The following table shows the heights in cm of two groups of people, group A and group B:

<table>
<thead>
<tr>
<th>Group A</th>
<th>160</th>
<th>160</th>
<th>170</th>
<th>175</th>
<th>180</th>
<th>160</th>
<th>165</th>
<th>155</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group B</td>
<td>180</td>
<td>160</td>
<td>230</td>
<td>160</td>
<td>170</td>
<td>165</td>
<td>125</td>
<td>150</td>
</tr>
</tbody>
</table>

a) Which group do you think would have the greatest range in heights?
b) Which group do you think would have the greatest standard deviation in heights?
c) Calculate these statistics for each group to confirm your prediction. (You may either calculate the standard deviation by hand or using the statistics mode of your calculator or CAS calculator)

Answer:

c) Range (Group A) = 180 - 155 = 25 cm
   Range (Group B) = 230 – 125 = 105

Standard deviation (Group A):
Mean = 165 cm
Differences from the mean: -5, -5, -5, 10, 5, -5, 0, -10
Squared differences: 25, 25, 25, 100, 225, 25, 0, 100
Sum of squared differences: \( \sum(x - \bar{x})^2 = 550 \)
Hence:
\[
\sigma = \sqrt{\frac{\sum(x - \bar{x})^2}{n}}
\]
\[
\sigma = \sqrt{\frac{550}{9}}
\]
\[
\sigma = 7.817 \text{ (to 3 decimal places)}
\]

Standard deviation (group B):
\[
\sigma = 27.39 \text{ (to 2 decimal places)}
\]