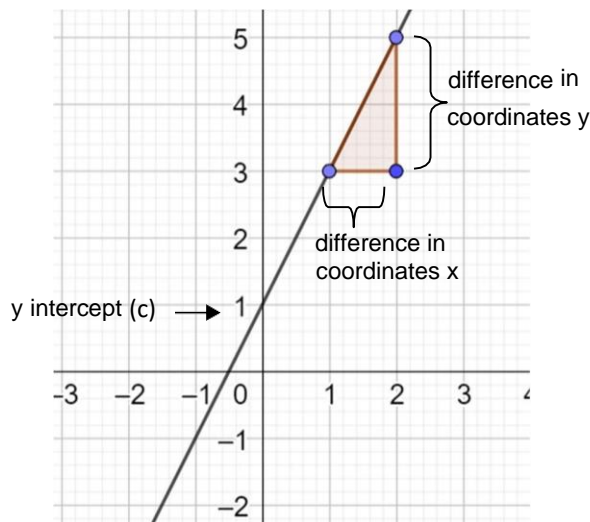## 21st Lesson - Graph

Graph of a straight line (y=mx+c)

$y = m x + c$
m =gradient
c = y intercept

$y = 3x - 2$

gradient (m) =3

y intercept (c) =-2

$y + x + 2 = 0$
$y = -x - 2$

gradient (m) =-2

y intercept (c) =-1

$2y = 4x + 1$
$y = 2x + \frac{1}{2}$

gradient (m) =2

y intercept (c) =$\frac{1}{2}$ −

· **Let us solve review Questions on Page 20**

gradient (m)= $\dfrac{\text{difference in coordinates y}}{\text{difference in coordinates x}}$ = $\dfrac{\text{Vertical distance}}{\text{Horizontal distance}}$

$m = \dfrac{5-3}{2-1} = \dfrac{2}{1} = 2$

c = 1

Equation of a graph

$y = 2x + 1$

Find the gradient when 2 coordinates are given

· The coordinates of two points on a straight line are (2, 3) and (4, 7). Find the gradient of the straight line.

gradient (m) = $\dfrac{(7-3)}{(4-2)} = \dfrac{4}{2}$

$m = 2$

· The coordinates of two points on a straight line are (-2, 2) and (-1, -2). Find the gradient of the straight line.

gradient (m) $= \dfrac{(2-(-2))}{(-2-(-1))} = \dfrac{4}{(-1)}$

$$m = (-4)$$

· **Let us solve all the problems in the exercise 28.2 on page 23**

Finding the equation of a straight line when the intercept of its graph and the coordinates of a point on the graph are given

· The intercept of the graph of a straight line is 2. The coordinates of a point on the graph is (2, 6).
Write the equation of the straight line.

By substituting c = 3, x=2 and y = 6 into the equation of the function $y = mx + c$.

$y = m\ x + c$
$6= m \times 2 + 2$
$6 - 2 = m \times 2$
$\mathbf{4 = 2m}$
$\mathbf{2 = m}$

Equation of a graph $y = 2x + 2$

· Let us solve **all the problems in the exercise 21.2 on page 24**

Finding the equation of a straight line which passes through two given points

· Let us find the equation of the straight line which passes through the points (2, 5) and (3, 7).

gradient (m) $= \dfrac{(7-5)}{(3-2)} = \dfrac{2}{1} = 2$

· Let us substitute the value of **m** and the **coordinates of one of the points(x,y)** into the equation **y = mx + c** .
Thereby we can find the value of (**c**).

$y = mx + c$
$5 = 2 \times 2 + c$
$5 - 2 = c$
$\mathbf{c = 3}$
Equation of a graph $y = 2x + 3$

· Let us find the equation of the straight line which passes through the points (2, -5) and (-2, 3).

gradient (m) $= \dfrac{(3-(-5))}{(-2-2)} = \dfrac{8}{-4} = -2$

· Let us substitute the value of **m** and the **coordinates of one of the points(x,y)** into the equation **y = mx + c** .
Thereby we can find the value of (**c**).

$y = mx + c$
$-5 = -2 \times 2 + c$
$-5 + 4 = c$
$\mathbf{c = -1}$
Equation of a graph $y = -2x - 1$

· **Let us solve all the problems in the exercise 21.3 on page 26**