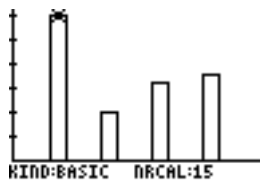


Descriptive Statistics and Bar Graphs

What kind of calculator do you own (choose from basic, fraction, scientific, graphing)?



KIND	c	NRCAL	10
BASIC		15	
FRAC		5	
SCI		8	
GRAPH		9	

Name=			

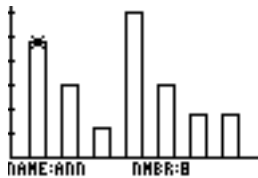
```
Plot2 Off
Type: L1
Cate9List: KIND
DataList1: NRCAL
DataList2: L3
DataList3: L4
Hor 2 3
```

- Range:** Not meaningful. The range requires numerical data to find a difference between the highest and lowest data value. The data values for this set of data are not numbers but kinds of calculators and not appropriate to consider the “difference” between one kind and another kind for finding a range of data values. One might consider the range of the frequencies for each category (e.g., “the number of people using each kind of calculator has a range of 10”). This is not typically helpful to draw conclusions by calculating the range on frequencies of categorical data.
- Mode:** It is possible and reasonable to determine which data value occurs most often. Basic calculators occur most often in this set of data.
- Median:** Not meaningful. The median requires ordering the categories in some meaningful way to determine a middle data value, but it does not make sense to find the “middle” of basic, fraction, scientific, and graphing calculator categories. Some might try to order the frequencies for each category (e.g., 5, 8, 9, 15) and calculate a median of 8.5; this would translate to a conclusion such as “a little more than 8 people use each kind of calculator.” This may not be helpful for drawing conclusions from the set of data.
- Mean:** Not meaningful. The mean would require determining an “average” kind of calculator or considering what would be a fair share among the kinds of calculators. However, it does not make sense to find an “average” kind of calculator. Finding the mean of the frequencies would indicate the “average use” of each kind of calculator, if each kind was used equally such as “of the people surveyed, a little more than 9 people used each kind of calculator”. While this statistic can be calculated using the frequencies for each category, the conclusion is generally not helpful for interpreting the data.

What kind of calculator do you own (choose from basic, fraction, scientific, graphing)?

(Note: The same data may be used with the bars arranged in order of increasing frequencies. The fact that the bars may be arranged in any order without changing the meaning of the data may indicate that range, median, and mean might not be helpful in describing the data.)

How many calculators (of any kind) do you own?
How many calculators does each person own?



NAME	c	NMBR	*****	B
ANN		2		
BOB		3		
CORY		3		
DAN		10		
ELLEN		5		
FRAN		8		
GAIL				

Name=█

```
Plot2  Off
Type:        
Cate9List: NAME
DataList1: NMBR
DataList2: L3
DataList3: L4
MATH Hor  2 3
```

Range: May or may not be meaningful. The range requires numerical data to find a difference between the highest and lowest data value. The data values in this set of data are cases and each case is a person's name rather than a number; therefore, it is not appropriate to consider the "difference" between one person and another person for finding a range of cases. On the other hand, one could consider the range of the case values (e.g., finding the difference between the least number of calculators owned and the most number of calculators owned). For this set of data, a range of 8 may be calculated by finding the difference between 2 calculators owned and 10 calculators owned.

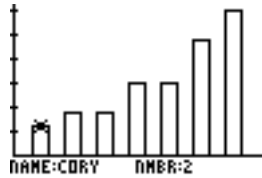
Mode: It is possible and reasonable to determine which case has the most value. For example, Dan owns the most calculators (10) in this set of data.

Median: May or may not be meaningful. The median requires ordering the cases in some meaningful way to determine a middle data value, but it does not make sense to find the "middle" of a list of names such as Ann, Bob, Cory, Dan. Some might try to order the case values for each case (e.g., 2, 3, 3, 5, 5, 8, 10) and calculate a median of 5. A possible conclusion might be, "half of the people surveyed own 5 or more calculators." This may be helpful in describing data from a case value plot.

Mean: May or may not be meaningful. The mean would require determining an "average" case or considering what would be a fair share among the people owning calculators. However, it does not make sense to find an "average" case for this set of data. Finding the mean of the case values would indicate the "average number" of calculators owned if each person owned the same number of calculators. This might translate to a conclusion such as "of the people surveyed, each person owns a little more than 5 calculators". This may be helpful in describing data from a case value plot.

How many calculators (of any kind) do you own?

(Note: The same data from above may be used with the bars arranged in order of increasing case values. The focus on comparing case values – length of the bars – indicates that median and mean of the case values might be helpful in describing the data.)



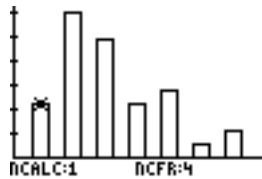
NAME	c	NMBR	█	B
CORY		2	█	
FRAN		2	█	
GAIL		2	█	
BOD		2	█	
ELLEN		2	█	
ANN		2	█	
DAN		2	█	

Name=█

```
Plot2 Off
Type: L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13 L14 L15 L16 L17 L18 L19 L20
Cate9List: NAME
DataList1: NMBR
DataList2: L3
DataList3: L4
MATH Hor 2 3
```

The median number of calculators owned is 5; half the people surveyed own 5 or fewer calculators and half the people surveyed own 5 or more calculators.

How many calculators (of any kind) do you own?



NCALC	NCFR	L1	12
1	4	█	
2	11	█	
3	8	█	
4	5	█	
5	3	█	
6	2	█	
7	1	█	
8	1	█	

L1(0)=

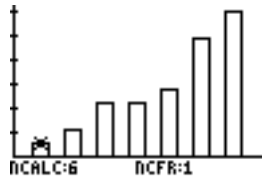
```
Plot3 Off
Type: L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13 L14 L15 L16 L17 L18 L19 L20
Cate9List: NCALC
DataList1: NCFR
DataList2: L3
DataList3: L4
MATH Hor 2 3
```

* The first bar represents four people who own one calculator. The second bar represents eleven people who own two calculators, etc.

- Range:** The least number of calculators owned is 1 and the most is 8 calculators owned. The number of calculators owned from this set of data has a range of 7.
- Mode:** The most frequent data value for this set of data is owning 2 calculators.
- Median:** The middle data value for this set of data is owning 3 calculators. Half the people surveyed own 3 or fewer calculators and half the people surveyed own 3 or more calculators.
- Mean:** For this set of data, the mean is 3.2 calculators owned. If everyone surveyed owned the same number of calculators, it would be a little more than 3 calculators.

(Note: The same data from above may be used with the bars arranged in order of increasing frequencies; however, that would not change the statistics even though the bars would not be “in order” according to the number of calculators owned as shown above.)

How many calculators (of any kind) do you own?



NCALC	NCFR	L1	12
6	1	6	1
7	2	7	2
8	3	8	3
9	3	9	3
10	4	10	4
11	6	11	6
12	7	12	7

L1(1)=

```

Plot3 Off
Type: L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12
Cate9List: NCALC
DataList1: NCFR
DataList2: L3
DataList3: L4
Hor 2 3
    
```

* The first bar represents one person who owns 6 calculators. The second bar represents two people who own 8 calculators, etc.