

ROJGAR WITH ANKIT

Ratio and Proportion

PART-3

(1). यदि $A:B:C = 2:3:5$, तो अनुपात $\frac{A}{B} : \frac{B}{C} : \frac{C}{A} = ?$

$$\begin{aligned} & \frac{2}{3} : \frac{3}{5} : \frac{5}{2} \\ & \frac{2}{3} \times \frac{10}{10} : \frac{3}{5} \times \frac{6}{6} : \frac{5}{2} \times \frac{15}{15} \\ & \Rightarrow 20:18:75 \text{ Ans} \end{aligned}$$

(2). यदि $a:b=c:d=e:f=g:h=1:3$, तो नि.लि. का मान क्या होगा-
 $(pa+qc+re+sg):(pb+qd+rf+sh)-$

$$\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \frac{g}{h} = \frac{1}{3}$$

$$\begin{aligned} & \frac{pa+qc+re+sg}{pb+qd+rf+sh} \\ & \frac{p+q+r+s}{p \times 3 + q \times 3 + r \times 3 + s \times 3} \end{aligned}$$

$$\frac{p+q+r+s}{3[p+q+r+s]} = \frac{1}{3} \text{ Ans}$$

(3). यदि $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \frac{2}{5}$ है, तो $(5a+3c+2e):(5b+3d+2f)$ क्या है-

$$\frac{10+6+4}{25+15+10} = \frac{20}{50} \text{ Ans}$$

(4). यदि $4A=6B=5C$; तो $A:B:C$ है-

$$\frac{30}{15} : \frac{20}{10} : \frac{24}{12} \text{ Ans}$$

(5). यदि $3A=5B$ और $4B=6C$ है तो $A:C$ बराबर है-

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$$\boxed{\frac{A}{B} = \frac{5}{3}} \quad \boxed{\frac{B}{C} = \frac{63}{42}}$$

$$A : C \Rightarrow 15 : 6$$

$$5 : 2 \text{ Ans}$$

Imp (6). यदि $(a+b) : (b+c) : (c+a) = 8 : 7 : 5$ और $a+b+c=60$; तो $a:b:c$ होगा-

$$2a+2b+2c=20$$

$$2(a+b+c) = 20 \quad 10$$

$$\boxed{1\phi = 6\phi}$$

$$\begin{array}{|l} c=12 \quad 2 \\ a=18 \quad 3 \\ b=30 \quad 5 \end{array}$$

2nd Method

$$2(a+b+c) = 20 \quad 10$$

$$c=2$$

$$a=3$$

$$b=5$$

$$\Rightarrow 3:5:2 \text{ Ans}$$

(7). यदि $x^2:y^2 = 9:25$ और $2:x = 5:15$ हैं तो y का मान -?

$$\frac{x^2}{y^2} = \sqrt{\frac{9}{25}} = \frac{3}{5}$$

$$\frac{2}{x} = \frac{5}{15} \quad 1$$

$$\boxed{x=6}$$

$$\frac{6}{y} = \frac{3}{5}$$

$$3y=30$$

$$\boxed{y=10} \text{ Ans}$$

(8). यदि $(m+n):(m-n) = 7:5$ हैं, तो $(m^3+n^3):(m^3-n^3)$ के बीच अनुपात ज्ञात कीजिए-

$$\frac{m+n}{m-n} = \frac{7}{5}$$

$$\frac{m^3+n^3}{m^3-n^3} = ?$$

$$5m+5n=7m-7n$$

$$6 \quad 12n=2m \quad 1$$

$$\boxed{\frac{n}{m} = \frac{1}{6}}$$

$$\frac{216+1}{216-1} = \frac{217}{215} \text{ Ans}$$

2nd Using C&D:

$$\frac{2m}{2n} = \frac{126}{2} \quad 1$$

$$\frac{216+1}{216-1} = \frac{217}{215} \text{ Ans}$$

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3rd

$$\frac{m+n}{m-n} = \frac{7}{5}$$

$$\frac{m^3+n^3}{m^3-n^3} \Rightarrow \frac{(m+n)(m^2+n^2-mn)}{(m-n)(m^2+n^2+mn)}$$

$\Rightarrow$ Upper Ratio $\rightarrow$ Multiple of 7

(217)

Lower Ratio $\rightarrow$ Multiple of 5.

(215) Ans

(9) यदि $P:Q = 5:3$ हैं; तो $(P^4-Q^4):(P^4+Q^4) = ?$

$$625-81 : 625+81$$

$$544 : 706$$

$$\Rightarrow 272 : 353 \text{ Ans}$$

(10) यदि $a = \frac{5}{4}b$ तथा $b = \frac{2}{10}c$ हो, तो $a:b:c = ?$

$$\frac{a}{b} = \frac{5}{4}$$

$$\frac{b}{c} = \frac{2}{10} \cdot \frac{1}{5}$$

$$\begin{array}{ccc} a & : & b & : & c \\ 5 & & 4 & & 4 \\ 1 & & 1 & & 5 \\ \hline 5 & : & 4 & : & 20 \end{array} \text{ Ans}$$

(11) यदि $P:(Q+R) = 2:5$ और $R:(P+Q) = 6:7$ हैं, तो $Q:(P+R)$ का मान ज्ञात करें-

$$\frac{P}{Q+R} = \frac{2}{5} \Rightarrow 7 = \frac{26}{65} \Rightarrow 91$$

$$\frac{R}{P+Q} = \frac{6}{7} \Rightarrow 13 = \frac{42}{49} \Rightarrow 91$$

$$P=26; R=42; Q = \frac{91-68}{1} = 23$$

$$\frac{Q}{P+R} = \frac{23}{68} \text{ Ans}$$

Imp

(12) यदि $(a+b-c):(b+c-a):(c+a-b) = 4:5:9$ हैं; तो $a:b:c$ का मान क्या होगा-

$$2b = 9; 2c = 14; 2a = 13$$

$$b = \frac{9}{2}; c = \frac{14}{2}; a = \frac{13}{2}$$

$$a:b:c \Rightarrow \frac{13}{2} : \frac{9}{2} : \frac{14}{2}$$

$$\Rightarrow 13:9:14 \text{ Ans}$$

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(13). यदि $(x + y - z) : (y - z + 2w) : (2x + z - w) = 2 : 3 : 1$ हैं, तो $(5w - 3x - z) : 3w$ का अनुपात क्या होगा?

By I and III Ratio

Adding

$$3x + \cancel{y} - w = \cancel{y} - z + 2w$$

$$\boxed{-3w = -z - 3x}$$

$$\frac{5w - 3w}{3w} = \frac{2w}{3w} \text{ Ans}$$