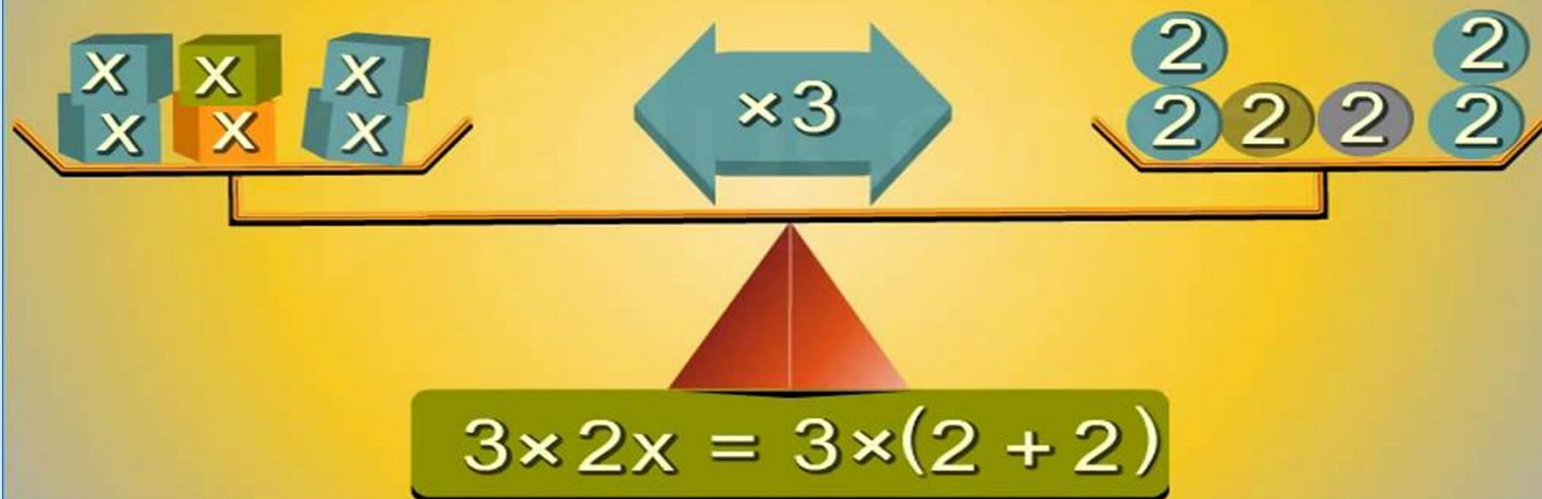


*Simple Equations



- * An equation is a condition of equality between two mathematical expressions
- * The value of the variable for which the equation is satisfied is called the solution of the equation.
- * An equation remains the same if the L.H.S. and the R.H.S. are interchanged.

- * In case of the balanced equation, if we
 - (i) add the same number to both the sides
 - (ii) subtract the same number from both the sides
 - (iii) multiply both sides by the same number
 - (iv) divide both sides by the same number, the balance remains undisturbed, i.e., the value of the
- * L.H.S. remains equal to the value of the R.H.S.



To balance an equation, each side may be multiplied by equal numbers, except zero.

*Transposing means moving to the other side. Transposition of a number has the same effect as adding same number to (or subtracting the same number from) both sides of the equation. When you transpose a number from one side of the equation to the other side, you change its sign. For example, transposing $+3$ from the L.H.S. to the R.H.S. in equation $x + 3 = 8$ gives $x = 8 - 3 (= 5)$. We can carry out the transposition of an expression in the same way as the transposition of a number.

Transformations that Produce Equivalent Equations

	Original Equation		Equivalent Equation
Add the same number to <i>each</i> side.	$x - 3 = 5$	Add 3	$x = 8$
Subtract the same number from <i>each</i> side.	$x + 6 = 10$	Subtract 6	$x = 4$
Simplify one or both sides.	$x = 8 - 3$	Simplify	$x = 5$
Interchange the sides.	$7 = x$	Interchange	$x = 7$

Examples – Using subtraction to solve

$$\begin{array}{r} x + 12 = 15 \\ - 12 = -12 \\ \hline x = 3 \end{array}$$

$$\begin{array}{r} x + 12 = 15 \\ 3 + 12 = 15 \\ \hline 15 = 15 \end{array}$$

Now try..... And check: $-5 = k + 5$

Some questions based on Simple Equations:

* Write the following statements in the form of equations.

1. The difference of three times x and ten is 30.

$$3x - 10 = 30$$

2. If you subtract 4 from 6 times a number, you get 15

$$6x - 4 = 15$$

3. One fourth of y is 3 more than 3

$$\frac{1}{4}y = 3 + 3$$

*5 Solve $5x - 3(x - 2) = 3x - 2(x - 1)$ and check the result.

$$5x - 3x + 6 = 3x - 2x + 2$$

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

$$x = -4$$

checking

$$\text{L.H.S} = 2x + 6 = 2(-4) + 6 = -8 + 6 = -2$$

$$\text{R.H.S} = x + 2 = -4 + 2 = -2$$

$$\text{L.H.S} = \text{R.H.S}$$

Hence correct.

*Thank You