MATH 146 - 3.2 MEASURES OF VARIATION

DATASET 1: 26 22 31 21 24 28 30

21 22 24 26 28 30 31

DATASET 2: 14 3 45 25 49 27 9 36

3 9 14 25 27 36 45 49

Q1: Mean, Median & MIDRANGE

$\bar{x}_1 = \frac{\sum x}{n} = \frac{182}{7}$ $\boxed{\bar{x}_1 = 26}$

$\bar{x}_2 = \frac{\sum x}{n} = \frac{208}{8}$ $\boxed{\bar{x}_2 = 26}$

$\boxed{M_1 = 26}$

$M_2 = \frac{25+27}{2}$ $\boxed{M_2 = 26}$

$MR_1 = \frac{21+31}{2}$ $\boxed{MR_1 = 26}$

$MR_2 = \frac{3+49}{2}$ $\boxed{MR_2 = 26}$

But these are definitely Not similar data sets!!

Q2: RANGE

$Range_1 = 31-21 = 10$

$Range_2 = 49-3 = 46$

Q3: CALCULATE $\sum(x_i - \bar{x})$

Data Set 1:

x_i	$x_i - 26$	$(x_i - \bar{x})^2$
26	0	0
22	-4	16
31	5	25
21	-5	25
24	-2	4
28	2	4
30	4	16
	$\sum(x_i - \bar{x}) = 0$	$\sum(x_i - \bar{x})^2 = 90$

STANDARD DEVIATION OF THE SAMPLE

$$s = \sqrt{\frac{\sum(x-\bar{x})^2}{n-1}}$$

STANDARD DEVIATION OF THE POPULATION

$$\sigma = \sqrt{\frac{\sum(x-\mu)^2}{N}}$$

DIVIDE BY $n-1$ or 6

$\frac{\sum(x_i-\bar{x})^2}{n-1} = \frac{90}{6} = 15$

$\sqrt{\frac{\sum(x_i-\bar{x})^2}{n-1}} = \sqrt{15}$

$\boxed{s \approx 3.873}$