Statistics Revision

Displaying Discrete Data versus Continuous Data

Collecting and organising discrete data using a frequency table:

There are **two types** of data that can be collected, **discrete** data and **continuous** data. A **frequency table** (tally chart) is a good way to organise both types of data as the data is being collected.

Discrete data is data that is **obtained by counting**.

Example: John records the number of people in cars as the cars go past the school gate.

Continuous (measurement) data is **obtained by measuring**.

Example: Amanda measured the height of her younger sister every week.

Task 1: Discrete Data on a Tally Chart & Column Graph

On a school camp, pupils can have either an apple, a banana, an orange or a pear for afternoon tea. This is what they selected.

banana, apple, orange, orange, pear, banana, pear, orange, pear, apple, apple, orange, pear, banana, pear, pear, apple, apple, pear, orange, banana, orange, pear, orange, apple, pear, apple, apple, pear, apple, banana, pear, orange, pear

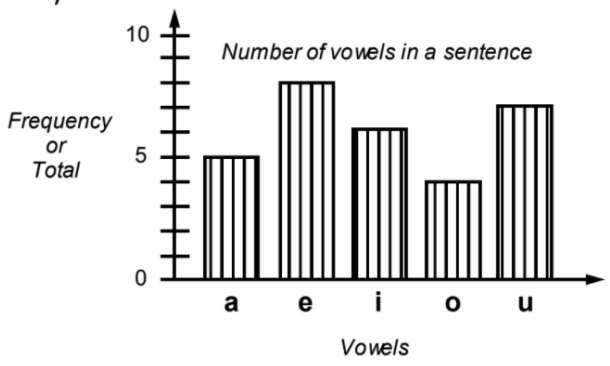
10. Organise this data into a **tally chart**.
11. Create a **column graph** using your tally chart results.
12. What fruit was the most popular choice?
13. What fruit was chosen 5 times?
14. If all pupils on camp ate fruit, how many pupils were on camp?

Task 2: Displaying Discrete Data on a Column Graph

Displaying Data: Column Graphs

Data that has been collected using a tally chart can be displayed in several ways.

Example:



All column graphs should have …

- a title or name,
- a label on each axis (lines with arrows),
- a scale on the frequency axis,
- gaps between columns.
- all columns should be the same width

From this graph we can see that there were 8 e's.
How many u's were there?

Task 3: Displaying Grouped Discrete Data on a Column Graph

Organising grouped discrete data:

To avoid having too many rows in a frequency table, the data can be grouped into categories or **class intervals**. Usually 6 to 7 class intervals is the maximum number to have in any one frequency table.

Each category or **class interval** should be the **same width**.

Example: The number of toys sold each hour at a local toy shop has been recorded in this frequency table.

Number of toys sold each hour

Class Interval	Tally	Frequency
1 - 5	𝍸 II	7
6 - 10	𝍸 IIII	9
11 - 15	𝍸 III	8
16 - 20	𝍸	5
21 - 25	I	1
		30

Which numbers would be recorded in the class interval 6 - 10?

How many times were less than 11 toys sold in an hour?

Answers: The numbers 6, 7, 8, 9 and 10 would go in the 6 - 10 class interval.
On 16 occasions, less than 11 toys were sold in an hour.

What other information is contained within this frequency table?

Task 7

The following data shows the number of Lego blocks used to create some models made by pupils in Room 7.

12, 26, 31, 28, 25, 19, 14,
11, 21, 29, 30, 24, 16, 18,
23, 14, 13, 31, 22, 29, 20,
23, 17, 12, 23, 29, 21, 34

Number of Lego blocks used

Class Interval	Tally	Frequency
11 - 15		
16 - 20		
21 - 25		
26 - 30		
31 - 35		

1. **Copy** and **complete** the frequency table, recording the numbers in the appropriate class interval.
2. What was the most common class interval?
3. How many pupils used less than 21 blocks in their models?
4. How many pupils used more than 25 blocks?
5. How many pupils in Room 7?

Task 4: Displaying Continuous Data on a Column Graph

Collecting and organising continuous data using a frequency table:

The second type of data that can be collected is called **continuous data**.
Continuous data is obtained by measuring. Because continuous data can take on any value, it is recorded in frequency tables that have **class intervals**, similar to frequency tables for grouped discrete data.

Example: The heights of Year 9 pupils are shown in this frequency table.

Heights of Year 9 Pupils

Height (m)	Tally	Frequency
1.30m —	𝍸 𝍸 IIII	14
1.40m —	𝍸 𝍸 III	13
1.50m —	𝍸 𝍸 𝍸	15
1.60 - 1.70m	𝍸 𝍸 II	12
		54

What range of heights would appear in the class interval 1.50m — ?

Answer: Any heights ranging from 1.50m to 1.599m, that is, just below 1.60m.

Although we know that 13 pupils were in the class interval 1.40m —, we do not know their exact heights.

All histograms should have ...

☑ a **title** or name, ☑ a **label** on each axis, ☑ a **scale** on each axis,
☑ **class intervals** that have the same interval, ☑ all **columns** should be the **same width**.

A histogram DOES NOT have gaps between the columns.

Continuous data is obtained by measuring. Because continuous data can take on any value, it is recorded in frequency tables that have **class intervals**, similar to frequency tables for grouped discrete data.

Example: The height of pupils in Room 8 are shown in this frequency table.

What range of heights would appear in the class interval 1.40m — ?

Answer: Any heights ranging from 1.40m to 1.499m, that is, just below 1.50m.

Although we know that 8 pupils were in the class interval 1.40m —, we do not know their exact heights.

Height of pupils in Room 8

Height (m)	Tally	Frequency
1.30m —	𝍸 I	6
1.40m —	𝍸 III	8
1.50m —	𝍸 IIII	9
1.60 - 1.70m	𝍸 II	7
		30

What other information is contained within this frequency table?

Task 11

This **histogram** shows the results of a school cross-country race.

1. How many runners ran the course in under 15 minutes?
2. How many runners took longer than 20 minutes to run the race?
3. How many runners ran the race?