

Basic Algebra :-

Algebra is the way of using letters instead of numbers to solve problems.

e.g. $x, y, z, a, b, c \rightarrow$ variables

$1, 2, 3 \rightarrow$ constants.

e.g. if I have 4 apples, I buy some apples, Now I have 12 apples, How many?

$$4 + x = 12$$

$$x + 4 = 12$$

$$x = 12 - 4$$

$$(x = 8)$$

$$x = 6$$

$$x + 1 = 6 + 1 = 7$$

$$x + 2 = 6 + 2 = 8$$

$$6 + 7 + 8 = 21$$

②

The sum of three consecutive numbers is 21.

$$x, x+1, x+2 = 21$$

$$x + x+1 + x+2 = 21$$

$$3x + 3 = 21$$

$$3x = 21 - 3$$

$$3x = 18$$

$$\frac{3x}{3} = \frac{18}{3}$$

$$x = 6$$

Simplify:

Q.1: $3xy - 6xy$

sol $3xy - 6xy$

$\boxed{-3xy}$ Ans

$$3xy, 3yz$$

$$\overbrace{3xy}^{3yz} = 3yz$$

Q.2: $3x + 5 = 29 - x$

sol $3x + 5 = 29 - x$

$$3x + x = 29 - 5$$

$$4x = 24$$

$$\frac{4x}{4} = \frac{24}{4}$$

$$\Rightarrow \boxed{x = 6}$$

(Linear Algebra)

Q.3: The sum of three consecutive numbers is 219. Find the numbers?

sol Let $x,$

$$x+1,$$

$$x+2$$

$$\rightarrow (x) + (x+1) + (x+2) = 219$$

$$x + x+1 + x+2 = 219$$

$$3x + 3 = 219 \Rightarrow 3x = 219 - 3$$

$$= 3x = 216 \Rightarrow \frac{3x}{3} = \frac{216}{3}$$

$$= (x = 72)$$

$$x = 72$$

$$x+1 = 72+1 = 73$$

$$x+2 = 72+2 = 74$$

$$72 + 73 + 74 = 219$$

Q.4: $x^2 - 9$

sol $x^2 - 9$

$$x^2 - 3^2$$

$$= (x-3)(x+3)$$

$$\therefore a^2 - b^2 =$$

$$(a-b)(a+b)$$

Q.5: $x^2 + 5x + 6$

sol. $x^2 + 5x + 6$

$$x^2 + 2x + 3x + 6$$

$$x^2 + 2x + 3x + 6$$

$$x(x+2) + 3(x+2)$$

$$(x+2)(x+3)$$

$$2, 3$$

$$2 \times 3 = 6$$

$$2 + 3 = 5$$

Ans

$$\Rightarrow \boxed{(x+2)(x+3)}$$