tail to the left (frequencies are more clumped right)

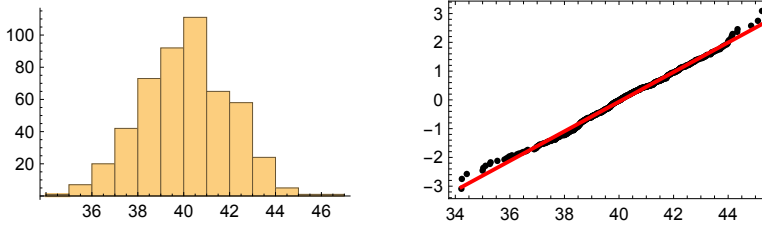
Example 1 Would the distribution of family annual salaries be normal, uniform, skewed left, or skewed right? Make a histogram of what the distribution may look like.

Assessing Normality

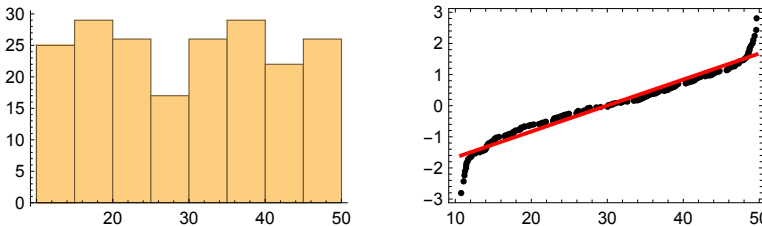
The need for having a distribution be normal or approximately normal is essential to much of statistical analyses we'll be using throughout this course. Although a histogram can often indicate whether a distribution appears to be normal, a better type of graph to assess normality is a normal-quantile plot (or quantile-quantile or normal probability plot).

Using a normal quantile plot, the distribution is normal if the pattern of the points in the normal quantile plot is reasonably close to a straight line, and the points do not show some systematic pattern.

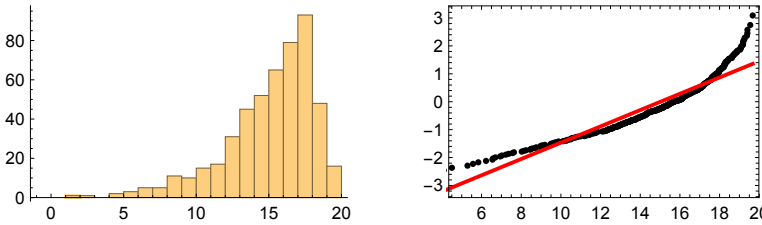
Normal Distribution



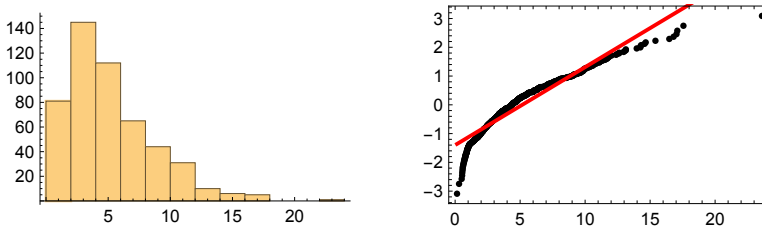
Uniform Distribution



Skewed Left



Skewed Right



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