It isn't always easy to read and interpret the data listed in a table. Sometimes, a better way to organize data is to create a graph. In this chapter, we will look at different graphs and how the data is displayed.

DOT PLOTS
A **dot plot** distributes discrete data using a number line. **Discrete data** has a finite value that can be measured or counted, like the number of calories in a candy bar.

Dot plots are best used to organize and display the number of occurrences for a small amount of data.

Cereal Name	Sugar in one Serving (grams)
Cocoa Rounds	13
Flakes of Corn	4
Frosty Flakes	11
Grape Nuggets	7
Golden Nuggets	10
Honey Nut Squares	10
Raisin Branola	7
Healthy Living Flakes	7
Wheatleys	8
Healthy Living Crunch	6
Multi-Grain Squares	7
All Branola	5
Munch Crunch	12
Branola Flakes	5
Complete Flakes	4
Corn Crisps	3
Rice Crisps	4
Shredded Wheatleys	1
Puffs	22
Fruit Circles	11

Lowest data value = 1

Highest data value = 22

So, the number line must include the numbers between 1 and 22.

Construct a dot plot:
1) Draw a number line, marking intervals that include all the data values listed in the table.
2) Place an "x" above the number that represents each data value. The "x"s represent the number of times that data value is listed in the table.
3) Title the dot plot and identify the data values and their unit of measure.

Sugar in Breakfast Cereals
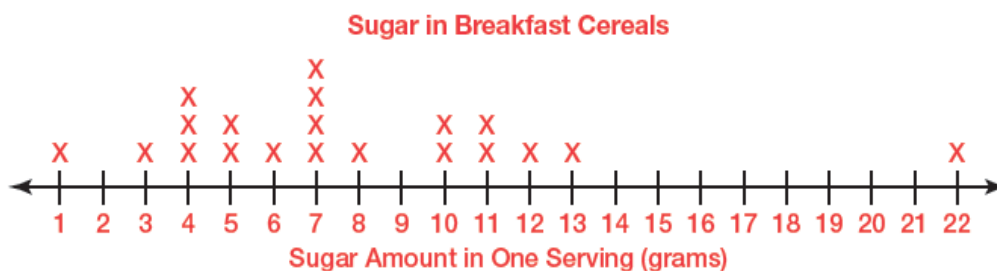
Analyze the dot plot:
From looking at the dot plot, I can tell that most cereals have less than 10 grams of sugar per serving. Only one cereal has more than 13 grams of sugar per serving.

When you analyze a graph, you should look at several characteristics to draw conclusions. Ask yourself:
- What's the overall shape of the graph? Does it have any interesting patterns?
- Where the middle or center of the graph?
- How spread out are the data values?

DATA DISTRIBUTIONS
The overall shape of a graph is called the **data distribution**. The data distribution is the way the data is spread out or clustered together. The shape of the distribution tells us a lot of information about the data. There are many distributions, but the most common are symmetric, skewed right, and skewed left.
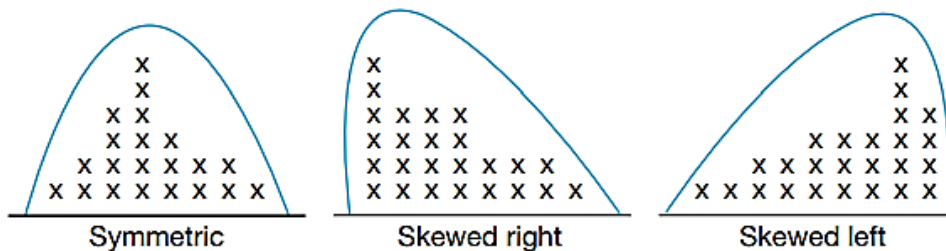
Properties of a data distribution:

- **Symmetric**   most of the data values are in the middle with the rest spread out in approximately the same pattern on either side of the middle.

- **Skewed right**   most of the data values are on the **left** with fewer data values on the right. The data "tails off" to the right.

- **Skewed left**   most of the data values are on the **right** with fewer data values on the left. The data "tails off" to the left.

Describe a Data Distribution:
To understand how to describe a data distribution, let's look at our previous example.

Describe the distribution of the amount of sugar in one serving of breakfast cereal. What does the distribution mean in terms of the problem situation?

> The data is skewed to the right. This means that most cereals have a low number of grams of sugar in a single serving. Only a few cereals have a high number of sugar grams per serving.
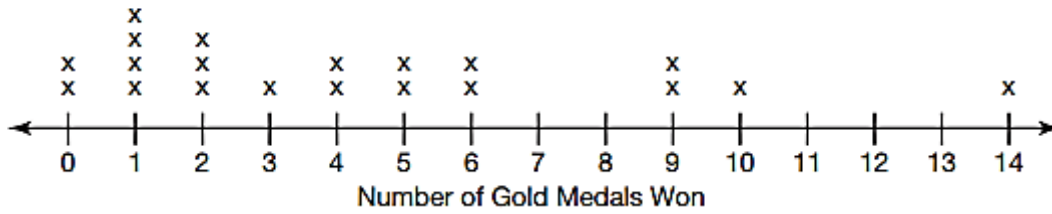
Do you think this conclusion is true for all breakfast cereals? Why or why not?

> No, there are many more breakfast cereals than those listed in the table. The table includes a small selection. The conclusion is only true for the breakfast cereals in the table.

PRACTICE

1.

Participants Who Won Gold Medals at the Special Olympics


```
       X
       X   X
   X   X   X       X   X   X           X
   X   X   X   X   X   X   X           X   X                       X
 ──┼───┼───┼───┼───┼───┼───┼───┼───┼───┼───┼───┼───┼───┼──►
   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14
```

Number of Gold Medals Won

a. Describe the information represented in the dot plot.

b. How many participants are represented in the dot plot?

c. How many participants won 10 or more medals?

d. Describe the data distribution and interpret its meaning in terms of this problem situation.

2. Construct a dot plot to represent the data. Use the number line provided.

Math Quiz Scores	12	14	8	13	12	14	5	13	14	3	15	15	10	13	12	0	14	11	14	13	10

```
 ──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──
```

Describe the distribution of the data set.

3. Construct a dot plot to represent the data. Use the number line provided.

# of Canned Goods Donated by Ms. Baker's Students to the Local Food Bank	15	18	18	22	13	15	19	17	18	17	16	10	17	20	19	25	17	18	19	16

Describe the distribution of the data set.