Section 5.4 The Normal Distribution

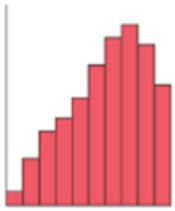
Example 1

Sometimes the distribution of data has a special shape. For example, the purple graph has one peak, so the shape has one mode - which is called *unimodal.*

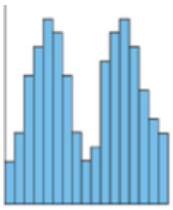
a) Describe the shape of each graph, and suggest a context that the graph could represent.

Graph 1:

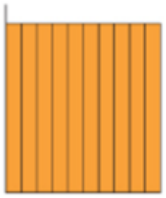
Graph 2:



Graph 3:



Graph 4:

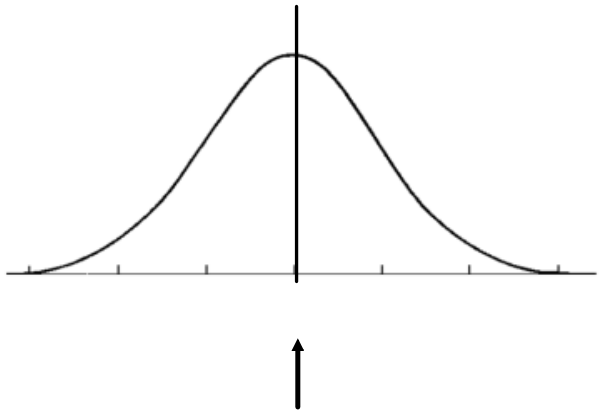


Normal Distribution

- when data is graphed in a histogram or frequency polygon, the result is a unimodal symmetric distribution about the mean.

Normal Curve:

- a symmetrical curve that represents the normal distribution; also called the bell curve.



The vertical line of symmetry in the middle represents the mode, median and mean.

b) Which of the 4 graphs from Example 1a, can be described as having a normal distribution?

Example 2: **Dice Simulator**

a) Choose 1 die and sketch the histogram for each:

(i) 50 rolls:

(ii) 100 rolls:

(iii) 1000 rolls:

(iv) 10 000 rolls:

(v) 50 000 rolls:

b). Describe what happens to the histogram as we increase the number of rolls.

c) Choose 2 dice and sketch the histogram for each:

(i) 50 rolls:

(ii) 100 rolls:

(iii) 1000 rolls:

(iv) 10 000 rolls:

(v) 50 000 rolls:

→

d). Describe what happens to the histogram as we increase the number of rolls.

e) Refer to the histogram below. This is the result of 3 dice and 50,000 rolls. Describe the histogram.

f). How does increasing the number of dice rolled each time affect the distribution of the data?

g). What do you think a graph that represents 10 000 rolls of 10 dice would look like?

→

Attachments

pm5s4-p10.tns

5s4e1.mp4

5s4e2.mp4

5s4e3.mp4

5s4e4.mp4

bbar.gif

rbar.gif

dice-simulator.html