

fs4u

Working with Data

Workbook 22

Collecting & Displaying Data

The data in the table below is some information collected from staff. You could obtain similar data from your own friends or colleagues about their eating habits.

Name	No of bananas eaten each week
Shaeenan	0
Anne	4
Daisy	10
Doreen	5
Jai	14
Fred	2
George	3
Herbert	2
Amarjit	4
Jean	5
John	6
Lily	8
Margaret	2
Pauline	7
Raj	6
Robert	3
Jane	5
Surinder	4
Tracey	2
William	1

This booklet shows some ways you can display information about the data.

First a few basic facts about the data:

What is the most number of bananas eaten in a week?
Look at the table and fill in the box.

Maximum number =

Jai must be fond of bananas!!

And what is the least number?

Minimum number =

Shireenah doesn't like them at all!!

The *range* is the difference between the two.

RANGE - =

The **MEAN** is another measure that can be used. (Some people call it an 'average' but there are other types of average you work out in a different way) .

First count the number of pieces of data (in this case the number of people).

Number of bits of data =

Then add up all the bananas (best to use a calculator).

Total bananas =

The **MEAN** is worked out by dividing the
TOTAL bananas by the number of bits of data

MEAN number of bananas eaten in a week = $93 \div 20 = 4.65$ bananas


Diagrams

One way to show how data is distributed is to group it into classes as a tally chart. Learners do not have to decide which class intervals to use.

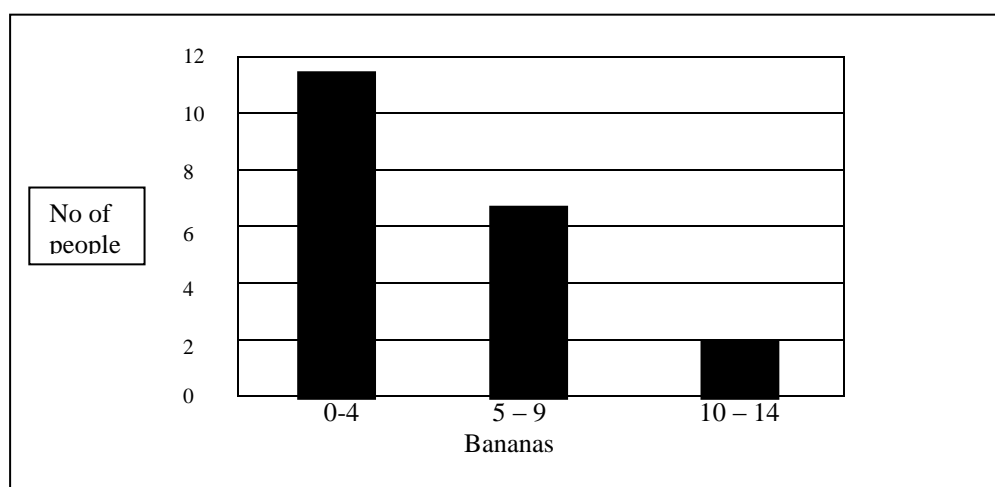
Work on one class at a time. Go through the list and make a tally mark for each one that fits in to the class and mark the list so they aren't counted twice. Use the data on the previous page to complete the table below.

No of bananas eaten in a week	No of people (Tally)	No of people
0 to 4	IIII IIII I	11
5 to 9		
10 to 14		

The data could then be displayed on a pictogram; (Draw your own pictures in the last two columns)

No if bananas eaten in a week	No of people who eat that many bananas
0 - 4	
5 - 9	
10 - 14	

or on a **Bar Chart**

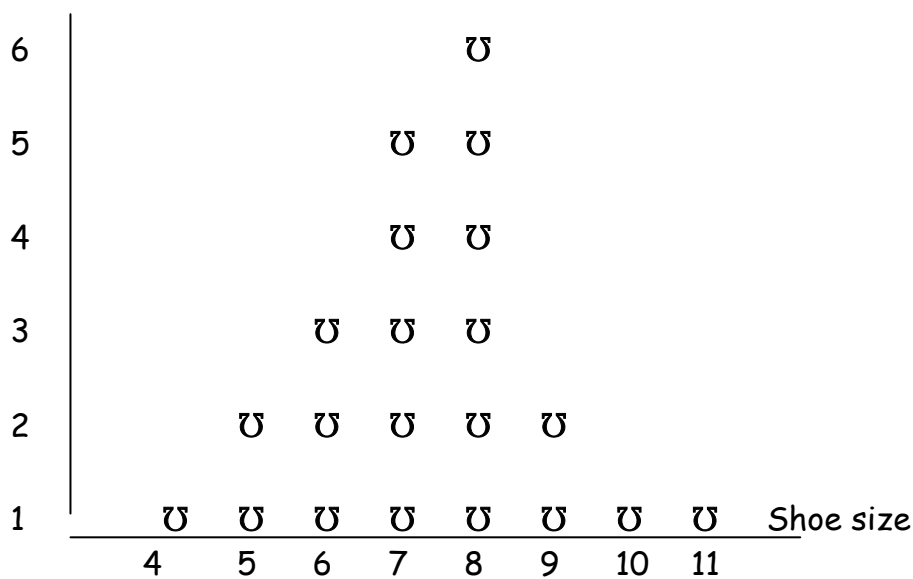


Shoe Size Survey

Analysed to show MEAN, MEDIAN and MODE.

Pictogram of Shoe Size

Frequency



Mean, Median & Mode

Mode - the item that occurs most often

Example: 1, 2, 2, 2, 3, 3, 4, 5, 6

Mode = 2 (there are more 2's than any other number)

NB - it is possible to have more than one mode.

Median - put in order, pick out the middle number

Example: 6, 3, 4, 8, 2 put in order 2, 3, 4, 6, 8

Median = 4

Mean - add up all the numbers and divide by how many numbers there are

Example: 6, 3, 4, 8, 2 **Mean** = $(6 + 3 + 4 + 8 + 2) \div 5$
= $23 \div 5 = 4.6$

Heights of 5 people

170 cm 182 cm 184 cm 190 cm 190 cm

Weights of 7 people

54 kg 72 kg 63 kg 56 kg 84 kg 56 kg 91 kg

Shoe size of 9 people

4 7 6 8 8 6 9 6 9

Activity 1

Find the modes in the lists of data above.

Activity 2

Find the medians in the lists of data above.

(NB If there are two numbers in the middle add them together and divide by 2)

Activity 3

Find the means of the lists of data above.

A survey of 21 people buying shoes was conducted. The sizes

8	5	9	6	7	8	7
4	6	6	5	11	9	7
10	7	8	7	8	8	8

Information in this form is known as **RAW DATA**

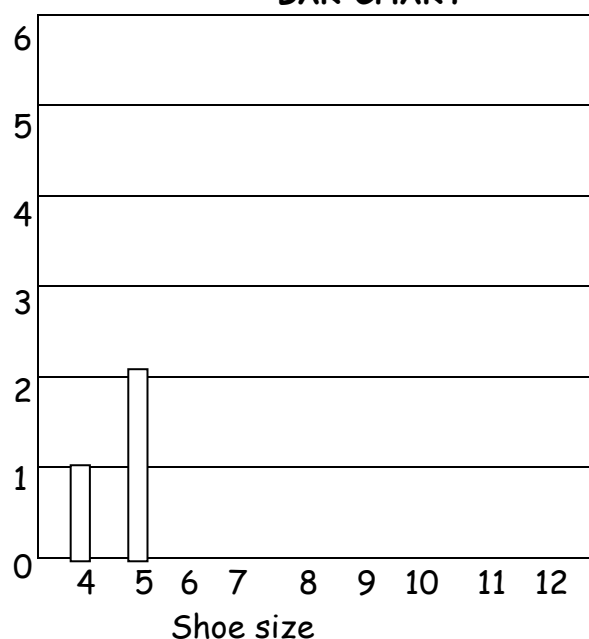
Copy and complete the following **FREQUENCY CHART**

Shoe size	Tally	Frequency
4		
5		
6		
7		
8		
9		
10		
11		
Total		21

Draw a bar chart from the information you have in your Frequency Table

Show size is your horizontal axis (4 to 11) and frequency is your vertical axis (0 - 6)

BAR CHART



The shoe size with the highest frequency is the **MODE**. The shoe size with the highest bar on your Bar Chart is also the **MODE**.

To work out the **MEDIAN** of all the shoe sizes from the raw data in order, the smallest first.

The **MEDIAN** is now the middle one (i.e. the eleventh one) 4, 5, 5, 6, 6,

To work out the **MEAN**, first add up all the shoes sizes from the raw data, then divide this by the number of people in the survey (i.e. divide by 21 in this case).

An alternative method of calculating the **MEAN** is to use the frequency table.

Copy and complete this amended table.

Shoe size (s)	Frequency (f)	s x f	
4			
5	2	5 x 3 =	10
6			
7			
8			
9			
10			
11			
	Totals 21		

The **MEAN** is calculated by dividing the total of the s x f column by the total of the Frequency column (i.e. 21).

$$\text{MEAN} = \frac{2}{21} = \boxed{}$$

Activity

1	Find out the natural hair colour of 20 people and draw a pictogram. Categories could be dark, blonde, red; which is the most common?
2	Count the cars which drive past your home, school, college or place of work during each hour of the day and display the information on a bar chart. Discuss with your tutor what the graph shows.
3	Measure the height of each member of a group e.g. family, colleagues or class. Ask your tutor to set limits for the data. Then:
a	find the mean and mode and draw a bar graph for the whole group.
b	find the mean and mode and draw a bar graph for females.
c	find the mean and mode and draw a bar graph for males.

Compare the results.