

1. Given the following set of data: 4 2 3 8 1 6 4 9 4 3 2
 1 2 Q_1 3 3 Q_2 4 4 4 Q_3 6 8 9

- a. Find the range of the data set.
 $9 - 1 = 8$
- b. Find the interquartile range of the data set.
 $IQR = Q_3 - Q_1 = 6 - 2 = 4$
- c. Find the standard deviation of the data set.

$$\bar{x} = \frac{46}{11} = 4.18 = 4\frac{2}{11}$$

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

$$\sigma_x = \sqrt{\frac{63.6364}{11}}$$

x	x - \bar{x}	(x - \bar{x}) ²
1	-3.18	10.1124
2	-2.18	4.7524
2	-2.18	4.7524
3	-1.18	1.3924
3	-1.18	1.3924
4	-0.18	0.0324
4	-0.18	0.0324
4	-0.18	0.0324
6	1.82	3.3124
8	3.82	14.5924
9	4.82	23.2324
46		63.6364

2. Given the following set of data:

Number of piglets in litter	Frequency
8	8
9	16
10	21
11	33
12	40
13	19
14	7
15	6

$$\sigma_x = 2.41$$

$$2.405229152...$$

- a. Calculate the range.
 $15 - 8 = 7$
- b. Calculate the interquartile range.
 $IQR = Q_3 - Q_1 = 12 - 10 = 2$
- c. Calculate the standard deviation

$$\bar{x} = 11.306\bar{6} = \frac{1696}{150}$$

$$\sigma_x = 1.67 \quad 1.669118...$$

3. The following set of data shows the time that is taken for 30 camels to cover a distance of 10 km:

- a. Use a separate sheet of graph paper to draw a cumulative frequency curve for this data.
- b. Find the interquartile range of the times taken.
 $Q_1 = .25(30) = 7.5 \rightarrow 58.5$
 $Q_3 = .75(30) = 22.5 \rightarrow 69.5$
 $IQR = 11$
- c. Calculate an approximate standard deviation of the times.

Time taken (t min.)	Frequency
$50 \leq t < 55$	2
$55 \leq t < 60$	8
$60 \leq t < 65$	10
$65 \leq t < 70$	3
$70 \leq t < 75$	4
$75 \leq t < 80$	2
$80 \leq t < 85$	1

$$\sigma_x = 7.43$$



4. The following set of numbers represents the scores obtained by students on two tests in which the maximum score was 20. Put the scores for Test 1 and Test 2 in your calculator under L₁ and L₂.

Test 1

4	12	11	10	5	10	12	12	6	8	19	13
3	7	11	13	4	9	12	10	6	13	19	11
3	12	14	11	6	13	16	11	5	10	12	13
7	8	13	14	6	10	12	10	7	10	12	10

Test 2

9	8	10	10	8	9	10	11	8	8	11	10
9	8	11	10	9	8	10	11	8	9	11	10
9	8	11	11	9	9	11	10	8	9	11	10
8	9	11	11	8	8	11	10	8	9	10	10

(a) Determine the mean (\bar{x}) for each set of data

Test 1: 10.1

Test 2: 9.48

(b) Determine the standard deviation for the data for Test 1 by hand:

$x - 10.1$ TEST 1:

Mark (x)	Frequency (f)	$x - \bar{x}$	$(x - \bar{x})^2$	$f(x - \bar{x})^2$
3	2	-7.1	50.41	100.82
4	2	-6.1	37.21	74.42
5	2	-5.1	26.01	52.02
6	4	-4.1	16.81	67.24
7	3	-3.1	9.61	28.83
8	2	-2.1	4.41	8.82
9	1	-1.1	1.21	1.21
10	8	-0.1	0.01	0.08
11	5	0.9	0.81	4.05
12	8	1.9	3.61	28.88
13	6	2.9	8.41	50.46
14	2	3.9	15.21	30.42
15	0	4.9	24.01	0
16	1	5.9	34.81	34.81
17	0	6.9	47.61	0
18	0	7.9	62.41	0
19	2	8.9	79.21	158.42
	<u>48</u>			Total: <u>640.48</u>

$\sigma_x = \sqrt{\frac{640.48}{48}}$

STANDARD DEVIATION of scores for TEST 1: 3.65 (check your answer using a calculator)

(c) Determine the standard deviation for the data for Test 2 by using a calculator:

STANDARD DEVIATION of scores for TEST 2: 1.13

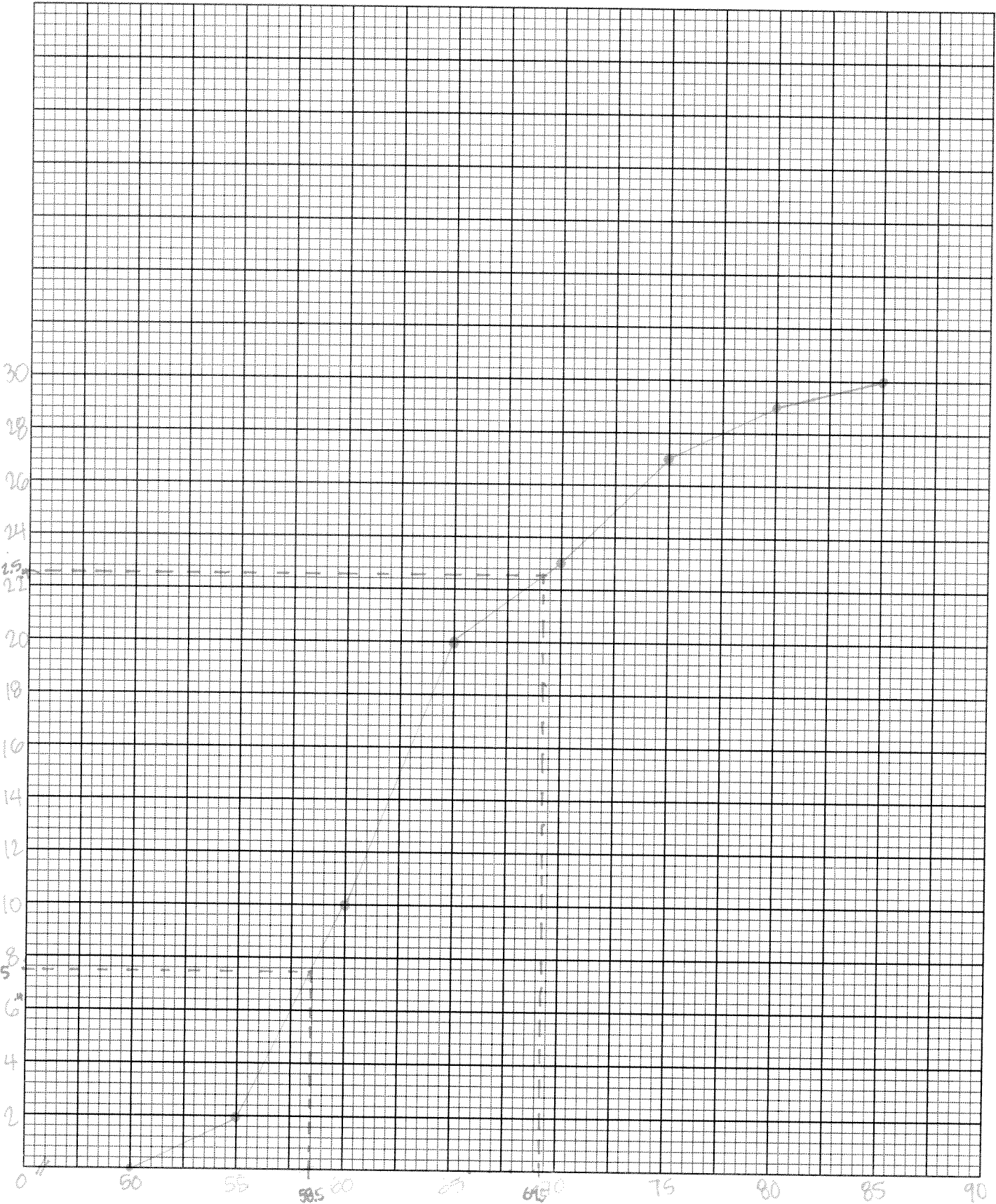
(d) What is the significance in the differences between the standard deviations?

The scores for Test 1 are more dispersed than those for Test 2.

Question # _____

Name Key

Cumulative
+
V
Q₂ 22.5
Q₁ 7.5



Time for camels to cover 10km in minutes