5.1 Meaning Of Linear Equations in Two Unknowns

The equation

$$2x + 3 = 5 \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

is called a **linear equation in one unknown *x***. We have learnt that its solution is given by

$$2x = 2$$
$$x = 1.$$

That is, the equation has a unique solution $x = 1$.

If we replace the number 3 in the above equation by a variable y, the equation becomes

$$2x + y = 5 \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

The equation $2x + y = 5$ is a **linear equation in two unknowns *x* and *y***.

From the equation, we know that the value of x depends on the value of y.
When $y = 1$, $2x + 1 = 5$ gives $x = 2$.
When $y = 2$, $2x + 2 = 5$ gives $x = 1.5$.
When $y = 3$, $2x + 3 = 5$ gives $x = 1$.

The pairs of values of x and y which satisfy the equation are the **solutions** of the equation. Therefore, ($x = 2$ and $y = 1$), ($x = 1.5$ and $y = 2$), ($x = 1$ and $y = 3$), … are solutions of the equation.

Notice that unlike equation (1), equation (2) has infinitely many solutions. If we represent the solutions by ordered pairs (2, 1), (1.5, 2), (1, 3), etc and plot them as points on a coordinate plane, we will see that they lie on a straight line as shown in the graph below.