अनुपात व समानुपात
(Ratio and Proportion)

$\frac{a}{b}$ → $a:b::c:d$

✳ **वर्गानुपात/ Duplicate Ratio :** $\left(\frac{a}{b}\right)^2 = \frac{a^2}{b^2}$ Ex $\left(\frac{2}{3}\right)^2 = \frac{4}{9}$

✳ **वर्गमूलानुपात/ Sub-duplicate Ratio :** $\frac{a}{b} = \sqrt{\frac{a}{b}}$ Ex $\sqrt{\frac{16}{25}} = \frac{4}{5}$

✳ **घनानुपात/ Triplicate Ratio :** $\frac{a}{b} = \frac{a^3}{b^3}$ Ex $\frac{2}{3} = \left(\frac{2}{3}\right)^3 = \frac{8}{27}$

✳ **घनमूलानुपात/ Sub-triplicate Ratio:** $\Rightarrow \sqrt[3]{\frac{64}{125}} = \frac{4}{5}$

✳ **योगान्तरानुपात/ Componendo & Devidendo :** [C & D Rule]

$\frac{x}{y} = \frac{4}{5}$

$\frac{x+y}{x-y} = \frac{9}{-1}$

Eg: यदि $\frac{x+y}{x-y} = \frac{15}{7}$ तो $\frac{x}{y}$?

$\frac{2x}{2y} = \frac{22}{8} \frac{11}{4}$ Ans

यदि $\frac{a+b}{a-b} = \frac{5}{4}$, तो

$\frac{a^2}{b^2} = ?$

$\frac{2a}{2b} = \frac{(9)^2}{(1)^2} = \frac{81}{1}$

$= 81$ Ans

#1: यदि $\frac{a}{b} = \frac{2}{3}$; $\frac{b}{c} = \frac{4}{5}$; तो $a:b:c$ का मान होगा–

$a \quad b \quad c$

$2 \quad 3 \quad 3$

$\times 4 \quad \times 4 \quad \times 5$

$8 : 12 : 15$

ROJGAR WITH ANKIT

II). यदि $a:b = 1:2$; $b:c = 2:3$; $c:d = 3:5$, तो $a:b:c:d = ?$

a	b	c	d
1	2	2	2
2	2	3	3
3	3	3	5
~~6~~ 1	~~12~~ 2	~~18~~ 3	~~30~~ 5 Ans

III). $a:b = 1:4$; $b:c = 2:3$; $d:c = 1:2$ तो $a:b:c:d = ?$

a	b	c	d
1	4	4	4
2	2	3	3
2	2	2	1
~~4~~ 1	~~16~~ 4	~~24~~ 6	~~12~~ 3 Ans

IV). $a:b = 1:5$; $b:c = 2:3$; $c:d = 3:2$ तो $a:d = ?$

a	b	c	d
1	5	5	5
2	2	3	3
3	3	3	2
~~6~~ 1	: ~~30~~ 5		

2nd Method :

a	:	d
1		5
~~2~~		~~3~~
~~3~~		~~2~~
1	:	2 Ans

(1). नि० लि० में से क्या सही अनुपात को दर्शाता है–

⇒ $12:9 = 16:12$ Ans

(2). $25^{2.5} : 5^3$ का अनुपात किसके बराबर है–
(What is the ratio)–

$$\frac{25^{2.5}}{5^3} = \frac{(5^2)^{2.5}}{5^3}$$

$$= \frac{5^5}{5^3} = 5^2$$

$= 25:1$ Ans

(3). यदि $a:b = 9:14$ और $b:c = 16:7$ है, तो $a:b:c$ क्या है?
(If $a:b = 9:14$ and $b:c = 16:7$, then what is $a:b:c$?)–

Home work