Statistics (at this level) is NOT Math! It is extremely ambiguous!

E.g. How wide is this curve?
About 2 standard deviations.

Two Types of Statistics:

<table>
<thead>
<tr>
<th>Descriptive</th>
<th>Inferential</th>
</tr>
</thead>
<tbody>
<tr>
<td>mean</td>
<td>To infer something about a population</td>
</tr>
<tr>
<td>median</td>
<td>from a single sample</td>
</tr>
<tr>
<td>mode</td>
<td></td>
</tr>
<tr>
<td>range</td>
<td></td>
</tr>
<tr>
<td>histogram</td>
<td></td>
</tr>
<tr>
<td>scatter plot</td>
<td></td>
</tr>
</tbody>
</table>

A set (finite or infinite) of objects to which we have only in complete access.

Population

Sample (a subset of which we have complete access)

E.g. From a sample, we can compute sample mean, sample range, sample ...

What do these say about the population mean?
The “coordinates” of the elements in both population and sample are generally called variables. But there are a few types we care about: (These distinctions matter, because each type has a different methodology developed for it.)

1) Quantitative
   a) Continuous \( x \in \mathbb{R} \)
      
      e.g. \( x = \) time it takes to complete a computer code.
   b) Discrete \( x \in \text{Integers} \)
      
      \( x = \# \) of defective elements in a computer. \( x \in \{0,1,2,\ldots\} \)
      
      \( x = \# \) of Macs in a class of 100 students \( x \in \{0,1,\ldots,100\} \)

2) Qualitative (or Categorical)

   \( x = \) computer type in a class. \( x \in \{\text{Mac, Dell, HP}\} \)
   
   \( x = \) state of a coin. \( x \in \{\text{Heads, Tails}\} \)

   \( x = \) letter grades in a class of 120 students \( x \in \{A,B,C,D,F\}\)

(hint: 1-1) Read the syllabus carefully. There is a lot of information in there that can benefit you.