

TI TECH NOTES

CREATING A HISTOGRAM

First of all, some data with which to practice: the following are energy expenditures (BTU's) for a sample of 50 houses in the South of the U.S.

64	60	102	62	80	66	155	45	55	130
111	81	66	90	55	139	151	75	101	58
67	136	83	91	55	50	125	51	77	97
78	111	96	113	104	113	93	100	86	54
109	99	83	97	97	94	69	129	87	96

1. Enter these data into a list in your calculator. Press **STAT** **1**.

```

2nd MODE CALC TESTS  L1  L2  L3  1
1 2 Edit...           |-----|-----|
2 SortA(             |-----|-----|
3 SortD(             |-----|-----|
4 ClrList            |-----|-----|
5 SetUpEditor        |-----|-----|
L1(1)=8
  
```

Maybe your list is empty; maybe not. To clear all of the numbers in a list, move the cursor to the very top of the list (on top of the name of the list—L₁ in this case) and press **CLEAR** **ENTER**.

To enter the data:

```

6 4 ENTER
1 1 1 ENTER
6 7 ENTER
  
```

etc.

```

L1  L2  L3  1
|-----|-----|
64 |-----|-----|
111 |-----|-----|
67  |-----|-----|
78  |-----|-----|
109 |-----|-----|
60  |-----|-----|
81  |-----|-----|
L1(1)=64
  
```

Finally, return to the home screen.

```

2nd MODE
  
```

2. Time to set things up. First, we need to make sure that there aren't any other graphs that will display on top of our histogram.

Press $\boxed{Y=}$.

```

Plot1 Plot2 Plot3
\Y1=(cos(X))^2/X
\Y2=
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=

```

Perhaps yours is empty; perhaps not. To erase a function, move the cursor onto the function and press $\boxed{\text{CLEAR}}$. To turn a function off (but not erase it), move the cursor onto the = symbol and press $\boxed{\text{ENTER}}$.

Now for the histogram...

Press $\boxed{2nd}\boxed{Y=}$.

```

5:HI-LOUS
1:Plot1...Off
  ^ L3 L4 +
2:Plot2...Off
  ^ L3 L4 .
3:Plot3...Off
  ^ L5 L6 ■
4↓PlotsOff

```

Note that all three of mine are turned off. If yours aren't, press $\boxed{4}\boxed{\text{ENTER}}$, then $\boxed{2nd}\boxed{Y=}$ again. Pick a plot! How about the first one?

Press $\boxed{1}$.

```

Plot1 Plot2 Plot3
On Off
Type: [line] [bar] [hist]
      [dot] [circle] [square]
Xlist:L3
Ylist:L4
Mark:  ■  +  .

```

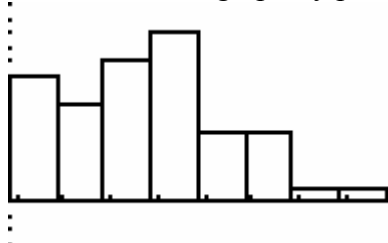
Move the cursor on top of the word On and press $\boxed{\text{ENTER}}$. Press $\boxed{\downarrow}$ to move to the next line. Use $\boxed{\leftarrow}$ or $\boxed{\rightarrow}$ to move through the six different graph types. We want the third one: $\boxed{\text{hist}}$. Press $\boxed{\downarrow}$ to move to the next line.

The XList is where the data are located—L₁. Press $\boxed{2nd}\boxed{1}\boxed{\text{ENTER}}$. The Freq: is only used if you entered a frequency distribution into two lists. We didn't—we entered raw data, so make sure that the entry is 1 (you may need to press $\boxed{\text{ALPHA}}$ in order to enter a 1).

You should have this now:

```
Plot1 Plot2 Plot3
Off Off
Type: [L1] [L2] [L3]
      [L4] [L5] [L6]
Xlist:L1
Freq:1
```

3. Get an initial graph by pressing **ZOOM** **9**.



This is NOT a good histogram! In particular, the bars are at unusual spots. Let's fix that...press

WINDOW.

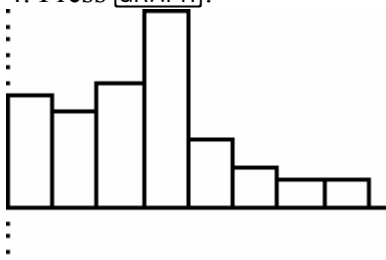
```
WINDOW
Xmin=45
Xmax=170.71428...
Xscl=15.714285...
Ymin=-3.60828
Ymax=14.04
Yscl=1
Xres=1
```

The value in X_{min} determines where the left edge of the first bar is. X_{scl} determines the width of the bars. You want to set X_{scl} to a number that it would be easy to count in multiples of...it's hard to count in multiples of 15.7! How about 15? Next, you want to lower the X_{min} to a multiple of X_{scl} = ...unless, of course, it's already a multiple (as is the case here).

Here's what you've got now:

```
WINDOW
Xmin=45
Xmax=170.71428...
Xscl=15
Ymin=-3.60828
Ymax=14.04
Yscl=1
Xres=1
```

4. Press **GRAPH**.



This should be a good histogram now. If you want to know how wide and tall each of the bars is,

press **TRACE**.

F1:L1



This tells you that the first bar is from 45 to 60 (but not including 60), and that there are 8 data in that interval. Use **◀** and **▶** to move back and forth across the bars.

If one of the bars is too tall, go back to **WINDOW** and raise the value of **Ymax=**.