RATIO PROPORTION & VARIATION

QUANTITATIVE APTITUDE

RATIO

- Ratio is the relation which one quantity bears to another of the same kind.
- The ratio of two quantities "a" and "b" is represented as a:b and read as "a is to b".
- Ratio is only a relative measure; it is not an exact measure.
- a:b can also be expressed as a/b.
- If two terms are in the ratio 2:3, we can say that their ratio is 2/3.
- If two terms are in the ratio 2, it means that they are in the ratio of 2/1, i.e., 2:1

1)If $x : y = 4 : 3$, then $(3x + 2y) : (3x - 2y)$ is _____.

(1)3 : 1

(2)1 : 3

(3)9 : 1

(4)1 : 9

2)If $2x=3y=4z$,then find the value of $2x+3y+4z/3x+4y-2z$

(1)3 : 4

(2)4 : 3

(3)9 : 7

(4)7 : 9

3)If a : b = 2 : 3 and b : c = 5 : 7, find a : b : c.

(1)10 : 15 : 21

(2)10 : 21 : 15

(3)9 : 12 : 14

(4)12 : 7: 18

(5)10 : 21 : 14

4)If a : b = 1 : 2, b : c = 4 : 3 and c : d = 1 : 5, find a : d.

(1)4 : 3

(2)2 : 3

(3)2 : 5

(4)2 : 15

(5)1 : 5

5)An amount of Rs.2,400 is divided among A, B and C in the ratio 3:4:5. Find the share of A.

(1)Rs.600

(2)Rs.800

(3)Rs.1,000

(4)Rs.300

6)A sum of money is divided among P, Q, R and S in the ratio of 5 : 9 : 11 : 13. If the share of R is Rs.2,856 more than that of P, then what is the total amount of money distributed among the four?

(1)Rs.18,088

(2)Rs.20,088

(3)Rs.22,088

(4)Rs.24,088

7)The ratio of two numbers is 4 : 5. If 15 is added to each of the two numbers, the ratio becomes 7 : 8. What is the sum of the two numbers?

(1)39

(2)42

(3)45

(4)30

8)The ratio of the present ages of Varun and his son is 13 : 4. After 15 years, Varun's age will be twice his son's age. If Varun's wife's age was 30 years when her son was born, then find the present age of Varun's wife.

(1)42 years

(2)36 years

(3)45 years

(4)12 years

9)The incomes of P and Q are in the ratio 5 : 4 and their expenditures are in the ratio 3 : 2. If each one saves ₹1,000, then what is theincome of P?

(1)₹1,500

(2)₹2,000

(3)₹2,250

(4)₹2,500

10)In a bag there are certain number of coins of the denominations ₹1, ₹2 and ₹5 in the ratio of 5 : 7 : 9 respectively. If the total value of the coins in the bag is ₹192, find the number of ₹1 coins in the bag.

(1)5

(2)10

(3)15

(4)20

PROPORTION

- When two ratios are equal, the four quantities involved in the two ratios are said to be proportional
- i.e., if $a/b = c/d$, then a, b, c and d are proportional. a : b : : c : d
- a and d are called the Extremes and the numbers b and c are called the Means.
- Product of the Means = Product of the Extremes
- If three quantities a, b and c are such that a : b :: b : c, then we say that they are in Continued proportion.
- We also get $b^2 = ac$

11)Find the fourth proportion of the numbers 18, 6 and 9.

(1)4

(2)3

(3)4.5

(4)12

VARIATION

- **Direct variation:**

A α B (A varies directly as B).If AαB, then A = kB, where k is a constant.

$A_1/B_1 = A_2/B_2$

- **Inverse variation:**

A varies directly with 1/B. It is denoted as A α1/B. then A = k/B, where k is a constant.

$A_1 B_1 = A_2 B_2$

- **Joint variation:**

If there are three quantities A, B and C such that A varies directly with B when C is constant and varies directly with C when B is constant, Then A α BC or A = kBC

$A_1/B_1C_1 = A_2/B_2C_2$

12)X varies directly with the square of Y and inversely with the cube of Z. If Y = 6 and Z = 3, then X = 4. Find the value of X when Y =8 and Z = 4.

(1)1

(2)2

(3)3

(4)4