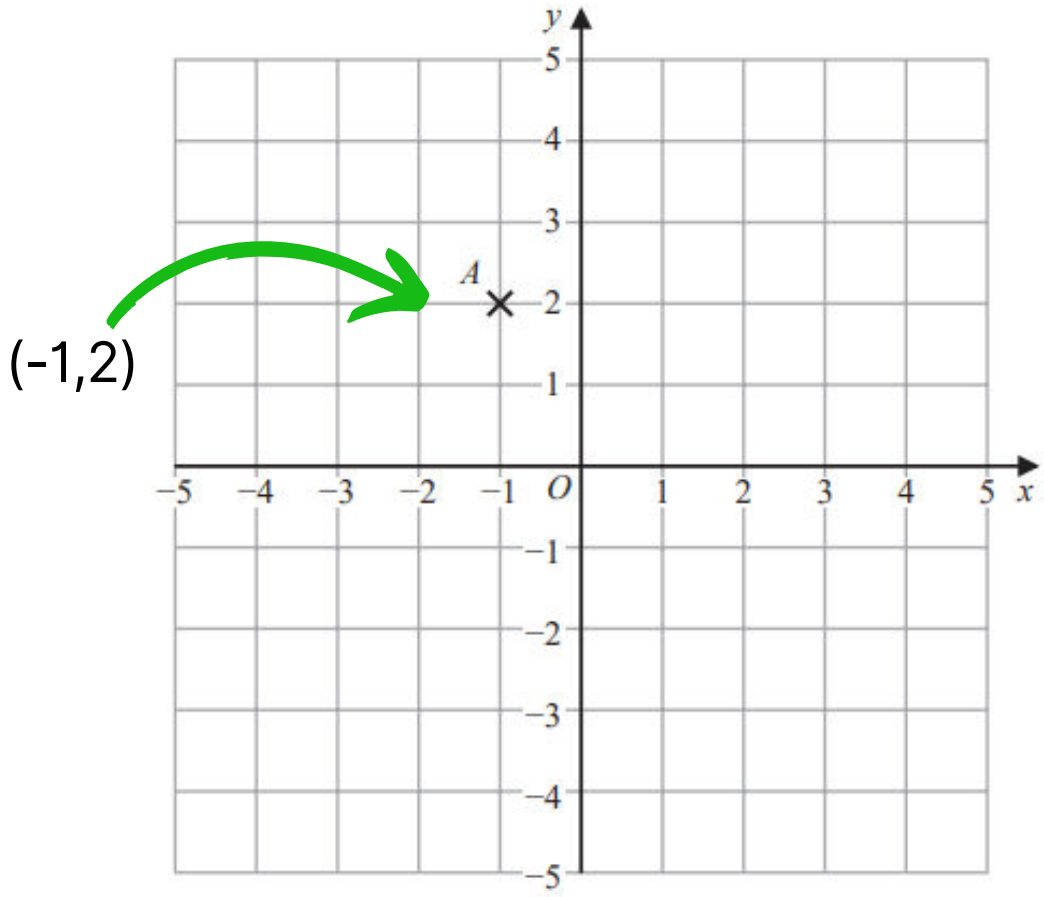
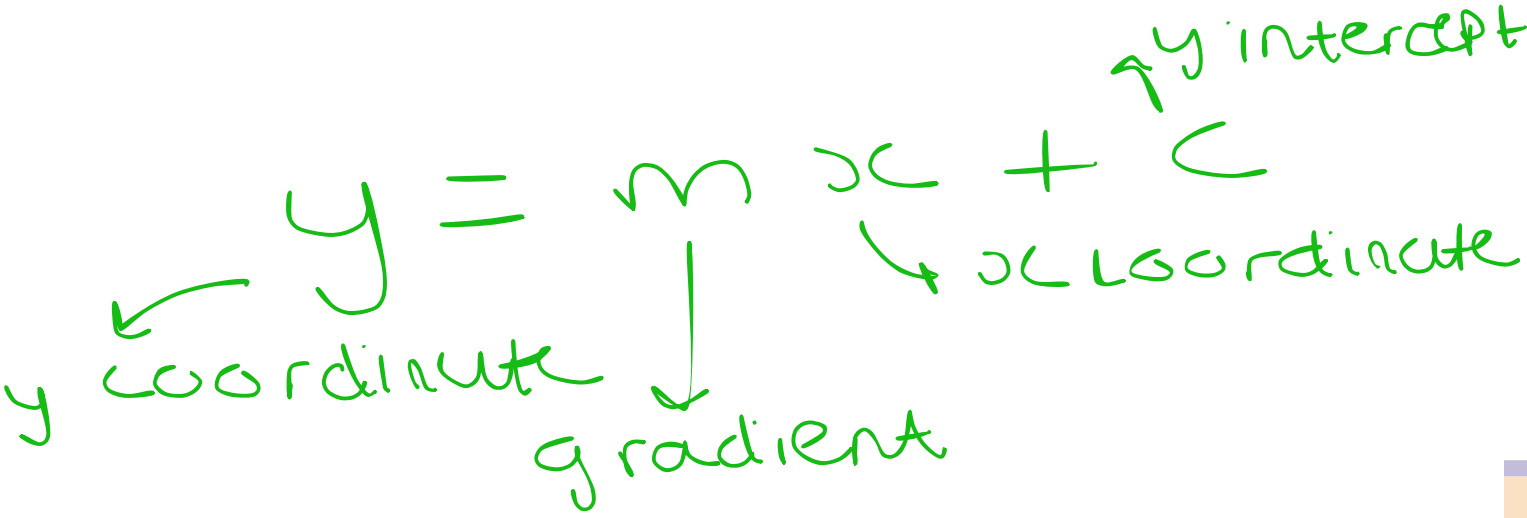
Graphs and Charts - Class 11

It is important to remember that X and Y coordinates are in alphabetical order (X:Y).
Also, just as an X is a cross, the X axis is across.
just as the Y points down, the y axis goes down the side.



Graphs and Charts - Class 11

Straight line graphs: straight line graphs always have the following formula



The **gradient** means how steep the line is. If you know two coordinates you can find the gradient by the following:

$$\frac{\text{change in } y}{\text{change in } x}$$

Effectively, the **gradient** tells us how much Y will change every time X goes up by 1. If M is positive, then the line will have a positive correlation. If M is negative the line will have a negative correlation. **Parallel** lines have the same gradient.

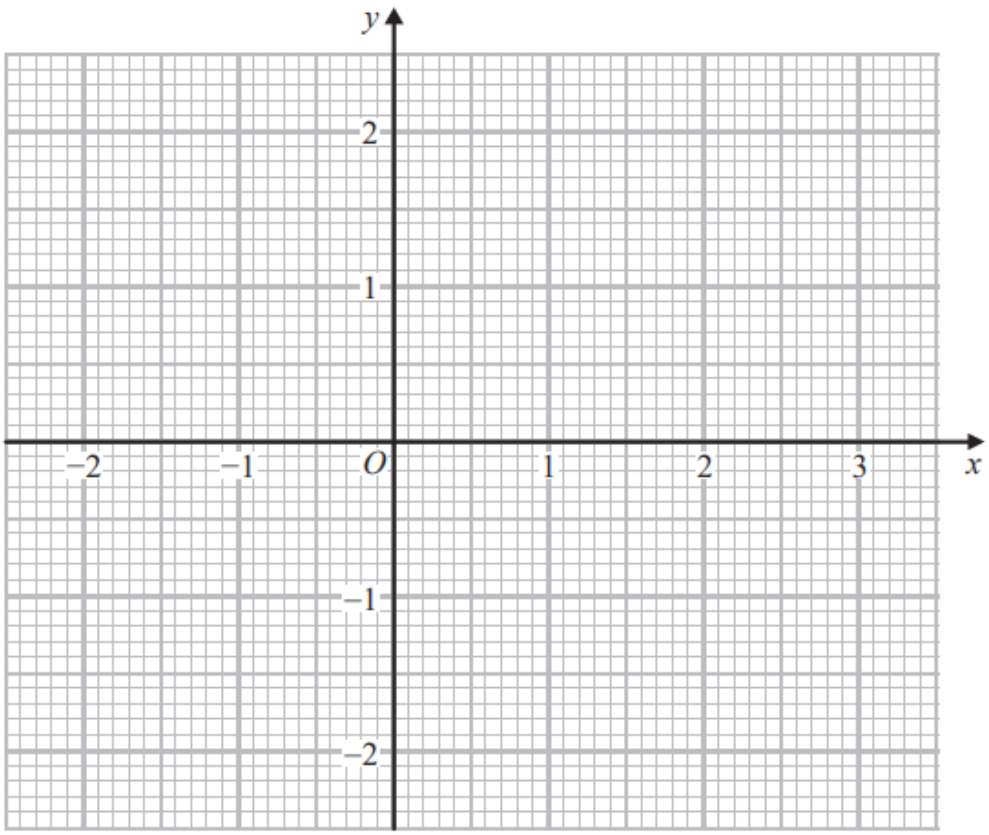
The **Y intercept** is the value of Y when X = 0. If you look at a straight line graph, it will be where the straight line goes through (intercepts) the Y axis.

Questions

x	−2	−1	0	1	2	3
y	−2				0	

(2)

(b) On the grid, draw the graph of $y = \frac{1}{2}x - 1$ for values of x from −2 to 3



(2)

(c) Use your graph to find the value of x when $y = 0.3$

$x =$ .....

(1)

The equation of a straight line **L** is $y = 3 - 4x$

(i) Write down the gradient of **L**.

.....

(1)

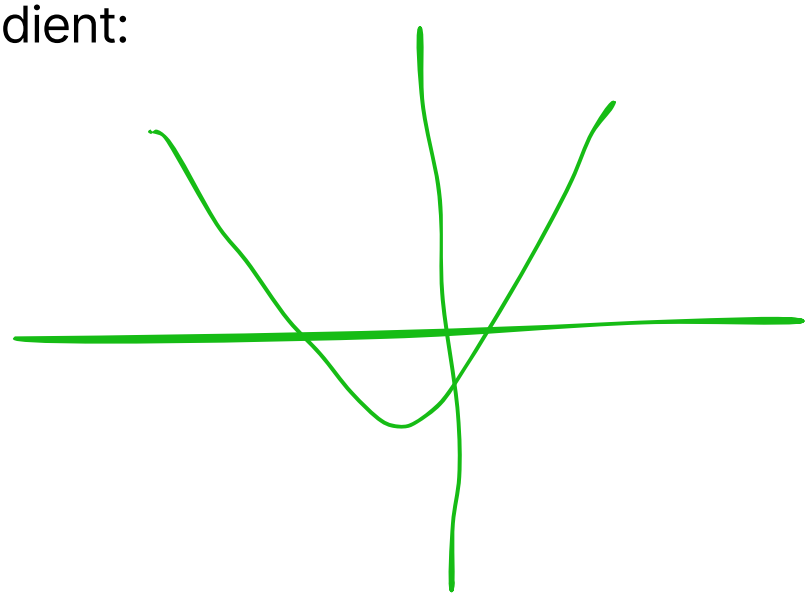
(ii) Write down the coordinates of the point where **L** crosses the y-axis.

(..... , ...)

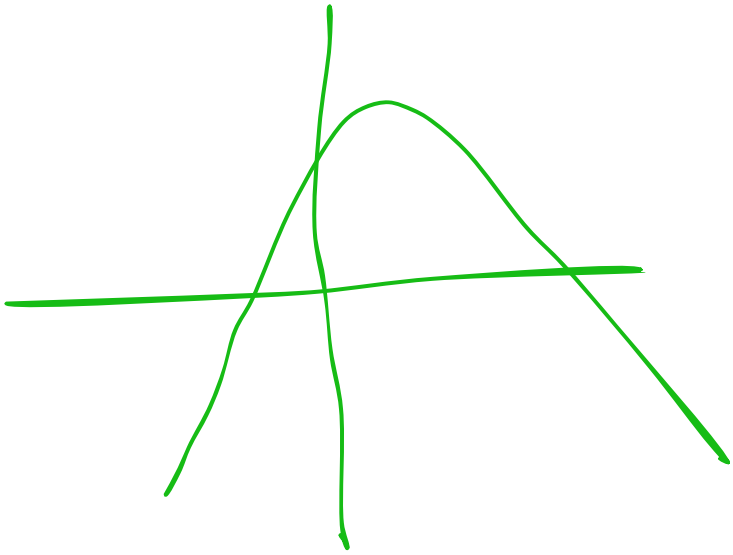
(1)

Quadratic Graphs: The important thing to know about these graphs is that they curve between points and the graph will grow progressively steeper.

Positive Gradient:



Negative Gradient:



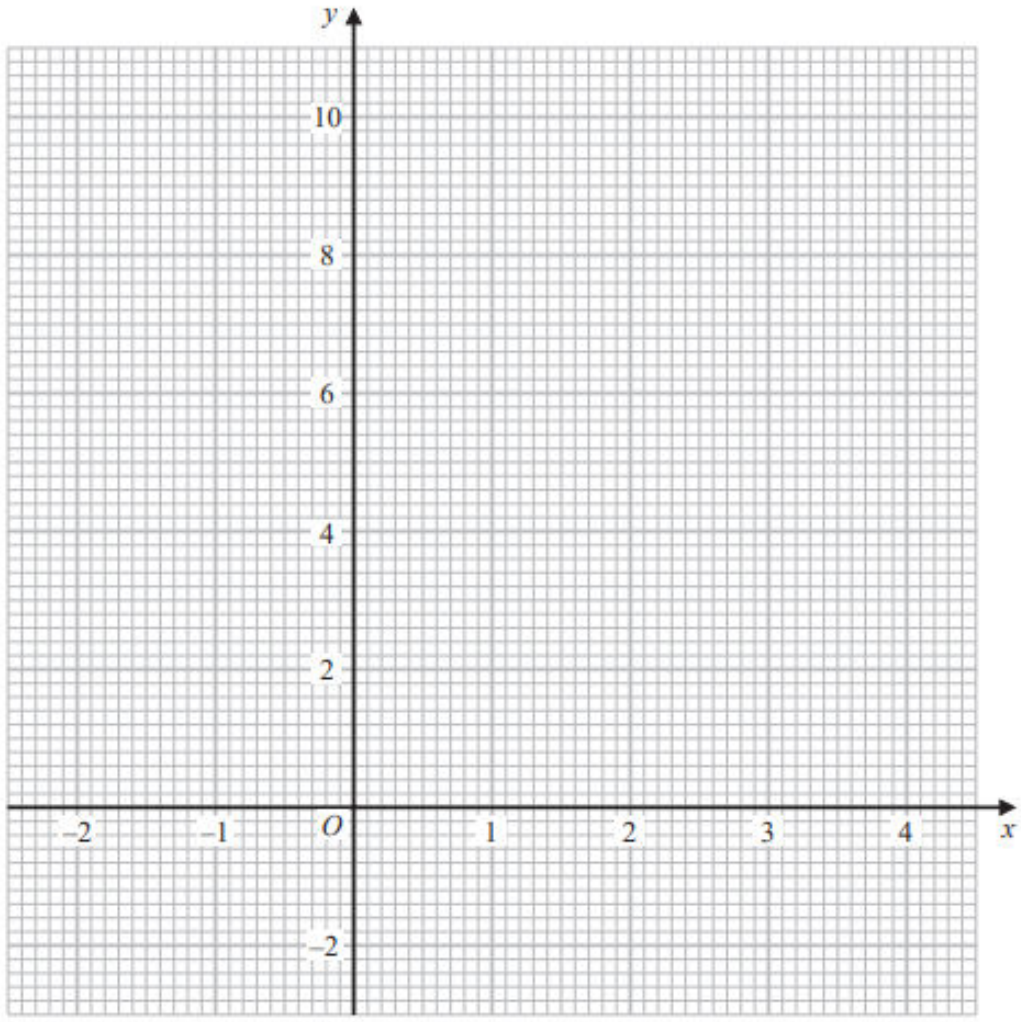
(a) Complete the table of values for $y = x^2 - 2x + 2$

x	–2	–1	0	1	2	3	4
y	10		2			5	

(2)

(b) On the grid, draw the graph of $y = x^2 - 2x + 2$ for values of x from –2 to 4

(2)



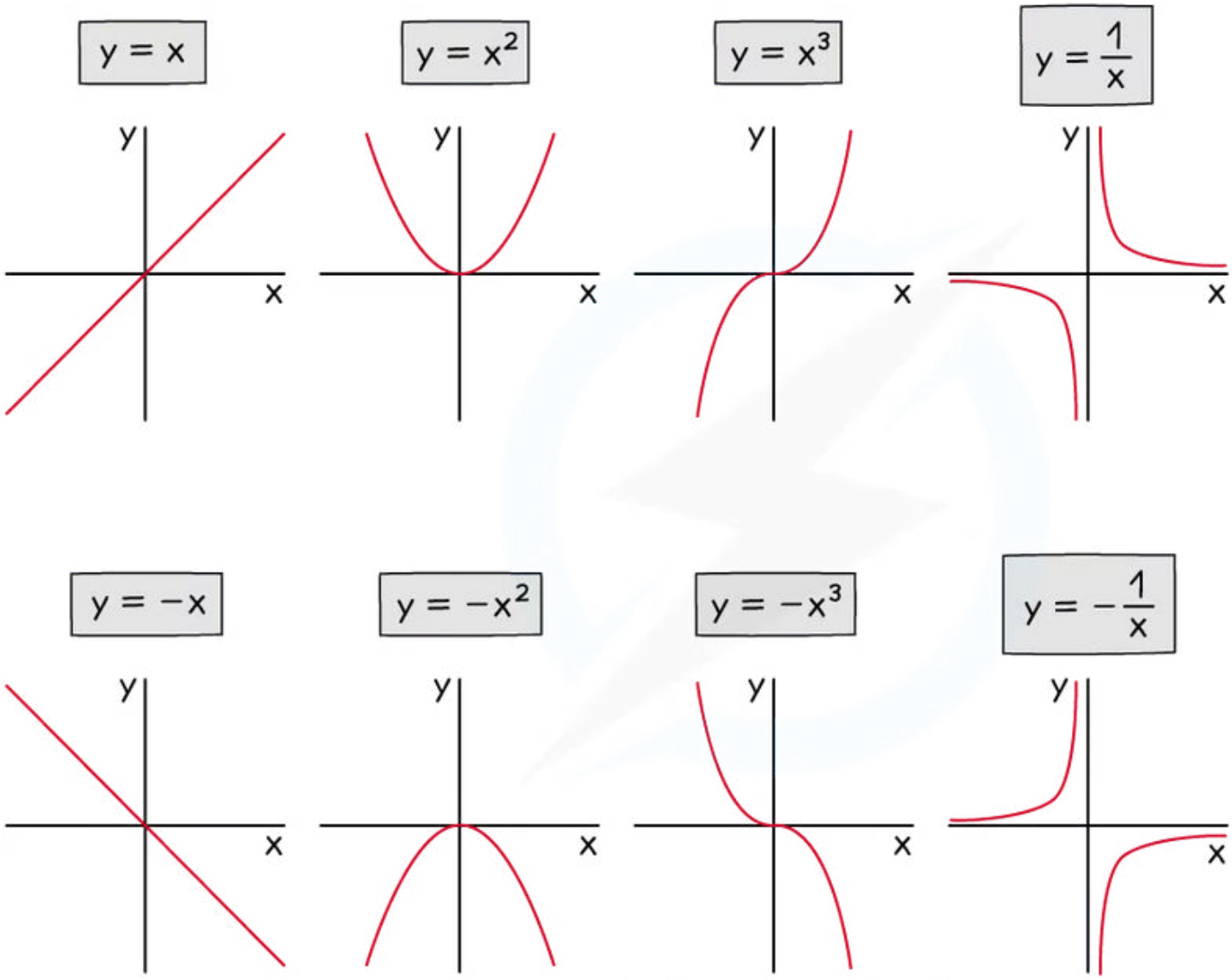
(c) Use your graph to find estimates of the solutions of the equation $x^2 - 2x + 2 = 4$

.....

(2)

Graphs and Charts - Class 11

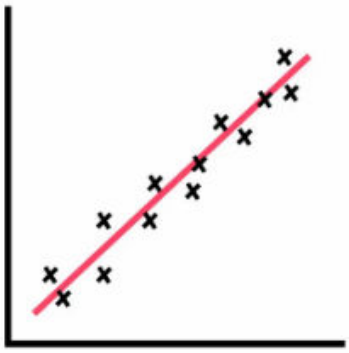
Here is an overview of the different kinds of graphs you need to know



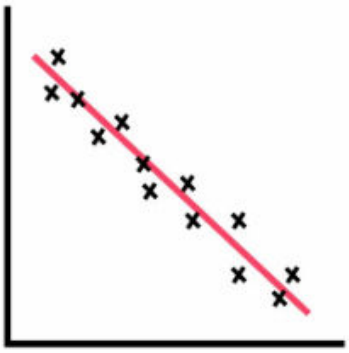
Graphs and Charts - Class 11

Types of correlation:

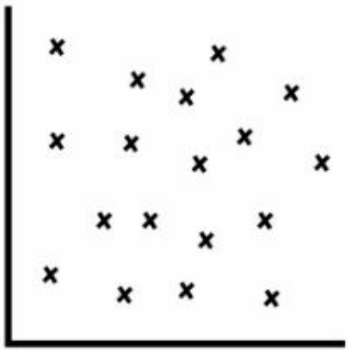
- Positive - as x increases y increases
- Negative - as x increases y decreases
- No correlation - no pattern between x and y
- Outlier - a coordinate which doesn't fit the pattern



Positive



Negative

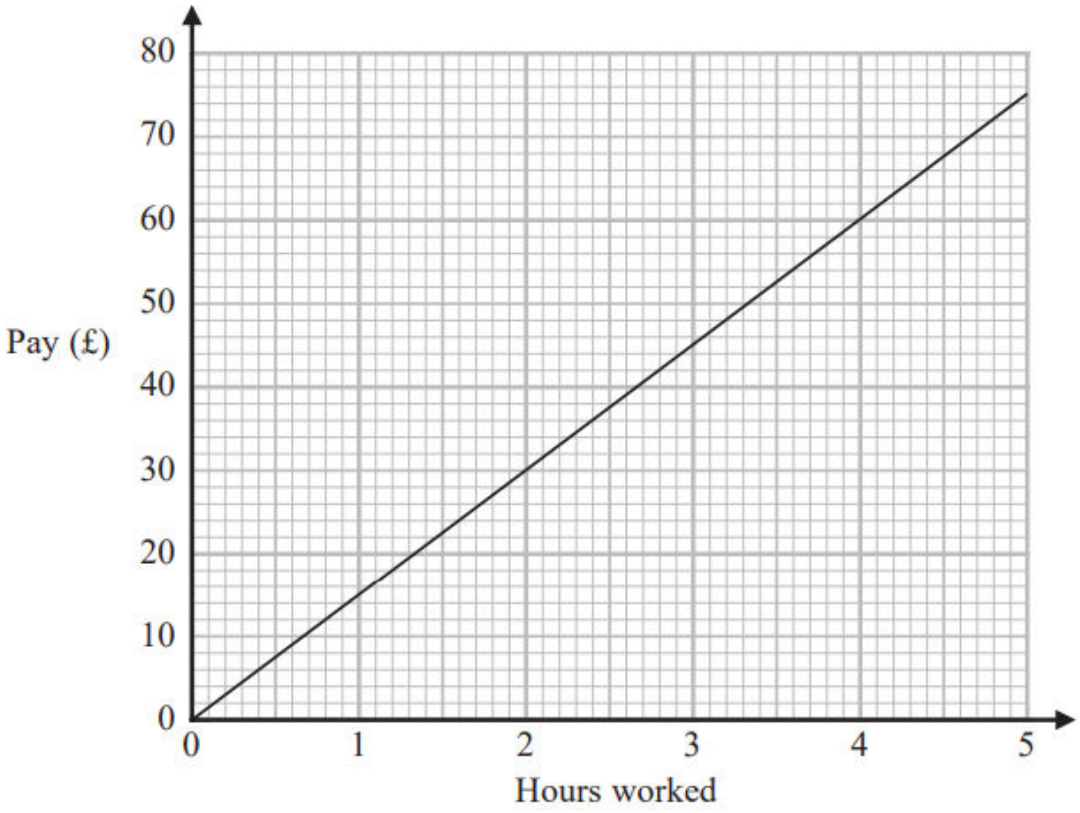


No correlation

Graphs and Charts - Class 11

Conversion Graphs: these graphs can be used to convert between different currencies or different types of measurements

Nazima uses this graph to find out how much money she is paid for the number of hours she has worked.



(a) How much money is Nazima paid for each hour she works?

£.....

(1)

Last week Nazima worked for 36 hours.

(b) How much money was Nazima paid?

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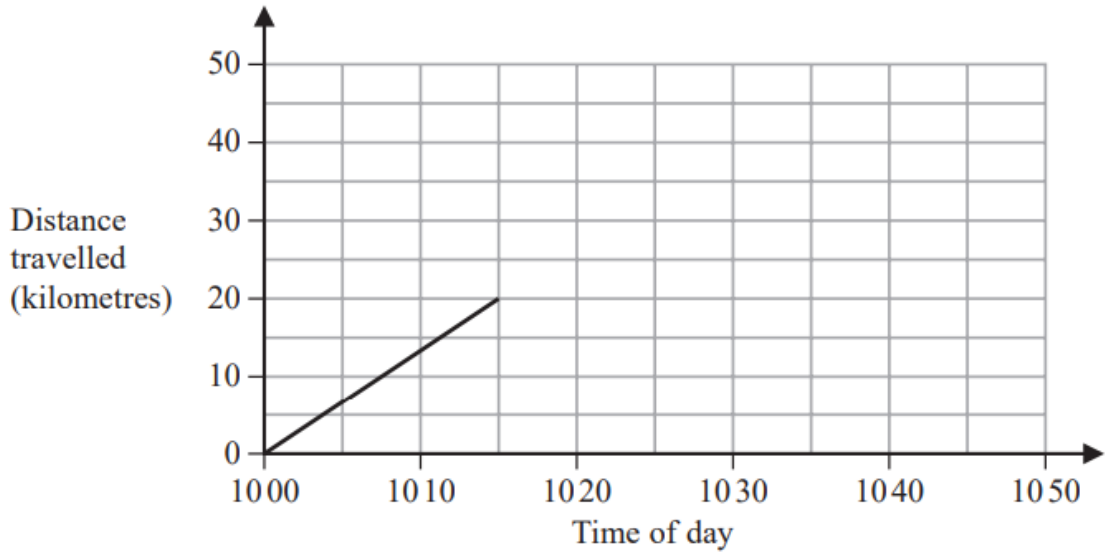
Graphs and Charts - Class 11

Distance Time Graphs: These graphs show how fast someone is moving from a start point.

- When the line is moving away from the X axis, they are travelling away from the start point
- When the line is horizontal they are still
- When the line returns to the X axis, they are returning to the start point

Sam drives his car on a journey.
Here is the travel graph for the first 15 minutes of his journey.



(a) Work out Sam's speed, in km/h, for the first 15 minutes of his journey.

..... km/h
(2)

At 1015 Sam stops for 10 minutes and then drives for 20 minutes at a speed of 75 km/h.

(b) On the grid, complete the travel graph for Sam's journey.

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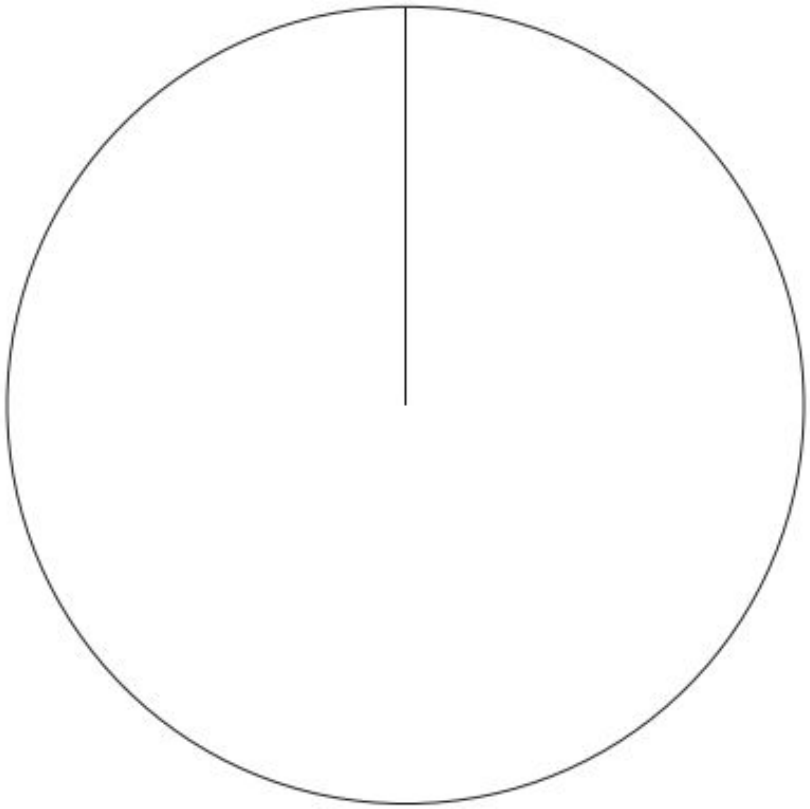
Graphs and Charts - Class 11

Pie Charts: a method of showing data in a circle. To calculate what angle each piece of data in a pie chart should be, you can work them out as a fraction and multiply this by 360. This is in effect the same maths we use for fractions of amounts and splitting totals into ratios.

The table gives information about the number of goals scored by each of three teams.

Team	Number of goals
City	50
Rovers	45
United	25

Draw an accurate pie chart for this information.



Graphs and Charts - Class 11

Stem and Leaf Diagrams: these are charts we can use to simplify numbers by splitting them in half.

A stem and leaf diagram is a slightly quicker way of writing numbers. You split numbers into columns with the left being the stem (their first digit(s) and the right being the leaf (the final digit) You put the numbers in order from smallest to biggest

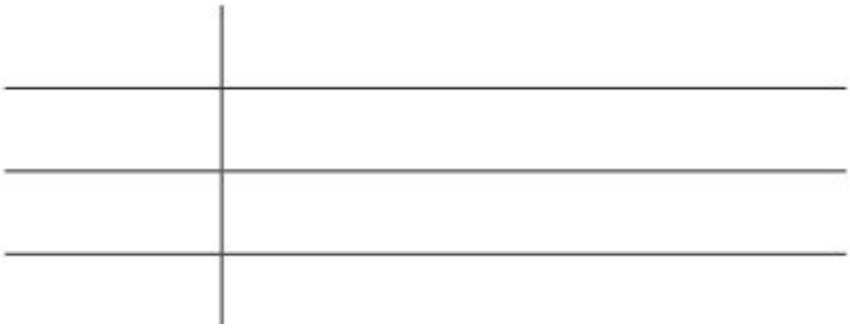
Median --> middle value
Mode --> most common
Range --> highest - lowest
Mean --> add all the numbers up and divide by how many there are

Graphs and Charts - Class 11

Here are the ages, in years, of 15 people.

19	28	29	33	27
27	37	25	27	37
17	45	47	25	26

Show this information in a stem and leaf diagram.



Key:

Graphs and Charts - Class 11

Frequency Tables: these tables present data with categories on the left and data on the right. Sometimes you will get a group frequency table and be asked to estimate the mean. To do this, you simply need to find the mid point for each group and multiply it by the frequency. Then divide the total by total frequency to get the mean

The table shows information about the heights of 80 teenagers.

Height (h cm)	Frequency
$150 < h \leqslant 160$	8
$160 < h \leqslant 170$	14
$170 < h \leqslant 180$	24
$180 < h \leqslant 190$	30
$190 < h \leqslant 200$	4

Work out an estimate for the mean height of the teenagers.

..... cm