

## Warm Ups (4.7b)

Part A : Use the graphing calculators!

Ex. 1 56, 72, 63, 59, 63

mean  $\bar{x} = 62.60$

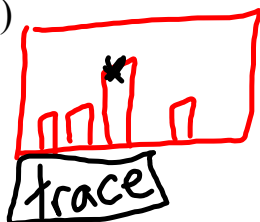
median  $\text{med} = 63.00$

range  $\text{max}X - \text{min}X = 72 - 56 = 16.00$

standard deviation  $\sigma_x = 5.39$

mode (create histogram)

63.00



Ex. 2

Mark	Frequency
53	2
58	4
61	3
65	3

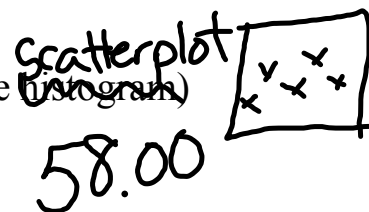
mean  $= 59.67$

median  $= 59.50$

range  $65 - 53 = 12.00$

standard deviation  $= 3.99$

mode (create histogram)



**Review for Quiz**

**Knowledge** section will be Multiple choice

**Application** section will be short answer, create the chart, perform calculations, analyse data

**Topics to be covered**

1. What is statistics? (4.0)
2. Tally chart (frequency table) (4.1)
3. Sampling Types (4.2)
4. Data Types and Graph Types (4.3)
5. Central Tendency (4.4) \* know definitions and how to calculate
6. Distribution Types (4.5)
7. Measures of Spread (4.6) \* know range and  $\sigma$
8. Analyzing the Data (4.7) \* know how to compare data

# Warm Ups (4.7c)

Part B: Use pencil and paper!

Ex. 1 56, 72, 63, 59, 63

mean  $\frac{56+72+63+59+63}{5}$

$= \frac{313}{5} = 62.6$

median ~~56, 59, 63, 63, 72~~

range  $72 - 56 = 16$

standard deviation

$$\sigma = \sqrt{\frac{(56-62.6)^2 + (72-62.6)^2 + 2(63-62.6)^2 + (59-62.6)^2}{5}}$$

$= \sqrt{\frac{145.22}{5}} = 5.39$

mode 63

Ex. 2

Mark	Frequency
53	2
58	4
61	3
65	3

mean  $\bar{x} = \frac{(2 \times 53) + (4 \times 58) + (3 \times 61) + (3 \times 65)}{12}$

$= \frac{216}{12} = 59.7$

median \* 2 middle #'s  $\frac{58+61}{2} = 59.5$

range  $65 - 53 = 12$

standard deviation

$$\sigma = \sqrt{\frac{2(53-59.7)^2 + 4(58-59.7)^2 + 3(61-59.7)^2 + 3(65-59.7)^2}{12}}$$

$\sigma = \sqrt{\frac{190.68}{12}}$

$\sigma = \sqrt{15.89}$

$\sigma = 3.99$

mode = 58

## MBF 3C1

## Review of Statistics Unit

## Unit 4 - 7

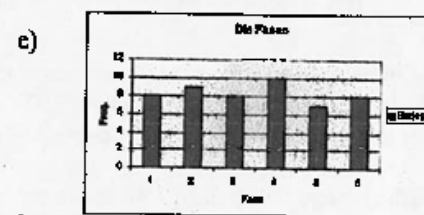
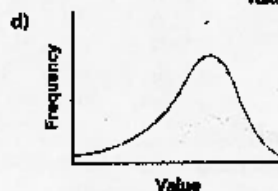
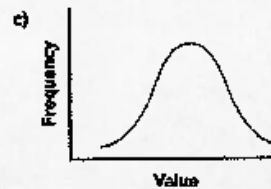
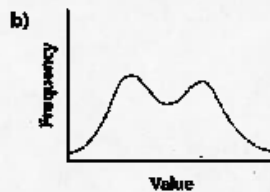
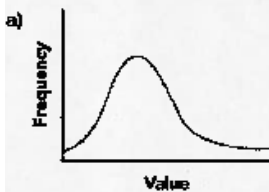
## Part A - Knowledge and manual calculations

1. The examination scores for a biology class are shown below:

68	77	91	66	52	58	79	94	81
60	73	57	44	58	71	78	80	54
87	43	61	90	41	76	55	75	49

- Determine the range for these data.
  - Determine a reasonable interval size and number of intervals.
  - Produce a frequency table for the grouped data.
  - Create a histogram.
2. Classify the sampling method used for the following:
- A radio-show host invites listeners to call in with their views on the smoking by-law.
  - The Heritage Ministry selects a sample of recent immigrants such that the proportions from each country of origin are the same as for all immigrants last year.
  - A reporter stops people on a street to ask them to comment on the new city park.
  - A school administrator arranges interviews for every fifth student on an alphabetized list.
3. An 80 kg load of recyclables contains 40kg of paper, 8 kg of plastic and 32 kg of other materials. Create a circle graph. Show all calculations.
4. The following scores are from a Scramble Game Tournament.
- |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 140 | 110 | 130 | 155 | 182 | 132 | 175 | 107 | 168 | 174 | 135 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
- Calculate mean, median and mode.
  - Calculate the range and standard deviation.

5. Identify the type of distribution displayed below.



6. Listed below are the number of pizzas made per shift by 8 employees.

54	152	140	112	92	126	104	152
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- Calculate the mean mode and median.
- Which value best represents the central tendency for the data. Explain.
- Calculate the range and the standard deviation for the data.
- Comment on why there is a large of s.d. value.

**Part B Using Graphing Calculators (to be done during class time)**

7. George collected these data about the number of hours her classmates spent working at part-time jobs last week.

0 5 3 0 4 16 3 5 17 5  
14 2 3 4 1 0 6 5 3 7

- a) Display these data in a histogram.
- b) Determine the mean, median, mode, the range, and the standard deviation.
- c) How well does the mean represent the typical number of hours of part-time work? Explain.

8. A manufacturer of light bulbs collected these data on the measured lifetimes (in hours) of two brands of light bulbs.

Measured lifetimes, in hours, of 24 randomly selected Brand A light bulbs

1060	1017	854	1105	1191	876	925	976	917	948	1010	1137
1124	1027	968	977	858	1172	1142	1004	1036	1071	833	1117

Measured lifetimes, in hours, of 24 randomly selected Brand B light bulbs

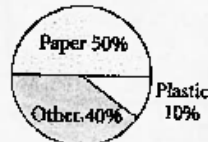
1067	1005	938	1048	1015	983	978	1046	939	1120	1080	1138
993	942	945	1146	968	1025	1001	954	1119	1138	1033	963

- a) Calculate the mean lifetime and the standard deviation for each brand.
- b) Which is the better light bulb? Explain.

**Solutions**

- 1a) 53 b) interval size is 5, number of intervals is 11
- 2a) voluntary b) stratified c) convenience d) systematic
- 3)

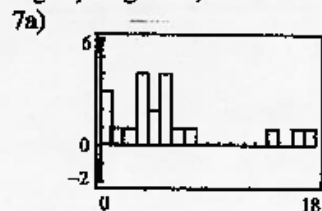
Paper:  $\frac{40}{80} \times 360^\circ = 180^\circ$   
 Plastic:  $\frac{8}{80} \times 360^\circ = 36^\circ$   
 Other:  $\frac{32}{80} \times 360^\circ = 144^\circ$



Score	Tally	Frequency
39.5-44.5		3
44.5-49.5		1
49.5-54.5		2
54.5-59.5		4
59.5-64.5		2
64.5-69.5		2
69.5-74.5		2
74.5-79.5		5
79.5-84.5		2
84.5-89.5		1
89.5-94.5		3

d) NA

- 4a) mean= 146, median= 140, mode= none
- b) range=44, standard deviation=25.07
- 5a) skewed right b) bimodal c) normal d) skewed left e) uniform
- 6a) mean=116.5, median = 119, mode = 152 b) 119 b/c the mean is low due to #54 and mode is very high c) range= 98, s.d.= 31.31 d) b/c outlier 52 and 2 very high values(mode)



b) mean= 5.15, median= 4, mode = 3 and 5(bimodal)  
 range= 17, s.d.= 4.84 c) the mean(5.15) is almost as large as the s.d.(4.84) thus the mean is not a good representation of the population. - only 5 people worked over the mean. 3 large values pulled up the mean. Thus the median of 4 is the best indicator to represent this population

8a) mean(A)= 1014.38hrs, mean(B)= 1024.33hrs, s.d.(A)= 102.73, s.d.(B)= 67.80