



HeMantra EduTech

Math : Number System

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FACE VALUE

PLACE VALUE

Indian Place Value System								
CRORES		LAKHS		THOUSANDS		ONES		
TC	C	TL	L	T-TH	TH	H	T	O
		2	3	1	9	6	1	7

International Place Value Chart								
MILLIONS			THOUSANDS			ONES		
HM	TM	M	HTh	TTh	Th	H	T	O
		2	3	1	9	6	1	7

Numbers:

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- Natural Numbers
- Whole Numbers
- Integers
- Even numbers
- Odd Numbers
- Prime Numbers
- Composite Numbers
- Rational Numbers
- Irrational Numbers

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NOTE 😊

- Smallest Prime Number is 2
 - Only even Prime Number is 2
 - First Odd Prime Number is 3
 - 1 is a unique number, neither prime nor composite.
 - The least composite number is 4
 - The Least Odd Composite no. is 9
-
- Sum of the first n natural nos.
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- Sum of the squares of the first n natural nos.
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-
- Sum of the cubes of the first n natural nos.

- Sum of the cubes of the first n natural nos.

- Sum of the first n odd natural numbers.

- Sum of the first n even natural nos.

- Divisibility test

V. Important Formulae:

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

$$(iii) (a + b)^2 + (a - b)^2 = 2(a^2 + b^2)$$

$$(v) (a + b)^3 = a^3 + b^3 + 3ab(a + b)$$

$$(vii) a^2 - b^2 = (a + b)(a - b)$$

$$(ix) a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$$

$$(xi) a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$$

$$(xii) \text{ If } a + b + c = 0, \text{ then } a^3 + b^3 + c^3 = 3abc$$

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

$$(iv) (a + b)^2 - (a - b)^2 = 4ab$$

$$(vi) (a - b)^3 = a^3 - b^3 - 3ab(a - b)$$

$$(viii) (a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$$

$$(x) a^3 - b^3 = (a - b)(a^2 + b^2 + ab)$$

Questions for practice

Q.1 567958×99999

Q.2. $983 \times 207 - 983 \times 107$

Q.3

Simplify: (i) $\frac{789 \times 789 \times 789 + 211 \times 211 \times 211}{789 \times 789 - 789 \times 211 + 211 \times 211}$ (ii) $\frac{658 \times 658 \times 658 - 328 \times 328 \times 328}{658 \times 658 + 658 \times 328 + 328 \times 328}$

Q.4

Simplify: $\frac{(893 + 786)^2 - (893 - 786)^2}{(893 \times 786)}$

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5.

Which of the following numbers is divisible by 3?

(i) 541326

(ii) 5967013

6.

*What least value must be assigned to * so that the number 197*5462 is divisible by 9?*

7. Which of the following numbers is divisible by 4?

(i) 67920594

(ii) 618703572

Q 8. Which digits should come in place of * and \$ if the number 62684*\$ is divisible by both 8 and 5?

Q 9.

$$\frac{(489 + 375)^2 - (489 - 375)^2}{(489 \times 375)} = ?$$

Q 10.

$$\frac{(963 + 476)^2 + (963 - 476)^2}{(963 \times 963 + 476 \times 476)} = ?$$

Q 11. $\frac{768 \times 768 \times 768 + 232 \times 232 \times 232}{786 \times 768 - 768 \times 232 + 232 \times 232} = ?$

Q 12. $\frac{854 \times 854 \times 854 - 276 \times 276 \times 276}{854 \times 854 + 854 \times 276 + 276 \times 276} = ?$

Q 13

$$\frac{753 \times 753 + 247 \times 247 - 753 \times 247}{753 \times 753 \times 753 + 247 \times 247 \times 247} = ?$$

(a) $\frac{1}{1000}$

(b) $\frac{1}{506}$

(c) $\frac{253}{500}$

(d) None of these

Q 14.

Find the value of $4 - \frac{5}{1 + \frac{1}{3 + \frac{1}{2 + \frac{1}{4}}}}$.

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Q 15.

Simplify: $\frac{\frac{7}{2} \div \frac{5}{2} \times \frac{3}{2}}{\frac{7}{2} \div \frac{5}{2} \text{ of } \frac{3}{2}} \div 5.25$

Q 16.

Find the value of $4 - \frac{5}{1 + \frac{1}{3 + \frac{1}{2 + \frac{1}{4}}}}$.

Q 17.

Find the value of $\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right)\left(1 - \frac{1}{5}\right) \dots \left(1 - \frac{1}{100}\right)$.

Q 18.

Find the value of $\frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \frac{1}{4 \times 5} + \frac{1}{5 \times 6} + \dots + \frac{1}{9 \times 10}$.

Thank you

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