

Lesson 16: Assessing Normality

Daily Data Collection

Roll 2 dice and record the sum and product.

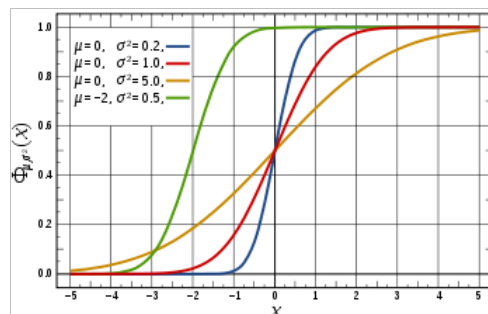
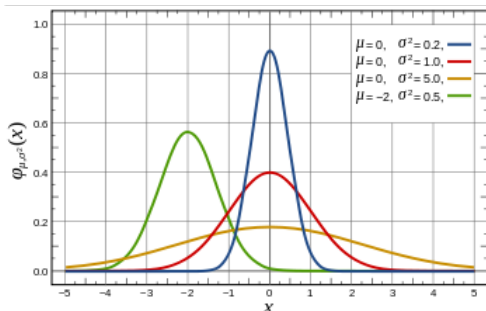
Class Data:

Use a spreadsheet or graphing calculator to create a histogram for the sums found on the dice. Sketch below:

Use your graphing calculator to enter the products found on the dice and run a normal probability plot. Sketch if below:

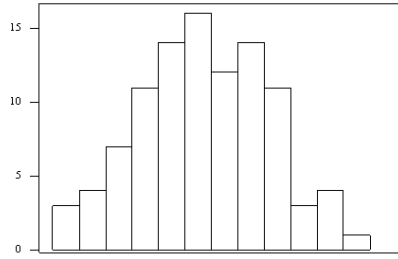
ASSESSING NORMALITY

Method 1: Construct a histogram, stem and leaf plot or box plot to determine if the shape is approximately bell shaped with symmetry about the mean. This is fairly easy because if you load the data into your calculator, you can check a histogram very quickly.

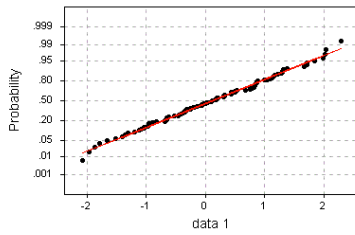


Method 2: Check the normal probability plot (on TI-83). This is an easy and quick way to check for normality. You are shooting for a normal probability plot that has a linear trend to it.

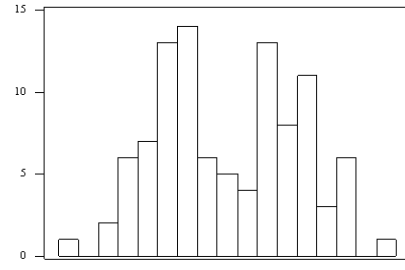
Normal Distribution



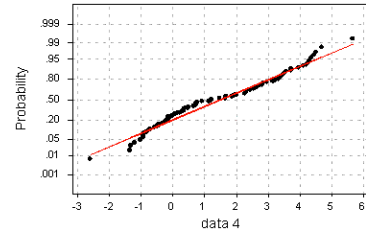
data 1
Normal Probability Plot



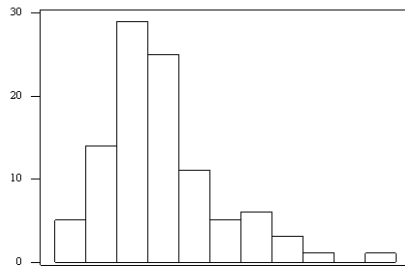
Bimodal Distribution



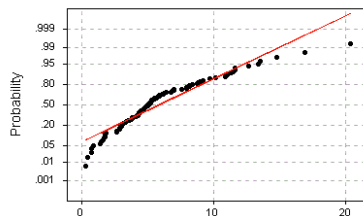
data 4
Normal Probability Plot



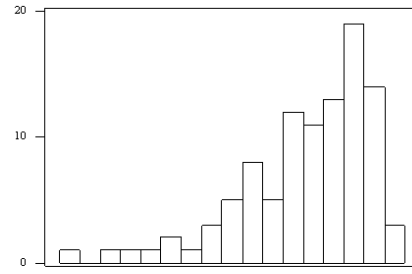
Skewed Right Distribution



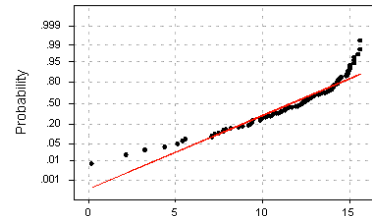
data 2
Normal Probability Plot



Skewed Left Distribution



data 3
Normal Probability Plot



Guided Practice:

CHECK YOUR UNDERSTANDING

Use Table A in the back of the book to find the proportion of observations from a standard Normal distribution that fall in each of the following regions. In each case, sketch a standard Normal curve and shade the area representing the region.

1. $z < 1.39$
2. $z > -2.15$
3. $-0.56 < z < 1.81$

Use Table A to find the value z from the standard Normal distribution that satisfies each of the following conditions. In each case, sketch a standard Normal curve with your value of z marked on the axis.

4. The 20th percentile
5. 45% of all observations are greater than z

Cholesterol mean = 170, st dev = 30

Tiger woods mean = 304, st dev = 8

CHECK YOUR UNDERSTANDING

Follow the method shown in the examples to answer each of the following questions. Use your calculator or the *Normal Curve* applet to check your answers.

1. Cholesterol levels above 240 mg/dl may require medical attention. What percent of 14-year-old boys have more than 240 mg/dl of cholesterol?
2. People with cholesterol levels between 200 and 240 mg/dl are at considerable risk for heart disease. What percent of 14-year-old boys have blood cholesterol between 200 and 240 mg/dl?
3. What distance would a ball have to travel to be at the 80th percentile of Tiger Woods's drive lengths?