

# Y10 STATISTICS UNIT 2: REPRESENTING DATA PART I

## Key words and definitions:

mean - an average calculated by finding the total and dividing by the total frequency

median - an average calculated by finding the middle value of an ordered list

mode - an average calculated by finding the most common value

range - the largest value subtract the smallest value of a list of data

quartile - the data point a quarter (Q1), or 3 quarters (Q3) into a set of data.

interquartile range - calculated by  $Q3 - Q1$

frequency - how many times something has occurred

cumulative frequency - adding up the frequency as you go

class width - the difference between the upper and lower bound of a group

## Comparative pie charts

Equivalent fractions are used to calculate a piece of missing information in a comparative pie chart. Here is the formula:

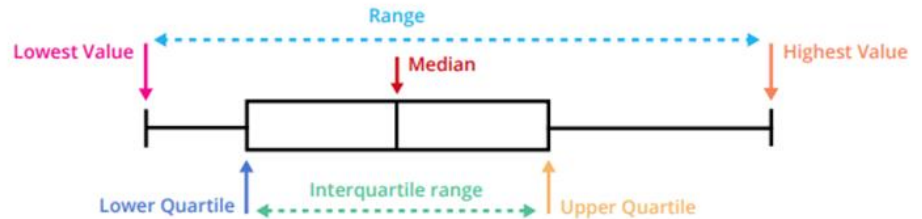
$$\frac{N}{n} = \frac{R^2}{r^2}$$

Where,

$N$  = larger population,  $R$  =

radius for the larger pie chart and

$n$  = smaller population,  $r$  = radius for the smaller pie chart.



**Median** - this is the middle value. 50% of the data will be below this value and 50% above this value.

**Range** - measures the spread of the whole data.

**Range** = **highest value** - **lowest value**

**Interquartile range** - measures the spread of the middle 50% of data, eliminating any extreme values which can affect the data.

**Interquartile range** = **upper quartile** - **lower quartile**

When the data is grouped, the individual values are not known. Therefore, we find the midpoint of the class interval and use this as an estimate of every value recorded in that group.

$$\begin{aligned} \text{Mean} &= \frac{\sum fx}{\sum f} = \frac{1620}{86} \\ &= 19 \text{ minutes} \\ &\text{(to the nearest minute)} \end{aligned}$$

Time (minutes)	Midpoint $x$	Frequency $f$	Midpoint $\times$ frequency ( $fx$ )
$0 < t \leq 10$	5	24	$5 \times 24 = 120$
$10 < t \leq 20$	15	16	$15 \times 16 = 240$
$20 < t \leq 30$	25	35	$25 \times 35 = 875$
$30 < t \leq 40$	35	11	$35 \times 11 = 385$
<b>Total</b>		<b><math>\sum f = 86</math></b>	<b><math>\sum fx = 1620</math></b>



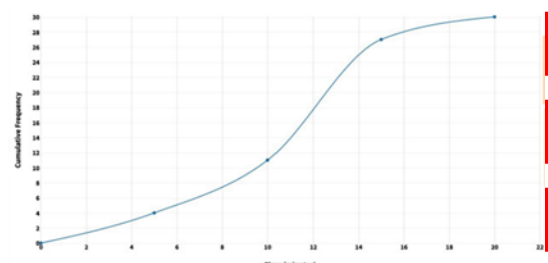
## Drawing a cumulative frequency graph

Here is a frequency table showing the length of time in mins it took pupils to complete a puzzle

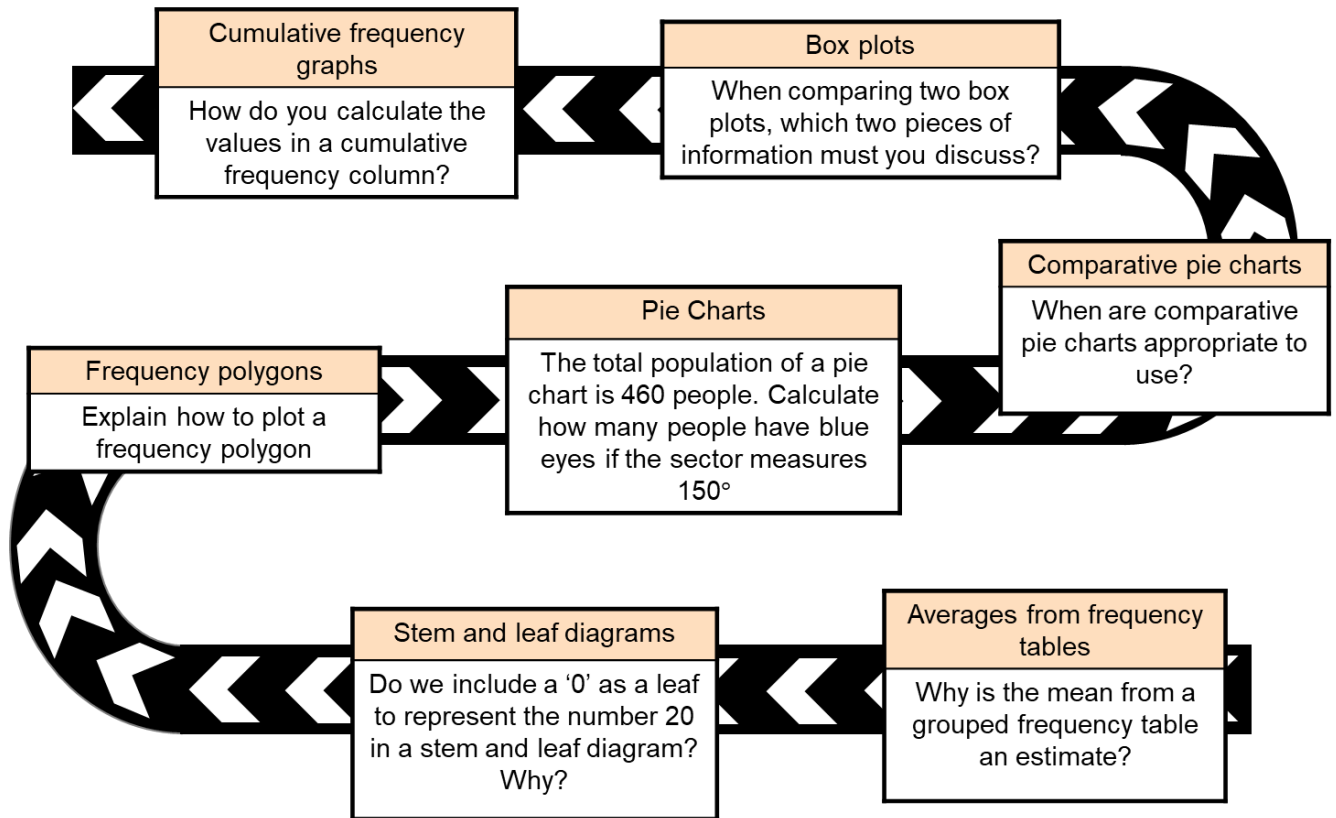
Time (minutes)	$0 < t \leq 5$	$5 < t \leq 10$	$10 < t \leq 15$	$15 < t \leq 20$
Frequency	4	7	16	3

We draw a cumulative frequency diagram by plotting the upper boundary of each class against the cumulative frequency therefore we use the information in the table to create a cumulative frequency table.

Time (minutes)	$\leq 0$	$\leq 5$	$\leq 10$	$\leq 15$	$\leq 20$
Cumulative frequency	0	$0 + 4 = 4$	$4 + 7 = 11$	$11 + 16 = 27$	$27 + 3 = 30$



## Statistics Unit 2 Learning Journey: Representing Data Part 1



<b>DEFINITION</b>	<b>CHARACTERISTICS</b>
<b>ETYMOLOGY/MORPHOLOGY</b>	
<b>EXAMPLES</b>	<b>NON-EXAMPLES</b>