Chapter 4 — Simple Equation

1) Linear Equation: An equation is a statement of equality, which contain one or more unknown quantities or variables.

2) A linear equation remain the same when the expression in the left and right are interchanged.

3) In a equation, there is always an equality sign.

4) Solution of a linear equation:
The value of the variable (x), which makes the equation a true statement is called the solution or root of a linear equation e.g. $5x - 12 = -2$

If $x = 2$ $\quad LHS = 5x - 12 = 5(2) - 12$

$= 10 - 12$

$= -2$

$RHS = -2$

$\therefore LHS = RHS$.

5) Rules for solving an equation:

(a) The same quantity can be added to both sides of the equation without changing the equality.
$x - 15 = 25$, $x - 15 + 15 = 25 + 15$, $x = 40$

(b) The same quantity can be subtracted from both sides of an equation without changing the equality.
$x + 4 = 10$, $x + 4 - 4 = 10 - 4$, $x = 6$

c) Both sides of an equation can be multiplied by the same non-zero number without changing equality.

d) Both sides of an equation may be divided by the same non-zero number without changing the equality.

6) Transposition: Any term of an equation may be taken from one side to the other with a change in its sign. This does not affect the equality of the statement and the process is called transposition. (Transposing)

$$2x + 5 = 29 \quad -5$$

$$2x = 29 - 5$$

$$2x = 24$$

$$x = 24 \div 2$$

$$x = 12.$$