WEEK: 5th - 9th OCTOBER 2020

SUBJECT: MATHEMATICS

CLASS: VII

NUMBER OF BLOCKS:3

TOPIC: CHAPTER 4: <u>SIMPLE EQUATIONS</u> (PART 2)

GUIDELINES

Dear Students

Kindly refer to the following notes / video links for the chapter "SIMPLE EQUATIONS" (Part–2) and thereafter do the questions in your Maths notebook .

NOTE – STUDENTS CAN GO THROUGH THE CHAPTER "SIMPLE EQUATIONS" USING THE FOLLOWING LINK

https://ncert.nic.in/textbook.php?gemh1=4-15

SUBTOPICS:

- **Solving an Equation by transposition method**

TEACHING AIDS USED

- Power point presentations, PDF documents, videos and digital white boards with the help of screen presentation.
- Explaining on white board with marker (showing with the help of device's camera)

LEARNING OBJECTIVES:

Each student will be able to:

- **Solve given equations by transposition method.**
- **Form equation with a given solution.**

BLOCK – 1

INTRODUCTION

According to English language, the meaning of transpose is, transfer a term to the other side of an equation by changing its sign. In transposition method, a term is transposed to the other side of an equation with its sign changed. It balances the equality of both expressions and also simplifies the linear equation in one variable. Thus, the solution of the linear equation in one variable can be calculated easily in mathematics.

Examples

(1) x–3=5

In this linear equation in one variable, x and 3 are two terms in the left-hand side of the equation. If the term 3 is transferred to other side of the equation, then it is easy to find the solution of this equation but the sign of the term 3 is negative. So, it can be shifted to other side by changing its sign.

$\implies$ x=5+3

$\therefore$ x=8

(2) 2x=12+x

It is another example for linear equation in one variable. In this linear equation, 12 and x are two terms in the right-hand side of the equation. The linear equation can be solved by transposing the term x to left-hand side of the equation from right-hand side by changing its sign.

$\implies$ 2x–x=12

$\therefore$ x=12

In this way, the terms are transposed in a linear equation in transposing method for solving linear equations in one variable.

You can refer to the following link for transposition method:

https://youtu.be/v784A9qovts

Note: Use only transposition method to solve the equations, Step by Step method is not in the syllabus.

Exercise:4.2 (all even parts)

Q1. Use transposition method to solve the following equations:
(b) $x + 1 = 0$ (d) $x + 6 = 2$
(f) $y - 4 = 4$ (h) $y + 4 = -4$

Q2. Use transposition method to solve the following equations
(b) $\frac{b}{2} = 6$ (d) $4x = 25$
(f) $\frac{z}{3} = \frac{5}{4}$ (h) $20t = -10$

Q3. Use transposition method to solve the following equations
(b) $5m + 7 = 17$ (d) $\frac{3p}{10} = 6$

From NCERT textbook, the following questions are to be done in the Mathematics notebook:

Exercise 4.2,Q 1,2,3(do all ODD parts in each question)

BLOCK – 2

LESSON DEVELOPMENT

Let us solve more equations using the transposition method only.

Exercise:4.2(all even parts of Q4)

Q4Find the solution of following equations using transposition method:

(b) $10p + 10 = 100$

(d) $\frac{p}{3} = 5$

(f) $3s = -9$

(h) $3s = 0$

(j) $2q - 6 = 0$

(l) $2q + 6 = 12$

Exercise: 4.3(all odd parts of Q1)

Q1. Solve the following equations:

(a) $2y + \frac{5}{2} = \frac{37}{2}$

(c) $\frac{a}{5} + 3 = 2$

(e) $\frac{5}{2}x = 10$

(g) $7m + \frac{19}{2} = 13$

(i) $\frac{3l}{2} = \frac{2}{3}$

You can refer to the following link for more examples:

https://youtu.be/fJzJV2LoNlc

From NCERT textbook, the following questions are to be done in the Mathematics notebook:

Exercise 4.2 ,Q 4(do all odd parts)

Exercise 4.3 ,Q1(do all even parts)

BLOCK – 3

LESSON DEVELOPMENT

We shall now solve two more equations. As you can see they involve brackets, which have to be solved before proceeding.

Solve

(a) 4(*m* + 3) = 18

(a) $4(m + 3) = 18$

Let us divide both the sides by 4. This will remove the brackets

$$m + 3 = \frac{18}{4} \quad \text{or} \quad m + 3 = \frac{9}{2}$$

or $\quad m = \frac{9}{2} - 3$ (transposing 3 to RHS)

or $\quad m = \frac{3}{2}$ (required solution) $\left(\text{as } \frac{9}{2} - 3 = \frac{9}{2} - \frac{6}{2} = \frac{3}{2} \right)$

(b) – 2(*x* + 3) = 8

$-2(x + 3) = 8$

We divide both sides by (– 2), so as to remove the brackets in the LHS, we get,

$x + 3 = -\dfrac{8}{2} \quad$ or $\quad x + 3 = -4$

i.e., $x = -4 - 3$ (transposing 3 to RHS) $\quad$ or $\quad x = -7$ (required solution)

FROM SOLUTION TO EQUATION

Atul always thinks differently. He looks at successive steps that one takes to solve an equation. He wonders why not follow the reverse path:

Equation $\longrightarrow$ Solution (normal path)

Solution $\longrightarrow$ Equation (reverse path)

He follows the path given below:

Start with $\qquad\qquad\qquad \downarrow \quad x = 5 \quad \uparrow$

Multiply both sides by 4, $\qquad 4x = 20 \quad$ Divide both sides by 4.

Subtract 3 from both sides, $\downarrow \quad 4x - 3 = 17 \uparrow$ Add 3 to both sides.

This has resulted in an equation. If we follow the reverse path with each step, as shown on the right, we get the solution of the equation.

Hetal feels interested. She starts with the same first step and builds up another equation.

$$x = 5$$

Multiply both sides by 3 $\quad 3x = 15$

Add 4 to both sides $\quad\quad 3x + 4 = 19$

Start with $y = 4$ and make two different equations. Ask three of your friends to do the same. Are their equations different from yours?

> *Is it not nice that not only can you solve an equation, but you can make equations? Further, did you notice that given an equation, you get one solution; but given a solution, you can make many equations?*

Exercise:4.3

Q2. Solve the following equations (all odd parts):

(a) $2(x + 4) = 12$ (c) $3(n - 5) = -21$

(e) $4(2 - x) = 8$

Q3. Solve the following equations (all odd parts):

(a) $4 = 5(p - 2)$ (c) $16 = 4 + 3(t + 2)$

(e) $0 = 16 + 4(m - 6)$

Q4. (a) Construct 3 equations starting with $x = 2$

(b) Construct 3 equations starting with $x = -2$

You can refer to the following link for more examples:

https://youtu.be/7iXWFHjbyk4

ASSIGNMENT

From NCERT textbook the following questions are to be done in the Mathematics notebook:

Exercise 4.3,Q2, Q3 (all even parts in both questions)

NOTE: EXERCISE 4.4 IS DELETED FROM THE SYLLABUS

SUMMARY: POINTS TO REMEMBER

- An equation is a condition on a variable such that two expressions in the variable should have equal value.
- 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 LHS and the RHS are interchanged.
- 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 LHS to the RHS 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.

- We also learnt how, using the technique of doing the same mathematical operation(for example adding the same number) on both sides, we could build an equation starting from its solution. Further, we also learnt that we could relate a given equation to some appropriate practical situation and build a practical word problem/puzzle from the equation.

ASSESSMENT

A)

Match each of the entries in Column I with the appropriate entries in Column II.

Column I		Column II	
(i)	$x + 5 = 9$	(A)	$-\dfrac{5}{3}$
(ii)	$x - 7 = 4$	(B)	$\dfrac{5}{3}$
(iii)	$\dfrac{x}{12} = -5$	(C)	4
(iv)	$5x = 30$	(D)	6
(v)	The value of y which satisfies $3y = 5$	(E)	11
(vi)	If $p = 2$, then the value of $\dfrac{1}{3}(1 - 3p)$	(F)	-60
		(G)	3

ASSIGNMENT

Online Practice Assignment (only to practice online)

https://www.khanacademy.org/math/in-in-class-7th-math-cbse/x939d838e80cf9307:simple-equations/x939d838e80cf9307:setting-up-an-equation/e/writing_expressions_1?modal=1

https://www.khanacademy.org/math/in-in-class-7th-math-cbse/x939d838e80cf9307:simple-

There are nine identical looking pearl. Eight are real and one is fake. Using a balance scale that consists of two pans, you must find the fake pearl.

The real pearls weigh the same and the fake weighs less. Also, the scale can be used maximum twice.

Now find the Phony!

[**Hint:** Divide the pearls into three equal groups and then proceed for weighing.]

equations/x939d838e80cf9307:solving-an-equation/e/one-step-mult-div-equations-2?modal=1

https://www.khanacademy.org/math/in-in-class-7th-math-cbse/x939d838e80cf9307:simple-equations/x939d838e80cf9307:more-equations/e/linear_equations_2?modal=1

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