

Formulae:

Some series :

$$(i) \quad (1 + 2 + 3 + \dots + n) = \frac{1}{2} n (n + 1)$$

$$(ii) \quad (1^2 + 2^2 + 3^2 + \dots + n^2) = \frac{1}{6} n (n + 1) (2n + 1)$$

$$(iii) \quad (1^3 + 2^3 + 3^3 + \dots + n^3) = \frac{1}{4} n^2 (n + 1)^2$$

Some Formulae :

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

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

$$(iii) \quad (a + b)^2 - (a - b)^2 = 4ab$$

$$(iv) \quad (a + b)^2 + (a - b)^2 = 2(a^2 + b^2)$$

$$(v) \quad (a^2 - b^2) = (a - b)(a + b)$$

$$(vi) \quad (a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$$

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

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

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

$$(x) \quad (a + b + c) = 0 \Rightarrow (a^3 + b^3 + c^3) = 3abc.$$

Questions:

Q1. $(658 * 658 * 658 + 342 * 342 * 342) / (658 * 658 - 658 * 342 + 342 * 342) = ?$

Q2. What is the unit digit in $(4517)^{754}$?

Q3. On dividing a certain number by 357, we get 39 as remainder. What will be the remainder when the same number is divided by 17?

Q4. What least value must be given to * so that the number $84765*2$ is divisible by 8?

Q5. In a division sum, the divisor is 10 times the quotient and 5 times the remainder. If the remainder is 46, the dividend is?

Q6. The least number which when increased by 5, is completely divisible by each of the numbers 24, 32, 36 and 54, is :

- a) 869 b) 859 c) 4320 d) 427

Q7. $215 * 215 + 185 * 185 = ?$ (HINT : $2(a^2 + b^2) = (a+b)^2 + (a-b)^2$)

Q8. Which of the following numbers is Prime?

- a) 119 b) 187 c) 247 d) 367

Answers:

Ans1) 1000

Ans2) 9

Ans3) Remainder = 5

Ans4) 1

Ans5) 5336

Ans6) option b) 859

Ans 7) 80450

Ans8) option d) 367