

# STAT 291 - Statistics for the Mathematical Sciences I

## Making a Histogram

1. Choose the number of categories to use. The following table is a general guide that we will use.

Sample Size	Number of Categories
$\leq 15$	Too small
16 – 31	5
32 – 63	6
64 – 127	7
128 – 255	8
256 – 511	9
$\vdots$	$\vdots$

2. Find the range, that is, the largest observation minus the smallest.
3. Divide the range by the number of classes, and truncate the answer to the same accuracy as the data. Then add one to the last digit of this number.
4. Start the first category  $1/2$  unit below the first observation. The following table explains this.

Accuracy	“Units”	$1/2$ unit
$\vdots$	$\vdots$	$\vdots$
Tens	10	5
Ones	1	.5
Tenths	.1	.05
Hundredths	.01	.005
$\vdots$	$\vdots$	$\vdots$

5. Complete the categories by adding the number found in step three to the number from step four to get the right boundary of the first category. Continue adding to complete the necessary number of categories.

6. Construct a Frequency Table with columns for frequency and relative frequency.

7. Draw a set of axes, and indicate the category boundaries along the  $x$ -axis. The  $y$ -axis is generally used to indicate the relative frequency. Bars are drawn from one boundary to the other, with height determined by the relative frequency.