

1. Problem Statement: Using the Excel data file viewed at: <http://markerwards.com/APStats/APStats.html> and shown partially to the right in Table 1, **determine if the data represents the outcome for a "fair" die.**
2. Solution Technique: Using the data file and MS Excel's histogram tool(s), create a frequency table and histogram (with associated probabilities) graph to determine the distribution of the die's data.
3. Data Analysis
  - a. Bins were created from 1 to 6 and data analyzed resulting in Table 2.
  - b. The Histogram is shown in Figure 1

Table 1 - Data Partial

500 = Total Rolls	
Roll	Outcome
1	3
2	5
3	3
4	3
5	3
6	2
7	2
8	3
9	3
10	3
11	5
12	5
13	5
14	1
15	3

4. Conclusion
  - a. The data is **NOT from a fair die** since the distribution is NOT uniform. The die appears to be weighted for 3 or 4 probably in conjunction with another similarly weighed die to yield "7s" in a dice throwing. The frequency for each outcome should have about 83 as shown by the line.
  - b. Eleven (11) data points were rejected since these datum provided outcomes above a 6. The explanation for these outliers is uncertain.

Table 2 - Frequency Table

Bins	Frequency	Cumulative %
1	31	6.20%
2	97	25.60%
3	117	49.00%
4	112	71.40%
5	97	90.80%
6	35	97.80%
More	11	100.00%

5. Areas of Additional Study
  - a. Determine an explanation for the 11 extraneous data points
  - b. Determine the effect of decreasing / increasing sample size.

Figure 1 - Histogram

