HeMantra EduTech

Math : Number System

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:

- Natural Numbers

- Whole Numbers

- Integers

- Even numbers

- Odd Numbers

- Prime Numbers

- Composite Numbers

- Rational Numbers

- Irrational Numbers

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.

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

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

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

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

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

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

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

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

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

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

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

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

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

Questions for practice

Q.1 567958×99999

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

Q.3

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

Q.4 *Simplify:* $\dfrac{(893 + 786)^2 - (893 - 786)^2}{(893 \times 786)}$

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. $$\frac{768\times768\times768+232\times232\times232}{786\times768-768\times232+232\times232}=?$$

Q 12. $$\frac{854\times854\times854-276\times276\times276}{854\times854+854\times276+276\times276}=?$$

Q 13

$$\frac{753\times753+247\times247-753\times247}{753\times753\times753+247\times247\times247}=?$$

(a) $\frac{1}{1000}$ (b) $\frac{1}{506}$

(c) $\frac{253}{500}$ (d) None of these

.

Q 14.

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

Q 15.

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

Q 16.

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

Q 17.

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

Q 18.

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

Thank you