### Center

<table>
<thead>
<tr>
<th>Measure of Central Tendency</th>
<th>Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Middle</strong></td>
<td><strong>Range</strong></td>
</tr>
<tr>
<td><strong>Mean</strong> (Average)</td>
<td><strong>Std Deviation</strong></td>
</tr>
<tr>
<td><strong>Median</strong> ( halfway mark)</td>
<td><strong>IQR</strong></td>
</tr>
<tr>
<td><strong>Mode</strong> (most occurring)</td>
<td></td>
</tr>
</tbody>
</table>

### Example

**Quiz Score**

10, 6, 8

\[
\text{mean } \bar{x} = \frac{10 + 6 + 8}{3} = 8
\]

**Median**

Sort:

\[ M = 8 \]

**Mode**

None

The average of quiz is 8 points.
Mode Interpretation

Half of the sample made below 8 points and half of the sample made above 8 points.

Ex 2. $S: 10, 12, 8, 6$

$\bar{x} = \frac{10+2+8+6}{4} = 6.5$

$M \approx \frac{6+8}{2} = 7.$

Mode = None.

Sample, $n=10 (\Sigma x)$

$\bar{x} = \frac{22+26+\ldots+14}{10} = 19.65$ On average in a sample 10

Lib arts colleges pay $19,500 per year and another hundred is above.

Half of the students in a sample of 10

Lib arts college pay below $19,500 per year and another hundred is above.

The most occurring cost of education

in a sample of 10 lib arts colleges is $19,000 or $20,000.
Since X and M are so close (within 5 mths) you report mean as the best representation of a center.

Population

Mean \( \mu = 61.15 \) min
Median \( M = 55 \) min
Mode = 80 & 125 min

Interpretation

Mean: 61.15 min: Average the duration, power failures at a residence in the last 10 yrs was about 61 min.

Median: Half of all power failure at the residence last less than 61 min, and the other half last for more than 55 mins.

Mode: The most occurring power failure at a residence lasted for 80 min and 125 min in the last 10 yrs.
Reported Median of 55 min as the best representation of a centre since most were more than 5 min away from each other.

\[
\bar{x} = \frac{\sum (f \times x)}{\sum f} \quad \text{class mid point}
\]

<table>
<thead>
<tr>
<th>IQ score</th>
<th>Freq</th>
<th>(x)</th>
<th>Freq</th>
<th>(x)</th>
<th>(x \times x)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-59</td>
<td>2</td>
<td>54</td>
<td>3</td>
<td>79.5</td>
<td>119</td>
</tr>
<tr>
<td>60-69</td>
<td>3</td>
<td>64</td>
<td>3</td>
<td>89.5</td>
<td>262.35</td>
</tr>
<tr>
<td>70-100</td>
<td>3</td>
<td>94.5</td>
<td>5</td>
<td>119.5</td>
<td>3482.5</td>
</tr>
<tr>
<td>110-129</td>
<td>7</td>
<td>129</td>
<td>5</td>
<td>139.5</td>
<td>8365</td>
</tr>
<tr>
<td>130-140</td>
<td>1</td>
<td>139</td>
<td></td>
<td></td>
<td>1395</td>
</tr>
</tbody>
</table>

\[
\sum f = 78
\]

\[
\bar{x} = \frac{\sum f \times x}{\sum f} = \frac{7201}{78} \approx 92.32
\]

The mean of IQ scores for the given sample was about 92.32 points.