

Welcome MYP 9 Mathematics!

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: <u>4/09</u> Topic: <u>10A: Types of data</u>	0 1 2	
Tuesday Date: <u>4/10</u> Topic: <u>Pre-assessment</u>	0 1 2	
Wednesday Date: _____ Topic: _____	0 1 2	
Thursday Date: _____ Topic: _____	0 1 2	
Friday Date: _____ Topic: _____	0 1 2	

Class Plan

1. Warm-up

B

DISCRETE NUMERICAL DATA

2. Examine Stem and leaf plots

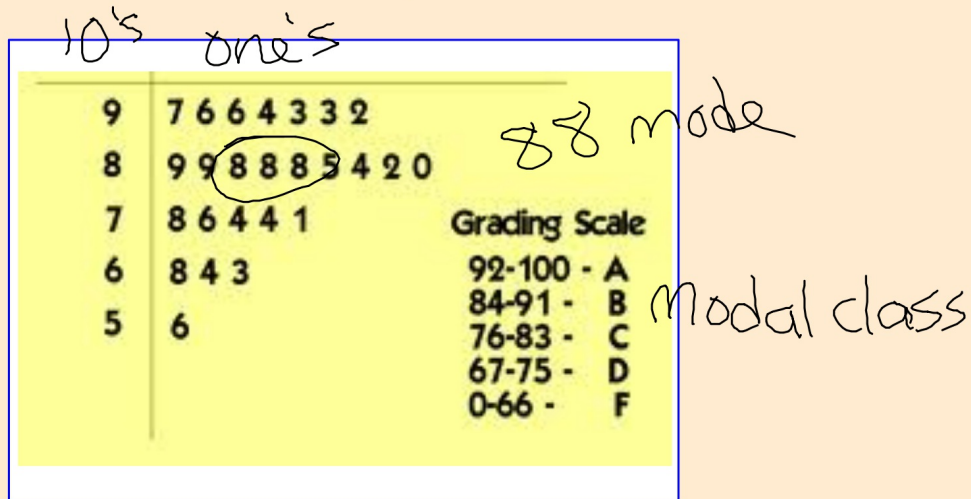
-Video

-Examples

3. Practice



Warm-up: What do you notice? wonder?



What could be said about the data?

What information could be stated?

Warm-up: What do you notice? wonder?

9	7 6 6 4 3 3 2	
8	9 9 8 8 8 5 4 2 0	
7	8 6 4 4 1	Grading Scale
6	8 4 3	92-100 - A
5	6	84-91 - B
		76-83 - C
		67-75 - D
		0-66 - F

What could be said about the data?

- 25 students, Min = 56, max = 97, mode = 88, Median score in 80's
- Most students scored above 70%

What could be concluded?

Overall, students scored well on the assessment.

Video: 2+ minutes



https://www.youtube.com/watch?v=sN1ez_qnBY0

B**DISCRETE NUMERICAL DATA**

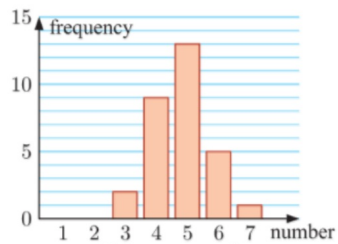
Discrete numerical data with not many different data values can be arranged in a **tally and frequency table**, and displayed in a **column graph** or **dot plot**.

For example, consider the data set:

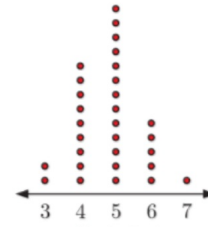
5 4 5 7 4 5 3 6 5 4
4 5 6 4 6 5 5 6 4 5
5 4 5 5 3 4 6 5 5 4

<i>Number</i>	<i>Tally</i>	<i>Frequency</i>
3		2
4		9
5		13
6		5
7		1

Tally and frequency table



Column graph



Dot plot

B**DISCRETE NUMERICAL DATA**

If the data has many different data values, we can display the data in groups using a **stem-and-leaf plot** or **stem plot**. The stem plot displays the frequency of data in each group, but retains the actual data values.

28 47 39 23 17 33
 35 26 49 35 9 36
 43 44 38 27 32 51
 31 11 26 42 24 30

For the data shown, we can construct an unordered or an ordered stem plot.

Unordered stem plot

<i>Stem</i>	<i>Leaf</i>
0	9
1	7 1
2	8 3 6 7 6 4
3	9 3 5 5 6 8 2 1 0
4	7 9 3 4 2
5	1

Scale: 5 | 1 = 51

Ordered stem plot

<i>Stem</i>	<i>Leaf</i>
0	9
1	1 7
2	3 4 6 6 7 8
3	0 1 2 3 5 5 6 8 9
4	2 3 4 7 9
5	1

Scale: 5 | 1 = 51

In the ordered stem plot, the data are given in ascending order.



B**DISCRETE NUMERICAL DATA**Example:

- 1) Record stem plot in notebook.
- 2) Choose a context for the data.
- 3) Write a conclusion.

<i>Stem</i>	<i>Leaf</i>	
1	2 4 4 6 8	
2	2 3 7 7 7 9 9	
3	0 0 2 4 5 8	<u>Scale</u>
4	0 2 3	4 0 = 40 people at work

B**DISCRETE NUMERICAL DATA**Example:Context for the data: # of people

Conclusion: at tryouts

most # = 27 people

<i>Stem</i>	<i>Leaf</i>
1	2 4 4 6 8
2	2 3 7 7 7 9 9
3	0 0 2 4 5 8
4	0 2 3

4 | 0 = 40

B**DISCRETE NUMERICAL DATA**Example:Context for the data: minutes playing

Conclusion: Fortnite

Ahmed played 43 minutes

Stem	Leaf
1	2 4 4 6 8
2	2 3 7 7 7 9 9
3	0 0 2 4 5 8
4	0 2 3

median
29 min

4 | 0 = 40

B**DISCRETE NUMERICAL DATA**Example:Context for the data: people at the beach

Conclusion:

at least 12 people at the beach over

21 days

<i>Stem</i>	<i>Leaf</i>
1	2 4 4 6 8
2	2 3 7 7 7 9 9
3	0 0 2 4 5 8
4	0 2 3

4 | 0 = 40

people

Example 1**Self Tutor**

The scores for a test out of 50 were recorded for 36 students.

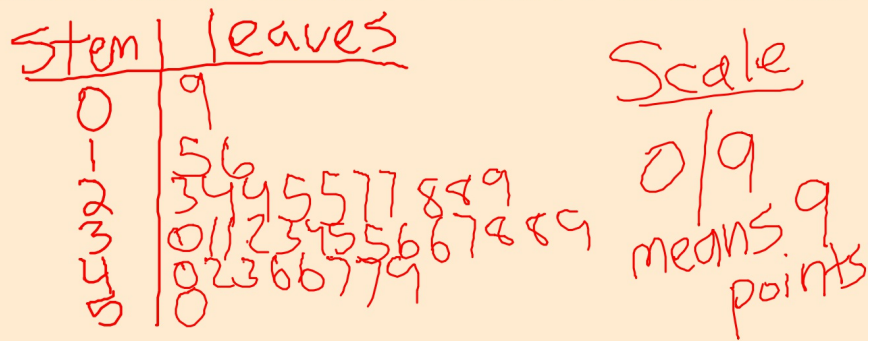
25, 36, 38, 49, 23, 46, 47, 15, 28, 38, 34, 9, 30,
24, 27, 27, 42, 16, 28, 31, 24, 46, 25, 31, 37, 35,
32, 39, 43, 40, 50, 47, 29, 36, 35, 33

- a Display the data using a stem-and-leaf plot.
- b What percentage of students scored 40 or more marks?

Step 1: Order data from least to greatest.

Determine stems.

Sorted: 9, 15, 16, 23, 24, 24, 25, 25, 27, 27, 28, 28, 29, 30, 31, 31, 32,
33, 34, 35, 35, 36, 36, 37, 38, 38, 39, 40, 42, 43, 46, 46, 47, 47, 49, 50



Example 1**Self Tutor**

The scores for a test out of 50 were recorded for 36 students.

25, 36, 38, 49, 23, 46, 47, 15, 28, 38, 34, 9, 30,
24, 27, 27, 42, 16, 28, 31, 24, 46, 25, 31, 37, 35,
32, 39, 43, 40, 50, 47, 29, 36, 35, 33

- a Display the data using a stem-and-leaf plot.
- b What percentage of students scored 40 or more marks?

Ordered stem plot

Stem | *Leaf*

key:

Example 1

The scores for a test out of 50 were recorded for 36 students.

25, 36, 38, 49, 23, 46, 47, 15, 28, 38, 34, 9, 30,
 24, 27, 27, 42, 16, 28, 31, 24, 46, 25, 31, 37, 35,
 32, 39, 43, 40, 50, 47, 29, 36, 35, 33

- a Display the data using a stem-and-leaf plot.
- b What percentage of students scored 40 or more marks?

- a The stems will be 0, 1, 2, 3, 4, 5 to account for numbers from 0 to 50.

Unordered stem plot

<i>Stem</i>	<i>Leaf</i>
0	9
1	5 6
2	5 3 8 4 7 7 8 4 5 9
3	6 8 8 4 0 1 1 7 5 2 9 6 5 3
4	9 6 7 2 6 3 0 7
5	0

Scale: 2 | 4 = 24 marks

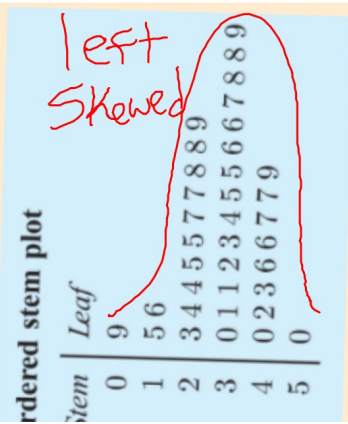
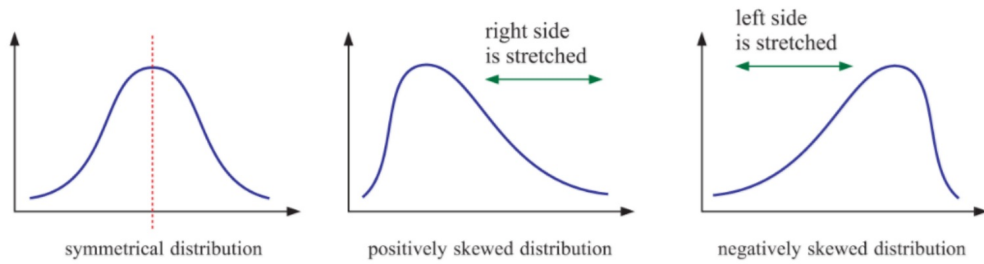
Ordered stem plot

<i>Stem</i>	<i>Leaf</i>
0	9
1	5 6
2	3 4 4 5 5 7 7 8 8 9
3	0 1 1 2 3 4 5 5 6 6 7 8 8 9
4	0 2 3 6 6 7 7 9
5	0

- b 9 students scored 40 or more marks.
 \therefore the percentage of students scoring 40 or more marks = $\frac{9}{36} \times 100\% = 25\%$.

How is the data distributed?

So we have:

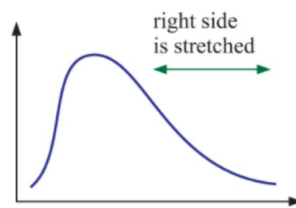


How is the data distributed?

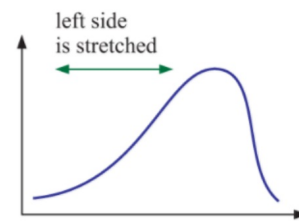
So we have:



symmetrical distribution



positively skewed distribution



negatively skewed distribution

<i>Stem</i>	<i>Leaf</i>
1	2 4 4 6 8
2	2 3 7 7 7 9 9
3	0 0 2 4 5 8
4	0 2 3

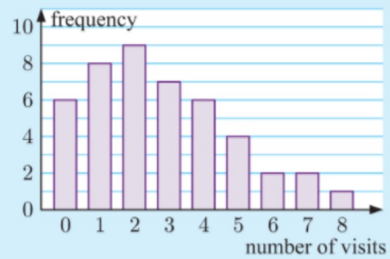
4 | 0 = 40

Example 2**Self Tutor**

45 people were asked how many times they had visited the doctor this year. The results are given in the frequency table alongside.

- a Display this information on a column graph.
- b Describe the distribution of the data.

<i>Number of visits</i>	<i>Frequency</i>
0	6
1	8
2	9
3	7
4	6
5	4
6	2
7	2
8	1

a Visits to the doctor

- b The right side of the graph is stretched out, so the data is positively skewed.

Exercises:

EXERCISE 10B

2 The stem-and-leaf plot alongside shows the ten pin bowling scores Ron has obtained this year.

Stem	Leaf
7	6 8
8	2 5 8
9	1 1 2 5 9
10	1 2 4
11	0
12	6
13	2 7

a How many games has Ron played? 17

b Find Ron's:

i lowest score 76 ii highest score. 137

c Describe the distribution of the data. Right skewed

d How many times has Ron scored less than 100? 10

e What percentage of Ron's scores have been 130 or higher?

Scale: 8 | 2 = 82

$$\frac{2}{17} \approx 11.8\%$$

Scores

Done? #6, #7

Exercises:

6 For the following stem plots:

- i state the minimum and maximum data values
- ii describe the distribution of the data.

a

Stem	Leaf
2	7 8
3	0 1 3
4	2 3 5 5 7
5	1 1 3 7 9 9
6	4 3 6 7
7	0 2 8
8	1

Scale: $3 | 0 = 30$

c

Stem	Leaf
1	4
2	
3	2 5
4	0 1 4
5	1 6 7 9
6	0 2 2 3 5 8
7	1 1 3 4 8 8 9
8	0 2 5 7

Scale: $3 | 2 = 3.2$

b

Stem	Leaf
6	3 6 7 8
7	2 2 6 8 9
8	0 5 7 7 8 9 9
9	1 3 4 6 7
10	2 4 5 8
11	0 0 3
12	1 4 7
13	4 4
14	1 3
15	2

Scale: $7 | 2 = 72$



Exercises:

7 The following marks were scored for a test out of 50 marks:

47 32 32 29 36 39 40 46 43 39 44 18 38 45 35 46 7 44 27 48

- a** Construct a stem plot to display the data.
- b** How many students scored 40 or more marks?
- c** What percentage of the students scored less than 30 marks?
- d** A score of 25 or more is required to pass the test. What percentage of the students passed?
- e** Describe the distribution of the data.

Exercise Solutions:

2 **a** 17 games **b** **i** 76 points **ii** 137 points
 c positively skewed **d** 10 times **e** $\approx 11.8\%$

6 **a** **i** minimum: 27, maximum: 81
 ii approximately symmetric
 b **i** minimum: 63, maximum: 152
 ii positively skewed
 c **i** minimum: 1.4, maximum: 8.7
 ii negatively skewed

Exercise Solutions:

7 a Test results

<i>Stem</i>	<i>Leaf</i>	
0	7	
1	8	
2	7 9	
3	2 2 5 6 8 9 9	
4	0 3 4 4 5 6 6 7 8	<i>Scale:</i> 1 8 = 18

b 9 students **c** 20% **d** 90% **e** negatively skewed