Grade 9 – 6th week

Equations

- To revise your knowledge on equations do the revision of lesson number 15 on your text book.

Types of brackets

( ) - Parenthesis

{ } - Curly brackets

[ ] - Square brackets

When there are two or more brackets are applying in one equation first we remove parenthesis ( ) , then curly brackets { } and finally square brackets [ ] .

Ex:

1. $3\{\ 2\ (x-1)+x-5\ \}=15$

$3\{\ 2\ x-2+x-5\ \}=15$ ⇐ First remove parenthesis and simplify inside the brackets

$3\ \{\ 3x-7\ \}=15$

$9x-21\ =\ 15$ ⇐ Then remove curly brackets

$9x\ =\ 15+21$

$\frac{9x}{9}=\frac{36}{9}$

$\underline{x=4}$

- Study the examples on lesson 15 and do the exercise 15.1

Simple equation with brackets

Ex : 01)

$$\frac{2x-5}{3}=1$$

$\frac{2x-5}{3}\times 3=1\times 3$ ⟸ Multiply both side by 3

$$2x-5=3$$

$$2x\ =3+5$$

$$\frac{2x}{2}=\frac{8}{2}$$

$$x=4$$

02)

$$\frac{3x}{2}-\frac{2x}{5}=11$$

$\frac{3x}{2}\times 10-\frac{2x}{5}\times 10=11\times 10$ ⟸ Here L.C.M of both 2 and 5 is 10. So multiply each term by 10

$$15x-4x=110$$

$$\frac{11x}{11}=\frac{110}{11}$$

$$\underline{x\ =10}$$

- Observe the examples and do the exercise 15.2

Simultaneous Equations

- In simultaneous equations there are two unknown terms, to solve the equations first we can name the equations as 01 and 02.

Ex : $2x + 3y = 12$ ——— (01)

$5x - 3y = 9$ ——— (02)

here in both two equations co – efficient of "y" are equal, when we add 01 and 02 terms of "y" are cancelled.

(01) +(02)

$$2x + 3y + (5x - 3y) = 12 + 9$$
$$2x + 3y + 5x - 3y = 21$$
$$2x + 5x = 21$$
$$\frac{7x}{7} = \frac{21}{7}$$
$$\underline{x = 3}$$

Subsititue value of **X** in equation (01)

$$2x + 3y = 12$$
$$2 \times 3 + 3y = 12$$
$$2 + 3y = 12$$
$$3y = 12 - 6$$
$$\frac{3y}{3} = \frac{6}{3}$$
$$\underline{y = 2}$$

Ex. 02 ÷

$2x - y = \quad 8$ ——— (01)

$2x + 3y = 16$ ——— (02)

Here we can see in both two equations co – efficient of x are equal, so we can subtract (01) by (02) then we can see terms of **X** are cancelled.

(01) – (02)

$2x - y - (2x + 3y) \quad = \quad 8 - 16$

$2x - y - 2x - 3y \quad = -8$

$-y - 3y \quad = \quad -8$

$\frac{-4y}{(-4)} \quad = \frac{-8}{-4}$

$y \quad = \quad +2$

Substitute value of y in (01)

$2x - y \quad = 8$

$2x - (+2) \quad = 8$

$2x - 2 \quad = 8$

$2x \quad = 8 + 2$

$\frac{2x}{2} \quad = \frac{10}{2}$

$x \quad = 5$

- In terms of same co – efficient get sign of both two equations are + or – to remove the terms the equation are subtracted.
- If co – efficient get two different signs to remove the terms equations should be add to each other to remove terms.
- Do the exercise 15.3