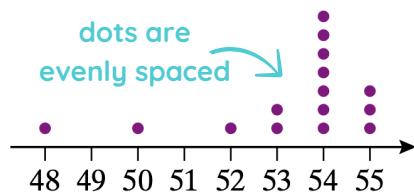


HISTOGRAM



For **discrete numerical** data

DOT PLOT

the data is grouped into class intervals (often 5 or 10)

Height (cm)	Frequency
135-139	1
140-144	2
145-149	4
150-154	5
155-159	7
160-164	9
165-169	10
170-174	9
175-179	11
180-184	2

For **continuous numerical** data

GROUPED FREQUENCY TABLE

Median is the middle value of data that is ordered.

odd data set

2 4 **7** 10 12
median

even data set

2 4 6 **10** 15 18
8
median

$\left(\frac{n+1}{2}\right)$ gives the **location** of the median in the data set

Range = Highest – Lowest

Mode is the most common value (there can be more than one). Two modes means data is bimodal. If there are 3 or more, data has 'no mode'.

Mean = average
= $\frac{\text{sum of all values}}{\text{number of values}}$ $\bar{x} = \frac{\Sigma x}{n}$

Number of words per sentence

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

(Key: 1|5 means 15)

For **discrete numerical** data

STEM AND LEAF PLOT

Waist measurements (cm)

Fifties	Leaf	Stem	Thirties	Leaf
		6		8
7		7	0 1 1 2 3 4 4 7 8 9	
9 7 3 2		8	0 0 1 4 4 7 8	
9 4 4 2 1		9	5 7	
9 8 7 5 3 0		10		
7 6 2				
3				

(Key: 7|6 means 67 and |6|8 means 68)

back-to-back stem and leaf plots allow us to compare two data sets

REPRESENTING DATA

- Title
- X and Y-axis labels
- Consistent Scale
- Accurate Data

KEY FEATURES OF A GRAPH

YEAR 9 UNIT 3

SUMMARISING DATA

CLASSIFYING DATA

Categorical

Data represented in non-numerical **word** form. E.g. hair colour, type of vehicle, type of animal...

Nominal

Need **sub-groups** to describe.
E.g. hair colour: blond, brown, black...

Ordinal

Need a **ranking** to order the description.
E.g. small, medium, large, extra large...

Numerical

Data represented in numerical (**number**) form. E.g. height, weight, number of children...

Discrete

Counted in exact values, often whole numbers.
E.g. shoe size, goals scored

Continuous

Measured in a continuous decimal scale.
E.g. height, temperature

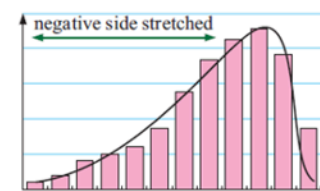
Symmetric distribution

One half of the graph is approximately the mirror image of the other half.



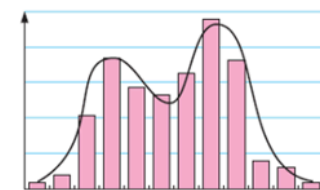
Negatively skewed distributions

The left or negative side of the data is stretched out.



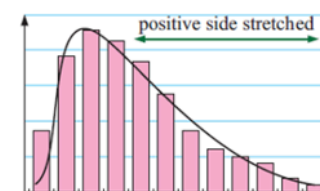
Bimodal distributions

The distribution has two distinct peaks.



Positively skewed distributions

The right or positive side of the data is stretched out.



DATA DISTRIBUTION

DEFINITIONS:

Primary Data: collected for the first time by the researcher **e.g.** surveys, experiments, observations...

Secondary Data: data that has already been collected by someone else **e.g.** textbooks, websites...

Census: an official count or survey of a whole population

Sample: a small part of a population

Algebra Words

variable / pronumeral – a letter or symbol that is used in place of a number

coefficient – a number in front of a variable

constant – a number on its own

$$y = 3x - 2$$

term – only one part

expression – no equals sign

equation – has an equals sign

ALGEBRA

Substitution

Replace the variable (letter) with the number

Evaluate $y = x + 3$ when $x = 5$.

$$y = x + 3$$

$$y = 5 + 3$$

$$y = 8$$

Writing Expressions

Look for numbers/variables/key words

I have x fish and I buy 3 more = $x + 3$

Describing Number Patterns

Common difference of an increase of 4

Spatial pattern: 

Number pattern: 4 8 12 ...

Rule: Number of sticks = 4 times the number of diamonds

Let s be number of sticks
and d be number of diamonds
Therefore the equation is: $s = 4d$

Solving Equations

Find the value of the variable by getting it by itself..

Use the process of 'opposite order of operations' to *undo* equations.

YEAR 7 UNIT 4

SOLVING EQUATIONS

Solving Two Step Equations

Eg: $8a - 5 = 11$

$$+5 \quad +5$$

$$8a = 16$$

$$\div 8 \quad \div 8$$

$$a = 2$$

Eg: $10 + 6y = 34$

$$-10 \quad -10$$

$$6y = 24$$

$$\div 6 \quad \div 6$$

$$y = 4$$

Eg:

$$\frac{x}{12} - 5 = 4$$

$$+5 \quad +5$$

$$\frac{x}{12} = 9$$

$$\times 12 \quad \times 12$$

$$x = 108$$

+

Above
Add
Altogether
And
Ascend
Deposit
Grew
Gain
Increase
Longer than
More
Plus
Save
Sum
Total

-

Below
Decline
Decrease
Descend
Difference
Discount
Fewer
Less
Minus
Shorter than
Subtract
Take away
Withdraw
Lost
Remove

×

Double
Every
Half ($\times \frac{1}{2}$)
Of
Product
Times
Triple
Twice

÷

Distribute
Divide
Find each
Find per
Quotient
Share
Split into

B

Brackets

I

Indices

D

Division

M

Multiplication

A

Addition

S

Subtraction

One Step Equations

The opposite of plus is minus

$$y + 14 = 20$$

$$-14 \quad -14$$

$$y = 6$$

Substitute back in to check if correct

The opposite of minus is plus

$$x - 120 = 80$$

$$+120 \quad +120$$

$$x = 200$$

The opposite of multiply is divide

$$3n = 12$$

$$\div 3 \quad \div 3$$

$$n = 4$$

$\frac{3}{3}$ cancels down to become $\frac{1}{1} = 1$

$$n = 4$$

1n is simply "n"

The opposite of divide is multiply

$$\frac{k}{2} = 16$$

$$\times 2 \quad \times 2$$

$$k = 32$$

$\frac{k}{2}$ is divided by 2, so we need to multiply both sides by 2

$\frac{2}{2}$ cancels down to become $\frac{1}{1} = 1$

1k is simply "k"