Review #1: Briefly define "Population":

Review #2: Briefly define "Sample":

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Review #1: Briefly define "Population." Answer:
Yours
Mine

Review #2: Briefly define "Sample." Answer:
Yours
Mine

Review #3: The following probabilities refer to events that occur how often?

0 1 .05
Review #3: The following probabilities refer to events that occur how often? Answer

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yours</td>
<td></td>
<td></td>
<td>Yours</td>
</tr>
<tr>
<td>Mine</td>
<td></td>
<td></td>
<td>Mine</td>
</tr>
</tbody>
</table>

New material:
Variable: Something that can take several or many possible values
Constant: Something that has one fixed value
Variable: Something that can take several or many possible values
Constant: Something that has one fixed value

<table>
<thead>
<tr>
<th>Level</th>
<th>Categorizes?</th>
<th>Inherent order?</th>
<th>Equal unit of measurement?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Ordinal</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Interval/Ratio</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

Examples:
Nominal: Type of ice cream
Ordinal: Shirt size
Interval/Ratio: Distance

An example that shows why the distinction between levels of measurement is important:
Chocolate = 1 (my preference)
Vanilla = 2
Strawberry = 3 (your preference)
Our average preference is \((1 + 3)/2 = 2\) or Vanilla, which is absurd!
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Usually we’ll symbolize a variable as $X$; $X$ with a subscript $i$, that is, $X_i$, is the $i$th value of $X$.

Consider these data:

<table>
<thead>
<tr>
<th>$i$</th>
<th>$X$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

For example, when $i$ is 2, $X_i$ is $X_2$, which is the second value of $X$, which is 3. Thus $X_2 = 3$.

Similarly, $X_3 = 5$. 
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Consider these data:

\[ \begin{array}{c|c}
   i & X \\
   1 & 4 \\
   2 & 3 \\
   3 & 5 \\
\end{array} \]

The Greek upper case letter sigma \( \Sigma \) means "the sum of"

Thus the sum of all the values of \( X \) is \( \Sigma X = 4 + 3 + 5 = 12 \)

The most complicated sum we will see in this course:

\[
    r = \frac{\sum XY - \frac{\sum X \sum Y}{n}}{\sqrt{\left( \sum X^2 - \frac{(\sum X)^2}{n} \right) \left( \sum Y^2 - \frac{(\sum Y)^2}{n} \right)}}
\]

You may wish to explore Personal Trainer's Algebra if you have not done so already.

End of lectlet.