Health Science Pathway

Data and Statistics Module, Summarising Data Question 2

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

Group A	160	160	160	175	180	170	160	165	155
Group B	180	160	230	160	170	165	125	150	145

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 = 25cm

Range (Group B) = 230 – 125 = 105

Standard deviation (Group A):
Mean= 165cm
Differences from the mean: -5, -5, -5, 10, 15, 5, -5, 0, -10
Squared differences: 25, 25, 25, 100, 225, 25, 25, 0, 100
Sum of squared differences ie: $\sum(x - \bar{x})^2$ = 550
Hence:

$$\sigma = \sqrt{\frac{\sum(x-\bar{x})^2}{n}}$$

$$\sigma = \sqrt{\frac{550}{9}}$$

$\sigma = 7.817$ (to 3 decimal places)

Standard deviation (group B):
σ= 27.39 (to 2 decimal places)