## Section 7.3 – Assessing Normality

To determine whether a set of sample data comes from a population that is normally distributed, we create a Normal Probability Plot, which is called a QQ Plot in StatCrunch.

## StatCrunch Directions

- Enter the data under var1.
- Graph > QQ Plot
- Select the column containing the data, check the box for Correlation Statistic, press Compute.

If the data are close to a straight line, this suggests that they follow the pattern of a normal distribution.

To conclude this, compare the correlation statistic on the graph to the critical value for that sample size *n* in the table below. If the correlation statistic > critical value, the data come from a population that is normally distributed.

N   .05   N   .05     5   .880   23   .956     6   .888   .24   .957     7   .898   .25   .959     8   .906   .26   .960     9   .912   .27   .961     10   .918   .28   .962     11   .923   .29   .963     12   .928   .30   .964     13   .932   .35   .969     14   .935   .40   .972     15   .939   .45   .974     16   .941   .50   .977     17   .944   .60   .980     18   .946   .70   .983     19   .949   .80   .985     20   .951   .90   .986     21   .952   .100   .987     22   .954   .954   .954	_			10 A A A A A A A A A A A A A A A A A A A		
5   .880   23   .956     6   .888   24   .957     7   .898   25   .959     8   .906   26   .960     9   .912   27   .961     10   .918   28   .962     11   .923   29   .963     12   .928   .30   .964     13   .932   .35   .969     14   .935   .40   .972     15   .939   .45   .974     16   .941   .50   .977     17   .944   .60   .980     18   .946   .70   .983     19   .949   .80   .985     20   .951   .90   .986     21   .952   .100   .987     22   .954   .954   .954	Ν	.05	N	.05		
6 .888 24 .957   7 .898 25 .959   8 .906 26 .960   9 .912 27 .961   10 .918 28 .962   11 .923 29 .963   12 .928 .30 .964   13 .932 .35 .969   14 .935 .40 .972   15 .939 .45 .974   16 .941 .50 .977   17 .944 .60 .980   18 .946 .70 .983   19 .949 .80 .985   20 .951 .90 .986   21 .952 .100 .987   22 .954 .954 .954	5	.880	23	.956		
7   .898   25   .959     8   .906   26   .960     9   .912   27   .961     10   .918   28   .962     11   .923   29   .963     12   .928   .30   .964     13   .932   .35   .969     14   .935   .40   .972     15   .939   .45   .974     16   .941   .50   .977     17   .944   .60   .980     18   .946   .70   .983     19   .949   .80   .985     20   .951   .90   .986     21   .952   .100   .987     22   .954   .954	6	.888	24	.957		
8   .906   26   .960     9   .912   27   .961     10   .918   28   .962     11   .923   29   .963     12   .928   30   .964     13   .932   .35   .969     14   .935   40   .972     15   .939   .45   .974     16   .941   .50   .977     17   .944   .60   .980     18   .946   .70   .983     19   .949   .80   .985     20   .951   .90   .986     21   .952   .100   .987     22   .954   .954	7	.898	25	.959		
9   .912   27   .961     10   .918   28   .962     11   .923   29   .963     12   .928   30   .964     13   .932   .35   .969     14   .935   40   .972     15   .939   .45   .974     16   .941   .50   .977     17   .944   .60   .980     18   .946   .70   .983     19   .949   .80   .985     20   .951   .90   .986     21   .952   .100   .987     22   .954	8	.906	26	.960		
10   .918   28   .962     11   .923   29   .963     12   .928   30   .964     13   .932   .35   .969     14   .935   40   .972     15   .939   .45   .974     16   .941   .50   .977     17   .944   .60   .980     18   .946   .70   .983     19   .949   .80   .985     20   .951   .90   .986     21   .952   .100   .987     22   .954   .954	9	.912	27	.961		
11   .923   29   .963     12   .928   30   .964     13   .932   35   .969     14   .935   40   .972     15   .939   .45   .974     16   .941   .50   .977     17   .944   .60   .980     18   .946   .70   .983     19   .949   .80   .985     20   .951   .90   .986     21   .952   .100   .987     22   .954	10	.918	28	.962		
12   .928   30   .964     13   .932   35   .969     14   .935   40   .972     15   .939   45   .974     16   .941   .50   .977     17   .944   .60   .980     18   .946   .70   .983     19   .949   .80   .985     20   .951   .90   .986     21   .952   .100   .987     22   .954	11	.923	29	.963		
13   .932   35   .969     14   .935   40   .972     15   .939   45   .974     16   .941   .50   .977     17   .944   .60   .980     18   .946   .70   .983     19   .949   .80   .985     20   .951   .90   .986     21   .952   .100   .987     22   .954   .954	12	.928	30	.964		
14   .935   40   .972     15   .939   45   .974     16   .941   50   .977     17   .944   60   .980     18   .946   70   .983     19   .949   80   .985     20   .951   .90   .986     21   .952   .100   .987     22   .954   .954	13	.932	35	.969		
15   .939   45   .974     16   .941   50   .977     17   .944   60   .980     18   .946   70   .983     19   .949   80   .985     20   .951   .90   .986     21   .952   .100   .987     22   .954   .954   .954	14	.935	40	.972		
16   .941   50   .977     17   .944   60   .980     18   .946   70   .983     19   .949   80   .985     20   .951   .90   .986     21   .952   .100   .987     22   .954   .954	15	.939	45	.974		
17   .944   60   .980     18   .946   70   .983     19   .949   80   .985     20   .951   90   .986     21   .952   100   .987     22   .954   .954   .987	16	.941	50	.977		
18   .946   70   .983     19   .949   80   .985     20   .951   90   .986     21   .952   100   .987     22   .954   .954   .987	17	.944	60	.980		
19   .949   80   .985     20   .951   90   .986     21   .952   100   .987     22   .954   .954   .987	18	.946	70	.983		
20   .951   90   .986     21   .952   100   .987     22   .954   .954	19	.949	80	.985		
21 .952 100 .987 22 .954	20	.951	90	.986		
22 .954	21	.952	100	.987		
	22	.954				

## Classroom Example:

Here are the times, in seconds, for greyhounds to run a 5/16-mile race. Are these times normally distributed?

31.26	31.35	31.91	32.06	32.37	32.52

Homework: Section 7.3 textbook problems 9-14