Homework 2

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Coin Toss

A fair coin is tossed fifteen times, and the number of heads is records. This trial is repeated nine times. The resulting data should have nine observations of "Number of Head in Fifteen Tosses"

The **mean**. The mean is the center that we will use to further examine the "spread" of the values.

The mean we use is the arithmetic average, which is calculated by first adding the values of all the observations, then dividing by the number of observations.

The **Mean** of a data set refers to the arithmetic mean of the values, denoted $\bar{x}$

$$\sum_{i=0}^{N} x_i = x_1 + x_2 + x_3 + \cdots + x_{42} + x_{43} + x_{44} + x_{45}$$

$$= 6+7+10+5+9+6+6+9+11+8+5+9+10+7+8+10+6+7+8+6+7+8+6+11+7+9+8+7+9+8+8+6$$

$$= 740$$

$$\bar{x} = \frac{\sum_{i=1}^{N} x_i}{N}$$

$$Dev_{\bar{x}} = (x_i - \bar{x})$$

$$Dev_{\bar{x}}^2 = (x_i - \bar{x})^2$$

$$Var(X) = \frac{\sum_{i=1}^{N} Dev_{\bar{x}}^2}{N} = \frac{\sum_{i=1}^{N} (x_i - \bar{x})^2}{N}$$

$$StdDev(X) = \sqrt{Var(X)}$$

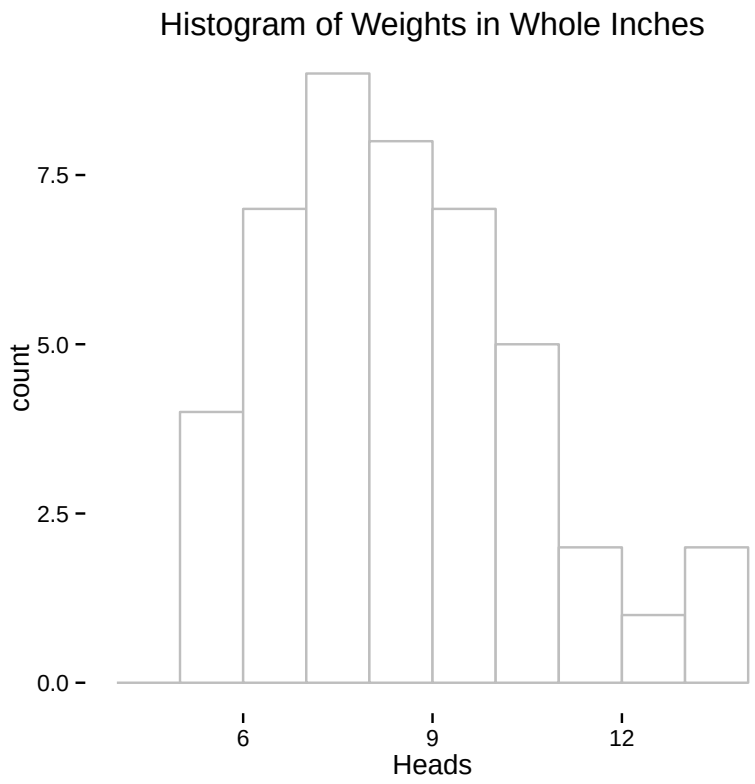

Figure 1: Histograms with Frequency Polygon and Ogive (Cumulative Frequency Polygon). The Height data set is unimodal, skewed right, with out outlier on the left.

Obs	Heads	Deviation	DeviationSq
x_1	6	-2.0	4.0
x_2	7	-1.0	1.0
x_3	10	2.0	4.0
x_4	5	-3.0	9.0
x_5	9	1.0	1.0
x_6	6	-2.0	4.0
x_7	6	-2.0	4.0
x_8	9	1.0	1.0
x_9	11	3.0	9.0
x_{10}	8	0.0	0.0
x_{11}	5	-3.0	9.0
x_{12}	9	1.0	1.0
x_{13}	10	2.0	4.0
x_{14}	7	-1.0	1.0
x_{15}	8	0.0	0.0
x_{16}	10	2.0	4.0
x_{17}	6	-2.0	4.0
x_{18}	7	-1.0	1.0
x_{19}	8	0.0	0.0
x_{20}	6	-2.0	4.0
x_{21}	7	-1.0	1.0
x_{22}	8	0.0	0.0
x_{23}	6	-2.0	4.0
x_{24}	11	3.0	9.0
x_{25}	7	-1.0	1.0
x_{26}	9	1.0	1.0
x_{27}	8	0.0	0.0
x_{28}	7	-1.0	1.0
x_{29}	9	1.0	1.0
x_{30}	8	0.0	0.0
x_{31}	8	0.0	0.0
x_{32}	6	-2.0	4.0
x_{33}	5	-3.0	9.0
x_{34}	9	1.0	1.0
x_{35}	7	-1.0	1.0
x_{36}	7	-1.0	1.0
x_{37}	10	2.0	4.0
x_{38}	9	1.0	1.0
x_{39}	5	-3.0	9.0
x_{40}	12	4.0	16.0
x_{41}	13	5.0	25.0
x_{42}	10	2.0	4.0
x_{43}	8	0.0	0.0
x_{44}	13	5.0	25.0
x_{45}	7	-1.0	1.0
Total	362	0	184.0
Total over N	8.0	0	4.1
	Average	Zero	Variance

Table 1: Deviations

Heads	Frequency	CumulativeFrequency	ecdf
5	4	4	0.089
6	7	11	0.244
7	9	20	0.444
8	8	28	0.622
9	7	35	0.778
10	5	40	0.889
11	2	42	0.933
12	1	43	0.956
13	2	45	1.000

Table 2: Frequency Table

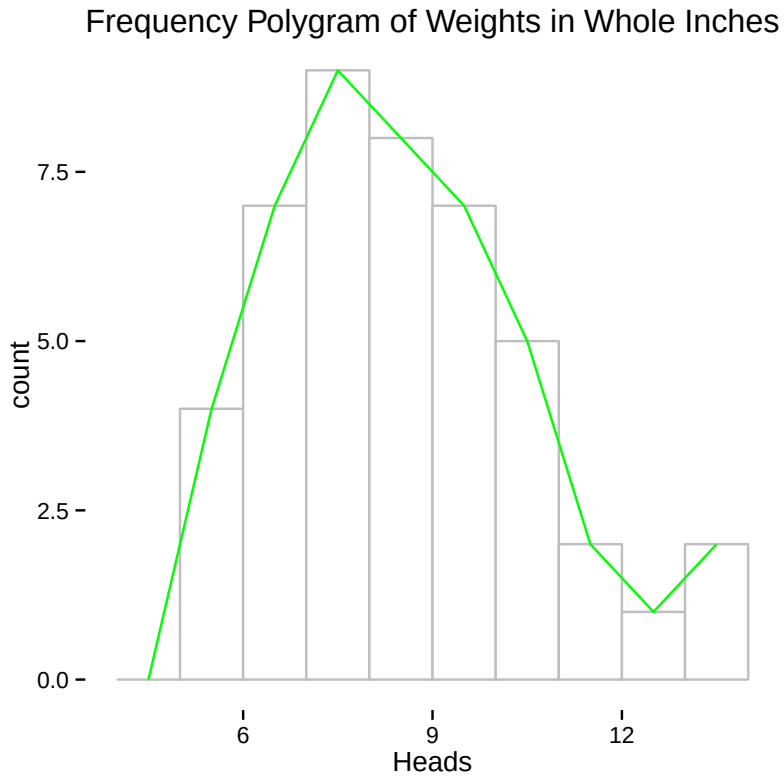

Figure 2: Histograms with Frequency Polygon and Ogive (Cumulative Frequency Polygon). The Height data set is unimodal, skewed right, with out outlier on the left.

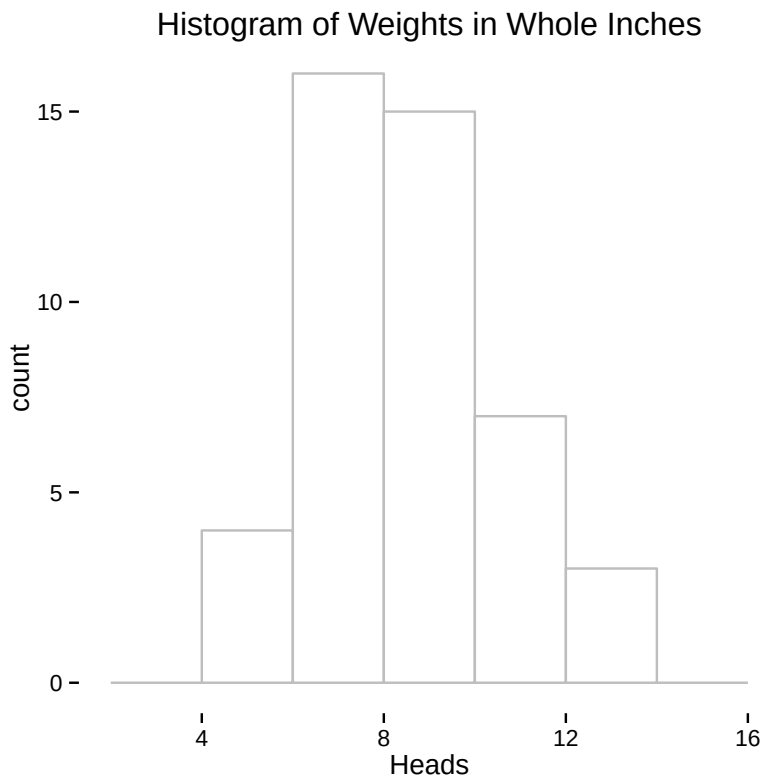

Figure 3: Histograms with Frequency Polygon and Ogive (Cumulative Frequency Polygon). The Height data set is unimodal, skewed right, with out outlier on the left.

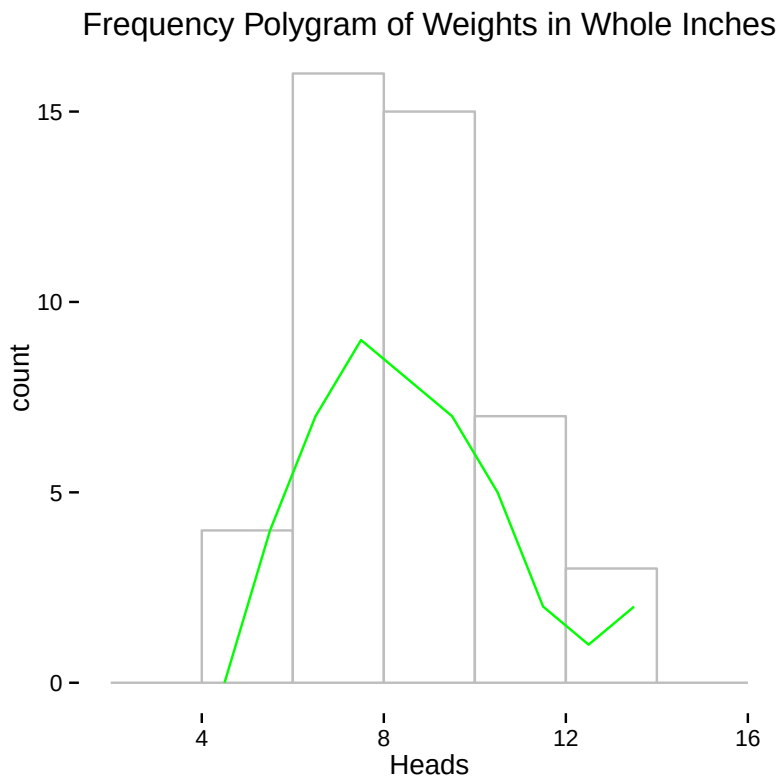

Figure 4: Histograms with Frequency Polygon and Ogive (Cumulative Frequency Polygon). The Height data set is unimodal, skewed right, with out outlier on the left.

Figure 5: Histograms with Ogive (Cumulative Frequency Polygon).