



BAL BHARATI PUBLIC SCHOOL ,PITAMPURA
SUBJECT : MATHEMATICS
CLASS :VI

WEEK :23rdNov '20 to 27th Nov' 20

No of Blocks : 3

Ch11 - Algebra(Part II)

GUIDELINES

Dear Students

Kindly refer to the following notes / videos for the Chapter - Decimals (Part II) and thereafter do the questions in your Mathematics notebook.

NOTE: The students can download NCERT textbook using the following link :-

<http://ncert.nic.in/textbook/textbook.htm?hemh1=0-16>

SUBTOPICS

- 1) Using algebraic expressions in daily life situations
- 2) Equations
- 3) Solution of an equation
- 4) Trial and error method
- 5) Activity based on algebraic expressions

LEARNING OUTCOMES :

Each student will be able to :

- 1) Translate a real life problem into an algebraic expression.
- 2) Identify an equation.
- 3) Form an equation based on the basis of given situation.
- 4) Check if the given number is a solution of an equation or not.
- 5) Find the solution of an equation by trial and error method.

Teaching Aids used :

E-lesson

Whiteboard or register using device camera

You tube videos

Khan Academy link

BLOCK I

Lesson development

Let us see the usage of algebraic expressions in daily life situations through the given examples.

Situation (described in ordinary language)	Variable	Statements using expressions
1. Sarita has 10 more marbles than Ameena.	Let Ameena have x marbles.	Sarita has $(x + 10)$ marbles.
2. Balu is 3 years younger than Raju.	Let Raju's age be x years.	Balu's age is $(x - 3)$ years.
3. Bikash is twice as old as Raju.	Let Raju's age be x years.	Bikash's age is $2x$ years.
4. Raju's father's age is 2 years more than 3 times Raju's age.	Let Raju's age be x years.	Raju's father's age is $(3x + 2)$ years.
5. How old will Susan be 5 years from now?	Let y be Susan's present age in years.	Five years from now Susan will be $(y + 5)$ years old.
6. How old was Susan 4 years ago?	Let y be Susan's present age in years.	Four years ago, Susan was $(y - 4)$ years old.
7. Price of wheat per kg is ₹ 5 less than price of rice per kg.	Let price of rice per kg be ₹ p .	Price of wheat per kg is ₹ $(p - 5)$.
8. Price of oil per litre is 5 times the price of rice per kg.	Let price of rice per kg be ₹ p .	Price of oil per litre is ₹ $5p$.
9. The speed of a bus is 10 km/hour more than the speed of a truck going on the same road.	Let the speed of the truck be y km/hour.	The speed of the bus is $(y + 10)$ km/hour.



EXERCISE 11.4

1. Answer the following:

(a) Take Sarita's present age to be y years

(i) What will be her age 5 years from now?

(ii) What was her age 3 years back?

(iii) Sarita's grandfather is 6 times her age. What is the age of her grandfather?

(iv) Grandmother is 2 years younger than grandfather. What is grandmother's age?

(v) Sarita's father's age is 5 years more than 3 times Sarita's age. What is her father's age?

Sno	Statement	Expressions for age (in years)
a)	Sarita's present age	y years
i)	Sarita's age 5 yrs from now	$y + 5$
ii)	Sarita's age 3 yrs back	$y - 3$
iii)	Sarita's grandfather's age	$6y$
iv)	Sarita's grandmother's age	$6y - 2$
v)	Sarita's father's age	$3y + 5$

(d) Meena, Beena and Leena are climbing the steps to the hill top. Meena is at step s , Beena is 8 steps ahead and Leena 7 steps behind. Where are Beena and Meena? The total number of steps to the hill top is 10 less than 4 times what Meena has reached. Express the total number of steps using s .

(d) Meena is at step s .

\therefore Beena is at $(s + 8)$ steps and Leena is at $(s - 7)$ steps.

Total number of steps on to the hill top = $(4s - 10)$

(b) The length of a rectangular hall is 4 meters less than 3 times the breadth of the hall. What is the length, if the breadth is b meters?

(c) A rectangular box has height h cm. Its length is 5 times the height and breadth is 10 cm less than the length. Express the length and the breadth of the box in terms of the height.

(d) Meena, Beena and Leena are climbing the steps to the hill top. Meena is at step s , Beena is 8 steps ahead and Leena 7 steps behind. Where are Beena and Meena? The total number of steps to the hill top is 10 less than 4 times what Meena has reached. Express the total number of steps using s .



(e) A bus travels at v km per hour. It is going from Daspur to Beespur. After the bus has travelled 5 hours, Beespur is still 20 km away. What is the distance from Daspur to Beespur? Express it using v .

2. Change the following statements using expressions into statements in ordinary language.

(For example, Given Salim scores r runs in a cricket match, Nalin scores $(r + 15)$ runs. In ordinary language – Nalin scores 15 runs more than Salim.)

- (a) A notebook costs ₹ p . A book costs ₹ $3p$.
- (b) Tony puts q marbles on the table. He has $8q$ marbles in his box.
- (c) Our class has n students. The school has $20n$ students.
- (d) Jaggu is z years old. His uncle is $4z$ years old and his aunt is $(4z - 3)$ years old.
- (e) In an arrangement of dots there are r rows. Each row contains 5 dots.

3. (a) Given Munnu's age to be x years, can you guess what $(x - 2)$ may show? (Hint : Think of Munnu's younger brother.)

Can you guess what $(x + 4)$ may show? What $(3x + 7)$ may show?

(b) Given Sara's age today to be y years. Think of her age in the future or in the past. What will the following expression indicate? $y + 7$, $y - 3$, $y + 4\frac{1}{2}$, $y - 2\frac{1}{2}$.

(c) Given n students in the class like football, what may $2n$ show? What may $\frac{n}{2}$ show? (Hint : Think of games other than football).

ASSIGNMENT

From NCERT text book the following questions are to be done in Mathematics Notebook
 Class Assignment Ex 11.4 Q1 b, c, e Q2 a, c, e Q3 a, c
 Home Assignment. Ex 11.4 Q 1 - d Q2 b, d Q3 , b , d

Refer to the following links :

<https://www.youtube.com/watch?v=Cq832vvq9PE>

Block II

Equation :

An equation is a condition on variable. It is satisfied only for definite value of variables.

An equation has an equal to sign (=) between the two sides. The equation says that the value of the left hand side (LHS) is equal to the value on the right hand side (RHS). If LHS is not equal to RHS we do not get an equation.

Eg : $8+3 = 11$, $5 \times 4 + 2 = 22$, $2x + 5 = 15$, $3x = 9$ etc

Note : $8 < 9$, $2x > 5$ etc are not equations .

Following are some examples of an equation. (The variable in the equation is also identified).

Fill in the blanks as required :

$$x + 10 = 30 \quad (\text{variable } x) \quad (3)$$

$$p - 3 = 7 \quad (\text{variable } p) \quad (4)$$

$$3n = 21 \quad (\text{variable } \underline{\quad}) \quad (5)$$

$$\frac{t}{5} = 4 \quad (\text{variable } \underline{\quad}) \quad (6)$$

$$2l + 3 = 7 \quad (\text{variable } \underline{\quad}) \quad (7)$$

$$2m - 3 = 5 \quad (\text{variable } \underline{\quad}) \quad (8)$$

Solution of an Equation

The value of variable which satisfies the equation is the solution of the equation.

For example : The equation $t + 5 = 7$ has the solution $t = 2$ as LHS becomes equal to RHS for $t = 2$.

TRIAL AND ERROR METHOD

We will use trial and error method to find the solution of an equation.

i.e we will keep on substituting the value of variable in the equation and check the LHS and RHS .

The value for which we have LHS = RHS will be the solution of the equation;

For Example 1) $3x + 5 = 17$

x	LHS = $3x + 5$	RHS = 17
1	$3x + 5 = 3 \times 1 + 5 = 8$	17
2	$3x + 5 = 3 \times 2 + 5 = 11$	17
3	$3x + 5 = 3 \times 3 + 5 = 14$	17
4	$3x + 5 = 3 \times 4 + 5 = 17$	17

For $x = 4$, LHS = RHS. The required solution is $x = 4$.

2) $2x + 16 = 26$

x	LHS = $2x + 16$	RHS = 26
1	$2x + 16 = 2 \times 1 + 16 = 18$	26
2	$2x + 16 = 2 \times 2 + 16 = 20$	26
3	$2x + 16 = 2 \times 3 + 16 = 22$	26
4	$2x + 16 = 2 \times 4 + 16 = 24$	26
5	$2x + 16 = 2 \times 5 + 16 = 26$	26

Here, LHS = RHS for $x = 5$ is the solution.



EXERCISE 11.5

1. State which of the following are equations (with a variable). Give reason for your answer. Identify the variable from the equations with a variable.

- (a) $17 = x + 7$ (b) $(t - 7) > 5$ (c) $\frac{4}{2} = 2$
- (d) $(7 \times 3) - 19 = 8$ (e) $5 \times 4 - 8 = 2x$ (f) $x - 2 = 0$
- (g) $2m < 30$ (h) $2n + 1 = 11$ (i) $7 = (11 \times 5) - (12 \times 4)$
- (j) $7 = (11 \times 2) + p$ (k) $20 = 5y$ (l) $\frac{3q}{2} < 5$
- (m) $z + 12 > 24$ (n) $20 - (10 - 5) = 3 \times 5$
- (o) $7 - x = 5$

2. Complete the entries in the third column of the table.

S.No.	Equation	Value of variable	Equation satisfied Yes/No
(a)	$10y = 80$	$y = 10$	
(b)	$10y = 80$	$y = 8$	
(c)	$10y = 80$	$y = 5$	
(d)	$4l = 20$	$l = 20$	
(e)	$4l = 20$	$l = 80$	
(f)	$4l = 20$	$l = 5$	
(g)	$b + 5 = 9$	$b = 5$	
(h)	$b + 5 = 9$	$b = 9$	
(i)	$b + 5 = 9$	$b = 4$	
(j)	$h - 8 = 5$	$h = 13$	
(k)	$h - 8 = 5$	$h = 8$	
(l)	$h - 8 = 5$	$h = 0$	
(m)	$p + 3 = 1$	$p = 3$	
(n)	$p + 3 = 1$	$p = 1$	
(o)	$p + 3 = 1$	$p = 0$	
(p)	$p + 3 = 1$	$p = -1$	

Note : Q2 part a,b,c has been already solved for reference

S. No.	Equation	Value of variable	Equation satisfied Yes/No	Solution of L.H.S.
(a)	$10y = 80$	$y = 10$	No	$10 \times 10 = 100$
(b)	$10y = 80$	$y = 8$	Yes	$10 \times 8 = 80$
(c)	$10y = 80$	$y = 5$	No	$10 \times 5 = 50$

HOME ASSIGNMENT

From NCERT text book the following questions are to be done in Mathematics Notebook

Exercise 11.5 Q1 a, c, e, g, i, k, m, o Q2 j, k, l, m, n, o, p, q

Exercise 11.5 Q1 b, d, f, h, j, l, n Q2 d, e, f, g, h, l

Refer to the following links :

<https://www.youtube.com/watch?v=7W7nKpbXSpY>

<https://www.youtube.com/watch?v=Up-6LkPG1XM>

BLOCK III

Exercise 11.5

3. Pick out the solution from the values given in the bracket next to each equation. Show that the other values do not satisfy the equation.

(a) $5m = 60$ (10, 5, 12, 15)

(b) $n + 12 = 20$ (12, 8, 20, 0)

(c) $p - 5 = 5$ (0, 10, 5 - 5)

(d) $\frac{q}{2} = 7$ (7, 2, 10, 14)

(e) $r - 4 = 0$ (4, -4, 8, 0)

(f) $x + 4 = 2$ (-2, 0, 2, 4)

Solution

a) $5m = 60$ (10, 5, 12, 15)

RHS = 60

LHS

For m = 10	For m = 5	For m = 12	For m = 15
$5m = 5 \times 10$ $= 50$	$5m = 5 \times 5$ $= 25$	$5m = 5 \times 12$ $= 60$	$5m = 5 \times 15$ $= 75$
LHS \neq RHS	LHS \neq RHS	LHS = RHS	LHS \neq RHS
m = 10 is not the solution	m = 5 is not the solution	m = 12 is the solution	m = 15 is not the solution

e) $r - 4 = 0$ (4, -4, 8, 0)

RHS = 0

LHS

For r = 4	For r = -4	For r = 8	For r = 0
$r - 4 = 4 - 4$ $= 0$	$r - 4 = 4 - (-4)$ $= 4 + 4 = 8$	$r - 4 = 4 - 8$ $= -4$	$r - 4 = 4 - 0$ $= 4$
LHS = RHS	LHS \neq RHS	LHS \neq RHS	LHS \neq RHS
r = 4 is the solution	r = -4 is not the solution	r = 8 is not the solution	r = 0 is not the solution

4. (a) Complete the table and by inspection of the table find the solution to the equation $m + 10 = 16$.

m	1	2	3	4	5	6	7	8	9	10	—	—	—
$m + 10$	—	—	—	—	—	—	—	—	—	—	—	—	—

- (b) Complete the table and by inspection of the table, find the solution to the equation $5t = 35$.

t	3	4	5	6	7	8	9	10	11	—	—	—	—
$5t$	—	—	—	—	—	—	—	—	—	—	—	—	—

Q4 c and d part is solved for your reference .

(c)

z	8	9	10	11	12	13	14	15	16	17	18	19	20
$\frac{z}{3}$	$2\frac{2}{3}$	3	$3\frac{1}{3}$	$3\frac{2}{3}$	4	$4\frac{1}{3}$	$4\frac{2}{3}$	5	$5\frac{1}{3}$	$5\frac{2}{3}$	6	$6\frac{1}{3}$	$6\frac{2}{3}$

$\therefore z = 12$ is the solution. \therefore At $z = 12, \frac{z}{3} = 4$

(d)

m	5	6	7	8	9	10	11	12	13	14	15
$m-7$	-2	-1	0	1	2	3	4	5	6	7	8

$\therefore m = 10$ is the solution. \therefore At $m = 10, m-7 = 3$

ASSIGNMENT

From NCERT text book the following questions are to be done in Mathematics Notebook
 Class Assignment- Ex 11.5 Q3) c, f Q4) a
 Home Assignment -Ex 11.5 Q3)b, d Q4) b

Refer to the following link

https://www.youtube.com/watch?v=ln20VrPmxdk&feature=emb_logo

<https://www.youtube.com/watch?v=NybHckSEQBI>

ACTIVITY

- 1) Collect the information about ages of any 5 family members/friends .
- 2) Taking your age to be x yrs , form algebraic expressions for the age of your relatives /friends in the terms of your age (x yrs)
 For example : If your age is 10 yrs and your Mother's age is 35 yrs
 Then the algebraic expression could be $3x + 5$ or $4x - 5$ etc
- 3) Fill in the table (Include your information as well).
- 4) Draw or paste the table in the CW/HW notebook

S no	Name	Relation	Age (in yrs)	Algebraic Expression
1)				
2)				
3)				
4)				
5)				
6)				

SUMMARY

- 1) An equation is a condition on variable. It is satisfied only for definite value of variables
- 2) An equation is having LHS and RHS equal.
- 3) If LHS is not equal to RHS, it is said to be an inequality.
- 4) Solution of an equation is the value of variable that makes LHS and RHS equal.
- 5) We can find the solution by trial and error method.

PRACTICE ASSIGNMENT

BRAIN TEASERS (To be done in Practice Notebook)

Who am I ?

- Q1) *Go round a square
counting every corner
Thrice and no more !
Add the count to me
to get exactly thirty four !*
- Q2) *For each day of the week
Make an upcount from me
If you make no sense
You will get twenty three !!*
- Q3) *I am a special number
Take away from me a six !
A whole cricket team
You will be able to fix !!*
- Q4) Tell me who I am
I shall give a pretty clue !
You will get me back
If you take me out of twenty two !!