

NOTES

CLASS 6

MATHS

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ALGEBRA

INTRODUCTION We have learnt numbers, operations on numbers and properties of numbers. We applied our knowledge of numbers to various problems in our life. The branch of mathematics in

which we studied numbers is arithmetic. We have also learnt about figures in two and three dimensions and their properties. The branch of mathematics in which we studied shapes is geometry. Now we begin the study of another branch of mathematics. It is called Algebra.

The main feature of the new branch which we are going to study is the use of letters. Use of letters will allow us to write rules and formulas in a general way.

Beginning of Algebra

The word **ALGEBRA** is derived from the title of the book, Aljebarw*al almugabalah, written about 825 AD by an Arab mathematician, Mohammed Ibn Al Khowarizimi of Baghdad.

[illegible]

Ameena takes two

matchsticks and forms the letter L as shown in Fig).

Idea of a Variable

In the above example, we found a rule to give the number of matchsticks

required to make a pattern of Ls. The rule was :

Number of matchsticks required = $2n$

Here, n is the number of Ls in the pattern, and n takes values 1, 2, 3, 4,... Let

us look at Table 1 once again. In the table, the value of n goes on changing

(increasing). As a result, the number of matchsticks required also go on changing.

The word ‘variable’ means something that can vary, i.e. change. The value of a variable is not fixed.

MCQ s

1 What is the rule for making patterns of V?(use n as variable)

B) $2n$

D)5n

2. What is the rule for making patterns of Z ? (use x as variable)

B) $4x$

D) $5x$

3. “Variable” means that it

(B) has a fixed value

(C) can take only 2 values

(D) can take only three values

4 In algebra, $a \times b$ means ab , but in arithmetic 3×5 is



(A) 35 (B) 53 (C) 15 (D) 8

Case study based

If there are 50 mangoes in a box, how will you write the total number of mangoes in terms of the number of boxes? (Use b for the number of boxes.)

Ans 50 b

Short answer type question

1. Cost of a pencil is Rs 6. Find the cost of x pencils.
2. What is the area of a square whose side is m cm?
3. Amulya is 17 years of age now. What was her age 5 years ago?
In similar way, Ritu is x years of age now. What was her age 5 years ago?

Long answer type questions

- 1 Students went to buy notebooks from the school bookstore. Price of one notebook is 5. Munnu wants to buy 5 notebooks, Appu wants to buy 7 notebooks, Sara wants to buy 4 notebooks and so on. How much money should a student carry when she or he goes to the bookstore to buy notebooks?

Solution ; The letter m stands for the number of notebooks a student wants to buy; m is a variable, which can take any value 1, 2, 3, 4, ... The total cost of m notebooks is given by the rule :

The total cost in rupees = $5 \times$ number of notebooks required = $5m$

If Munu wants to buy 5 notebooks, then taking $m = 5$, we say that Munnu should carry 5×5 or 25 with him to the school book store. Appu should carry $7 \times 5 = 35$ rs Sara should carry $4 \times 5 = 20$ rs



III Questions for practice : MCQs

1 What is the rule for making patterns of E ? (use n as variable)

A) $3x$ B) $3n$ C) $5n$ D) $4x$

2 . Which of the following is an equation?

(A) $x + 7$ (B) $2y + 3 = 7$ (C) $2p < 10$ D) $12x$

3. Which of the following represents $6 \times x$

(A) $6x$ (B) $6/x$ (C) $6 + x$ (D) $6 - x$

4. Kanta has p pencils in her box. She puts q more pencils in the box.

The total number of pencils with her are

(A) $p + q$ (B) pq (C) $p - q$ (D) p/q

5. The area of a square having each side x is

(A) $x \times x$ (B) $4x$ (C) $x + x$ (D) $4 + x$

6. If each match box contains 50 matchsticks, the number of matchsticks required to fill n such boxes is

(A) $50 + n$ (B) $50n$ (C) $50 \div n$ (D) $50 - n$

7. The teacher distributes 5 pencils per student. Can you tell how many pencils are needed, given the number of students? (Use s for the number of students.)

A) $5s$ B) $6x$ C) $5 + x$ D) $5/s$

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