

4.1 Representing Data
(Graphically)

EQ: How can I represent data?

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Mean

The average value of a data set, found by summing all values and dividing by the number of data points

Example: $5 + 4 + 2 + 6 + 3 = 20$
 $\frac{20}{5} = 4$
The Mean is 4

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Median

The middle-most value of a data set; 50% of the data is less than this value, and 50% is greater than it

Example:

65, 65, 70, 75, 80, 80, 85, 90, 95, 100

median of all data, second quartile

median of lower part, first quartile

median of upper part, third quartile

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How do you find the mode?

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Let's use the calculator to calculate some statistics...

15, 11, 19, 15, 14, 14, 13, 17, 11, 12, 17, 15, 14, 15

Mean = _____

Median = _____

Mode = _____

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How can I represent data graphically?

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Dot Plot: Pros and Cons

Advantages:

- Simple to make
- Shows each individual data point

Disadvantages:

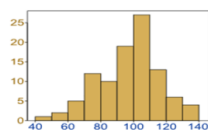
- Can be time consuming with lots of data points to make
- Have to count to get exact total. Fractions of units are hard to display.

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Histogram

A frequency plot that shows the number of times a response or range of responses occurred in a data set.

Example:



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Histogram: Pros and Cons

Advantages:

- Visually strong
- Good for determining the shape of the data

Disadvantages:

- Cannot read exact values because data is grouped into categories
- More difficult to compare two data sets

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Coordinate Algebra
4.1 Representing Data

Graphical Displays for Data

Example 1: A pharmacy records the number of customers each hour that the pharmacy is open. The staff is using the information to determine how many people need to be working at the pharmacy at each time of the day. The number of customers is in the table below. Use the table to create a histogram to help the pharmacy staff understand how many customers are in the pharmacy at each time of day.

Time Frame	Number of customers
8:00 A.M. – 9:00 A.M.	2
9:00 A.M. – 10:00 A.M.	0
10:00 A.M. – 11:00 A.M.	8
11:00 A.M. – 12:00 P.M.	14
12:00 P.M. – 1:00 P.M.	23
1:00 P.M. – 2:00 P.M.	12
2:00 P.M. – 3:00 P.M.	7
3:00 P.M. – 4:00 P.M.	3
4:00 P.M. – 5:00 P.M.	5

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Example 2: Anna and Ethan watch 10 thirty-minute shows during the month of June. They record the number of food commercials that air during each show in the table below. Create a dot plot to display the number of food commercials that aired during the 10 shows.

Shows	# of Commercials
A	7
B	7
C	5
D	7
E	4
F	7
G	5
H	9
I	5
J	6

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Example 3: Ray's scores on his mathematics tests were 70, 85, 78, 90, 84, 82, and 83. Draw a box plot to represent Ray's Data.

Find the IQR. Are there any outliers?

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Frequency Tables

A **frequency table** shows the frequency of each data value. If the data is divided into intervals, the table shows the frequency of each interval.

A **two way frequency table** separates data into two groups and often shows relative frequencies.

Joint relative frequency: the values in each category divided by the total number of values

Marginal relative frequency: adding the joint relative frequencies in each row and column

Example 4: The table shows the results of a poll of 80 randomly selected high school students who were asked if they prefer math or English. Complete the table with the joint and marginal relative frequencies.

	9th grade	10th grade	11th grade	12th grade	Total
Math	10	12	11	8	
English	12	11	8	8	
Total					

What is the percent of high school students who preferred math?

What is the percentage of freshmen who prefer English?

Given that a student prefers math, what is the probability a junior is chosen?

**The three percentages above represent joint, marginal, and conditional probability/percentages. Which one is which?

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