ST. MICHAEL'S SCHOOL, MURI

STUDY MATERIAL CUM HOME ASSIGNMENT 2020-21

CLASS - VIII SUBJECT - MATHEMATICS

CUBES AND CUBE ROOTS

CUBE OF A NUMBER

For a given number x, we define, cube of x = x × x × x , denoted by x^3.

EXAMPLES (i) 2^3 = (2 × 2 × 2) = 8. Thus , cube of 2 is 8.

(ii) 3^3 = (3 × 3 × 3) = 27.Thus ,cube of 3 is 27.

HOME ASSIGNMENT

Evaluate :

1. $(8)^3$ 2. $(15)^3$ 3. $(21)^3$

4. $(3.5)^3$ 5. $(0.05)^3$

CUBE ROOTS

Cube Root : The cube root of a number x is that number whose cube gives x. We denote the cube root of x by $\sqrt[3]{x}$.

EXAMPLES : (i) since (2 × 2 × 2) = 8 , we have $\sqrt[3]{8} = 2$.

(ii) since (5 × 5 × 5) =125 , we have $\sqrt[3]{125} = 5$.

Method for finding the cube root by factorization

EXAMPLE : Evaluate $\sqrt[3]{216}$

SOLUTION : By prime factorization, we have

$$2744 = 2 \times 2 \times 2 \times 7 \times 7 \times 7$$

$$= (2 \times 2 \times 2) \times (7 \times 7 \times 7)$$

$$\therefore \sqrt[3]{2744} = (2 \times 7) = 14.$$

HOME ASSIGNMENT

Find the cube root of :

1. 64 2. 729 3. 1728

4. 9261 5. 3375

FACTORISATION

FACTORS When an algebraic expression can be written as the product of two or more expressions, then each of these expressions is called a factor of the given expression.

FACTORISATION The process of finding two or more expressions whose product is the given expression is called factorization.

FACTORISATION WHEN EXPRESSION IS A PERFECT SQUARE

FORMULAE : (i) $a^2 + b^2 + 2ab = (a + b)^2$

(ii) $a^2 + b^2 - 2ab = (a - b)^2$

EXAMPLE : Factorise : $x^2 - 20x + 100$

SOLUTION : We have,

$(x)^2 + (10)^2 - 2 \times x \times 10$

$\therefore (x - 10)^2$ Ans

HOME ASSIGNMENT

1. $x^2 + 8x + 16$
2. $x^2 - 14x + 49$
3. $x^2 + 6ax + 9a^2$
4. $a^2b^2 - 6abc + 9c^2$
5. $121a^2 - 88ab + 16b^2$

FACTORISATION OF QUADRATIC TRINOMIALS

EXAMPLE : Factorise $x^2 + 8x + 15$

Solution : Find two numbers whose sum = 8 and product = 15

clearly,the numbers are 5 and 3.

therefore $x^2 + 8x + 15$

$= x^2 + 5x + 3x + 15$

$= x(x + 5) + 3(x + 5)$

$= (x + 5)(x + 3)$

HOME ASSIGNMENT

Factorise :

1. $x^2 + 15x + 56$

2. $x^2 - 7x + 12$

3. $x^2 + x - 56$

4. $y^2 + 10y + 24$

5. $x^2 - 7x + 12$

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