

Example

$$a : (b + c) = (3 : 7) \times 3$$

$$b : (c + a) = (4 : 11) \times 2$$

तो,

$$c : (a + b) = 13 : 17$$

 $LCM = 30$

~~$10 : 15$~~
 ~~$2 : 3$~~

$a + b + c = 30$
 $9 : 8 : 13$

37. If $(a + b)/c = 23/12$ and $(b + c)/a = 17/8$, then what is the value of $(a + c)/b$?

यदि $(a + b)/c = 23/12$ तथा $(b + c)/a = 17/8$ है, तो $(a + c)/b$ का मान क्या है?

[A] $9/5$

~~[B] $116/59$~~

[C] $107/68$

[D] $16/11$

$$\frac{a+b}{c} = \frac{23 \times 5}{12 \times 5}, \quad \frac{b+c}{a} = \frac{17 \times 7}{8 \times 7}$$

$$\frac{a+c}{b} = \frac{56+6}{59} = \frac{116}{59}$$

$$a+b+c = 35, 25$$

$7:5$

38. If $x:(y+z)=3:8$, $y:(x+z)=4:11$, and $x+y+z=4950$, then find the value of $z-y$.

यदि $x:(y+z)=3:8$, $y:(x+z)=4:11$ और $x+y+z=4950$ है, तो $z-y$ का मान ज्ञात कीजिए।

[RRB GROUP-D 2026], (ICAR Technician 2023)

[A] 720

[B] 1080

[C] 840

[D] 960

$$\textcircled{32} \xrightarrow{\times 30} 960$$

$$x+y+z = \textcircled{165} \xrightarrow{\times 30} 4950$$

$45 : 44 : 76$

CONCEPT

If, $(a + b) : (b + c) : (c + a) = 10 : 13 : 17$

$a : b : c =$

$$2(a+b+c) = 40 \Rightarrow a+b+c = 20$$
$$7 : 3 : 10$$

39. If $(a+b):(b+c):(c+a) = 7:6:5$ and $a+b+c = 27$, then what will be the value of $\frac{1}{a}:\frac{1}{b}:\frac{1}{c}$?

यदि $(a+b):(b+c):(c+a) = 7:6:5$ और $a+b+c = 27$, तो $\frac{1}{a}:\frac{1}{b}:\frac{1}{c}$ का मान क्या होगा?

[A] $4:3:6$

[B] $3:4:2$

[C] $3:2:4$

[D] $3:6:4$

$\frac{1}{a}:\frac{1}{b}:\frac{1}{c}$
 $4:3$

~~$(\frac{1}{3}:\frac{1}{4}:\frac{1}{2}) \times 12$~~

$$(a+b+c) = 9$$

$3:4:2$

40. If $(a + b) : (b + c) : (c + a) = 15 : 14 : 11$, and $a + b + c = 180$, then what is the value of $(3a + b - 4c)$?

यदि $(a+b):(b+c):(c+a)=15:14:11$, और $a+b+c=180$ है, तो $(3a+b-4c)$ का मान ज्ञात करें।

MTS 2020

[A] 98

[C] 45

[B] 77

[D] 63

$$\textcircled{18} + \textcircled{9} - \textcircled{20} = \textcircled{7} \xrightarrow{\times 9} 63$$

$$\begin{array}{l} (a+b+c) = \textcircled{20} \xrightarrow{\times 9} 180 \\ 6:9:5 \end{array}$$

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41. If a, b and c are positive numbers such that $(a^2 + b^2) : (b^2 + c^2) : (c^2 + a^2) = 34 : 61 : 45$, then $b - a : c - b : c - a = \underline{\hspace{2cm}}$.

यदि a, b और c तीन ऐसी धनात्मक संख्याएं हैं कि $(a^2 + b^2) : (b^2 + c^2) : (c^2 + a^2) = 34 : 61 : 45$ है तो $b - a : c - b : c - a = \underline{\hspace{2cm}}$ ।

[A] 1:2:3

[B] 2:1:3

[C] 3:1:2

[D] 3:2:1

~~$$(a^2 + b^2 + c^2) = 70$$

$\rightarrow 9 \quad 25 \quad 36$~~

~~$$a : b : c = 3 : 5 : 6$$~~

42. If $(a + b - c) : (b + c - a) : (a + c - b) = 4 : 5 : 9$, then find $(a - b) : (c - b) : (c - a)$?

यदि $a+b-c : b+c-a : a+c-b = 4:5:9$, तो $(a-b) : (c-b) : (c-a)$ ज्ञात कीजिए
(SSC GD 2021)

$4 : 5 : 1$

[A] 4:1:5

[B] 1:4:5

[C] 4:5:1

[D] 5:1:4

$$\begin{array}{ccc} a & b & c \\ 13 & 9 & 14 \end{array}$$

$$\frac{3}{5} = \frac{6}{10} = \frac{12}{20} = \frac{3+6+12}{5+10+20}$$

$$= \frac{3 \cdot (1+2+4)}{5 \cdot (1+2+4)}$$

$$\frac{4}{7} = \frac{8}{14} = \frac{12}{21} = \frac{20}{35} = \frac{4+8+12+20}{7+14+21+35}$$

$$= \frac{4 \times (1+2+3+5)}{7 \times (1+2+3+5)}$$

यदि, $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = x$

$$\frac{a+c-e}{b+d-f} = x$$



Ratio Same

If (यदि)

$$\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \frac{7}{4}$$

$$\blacklozenge \frac{a+c+e}{b+d+f} = \frac{7}{4}$$

$$\blacklozenge \frac{a-c+e}{b-d+f} = \frac{7}{4}$$

$$\blacklozenge \frac{2a+3c-5e}{2b+3d-5f} = \frac{7}{4}$$

$$\frac{2a^2c^2 + 3c^2 + \sqrt{6}e^2}{2b^2 + 3d^2 + \sqrt{6}f^2} = \frac{49}{16}$$

43. If $a : b = p : q = 3 : 7$, then what is the value of $\frac{(2a + 3p)}{(2b + 3q)}$?

यदि $a : b = p : q = 3 : 7$ है, तो $\frac{(2a + 3p)}{(2b + 3q)}$ का मान कितना होगा?

[RRB ALP CBT-1 2025]

[A] $\frac{3}{7}$

[C] $\frac{6}{11}$

[B] $\frac{4}{9}$

[D] $\frac{2}{5}$

$$\frac{a}{b} = \frac{p}{q} = \frac{3}{7}$$

44. If $a : b = c : d = e : f = 5 : 7$, then what is the ratio $(3a + 5c + 11e) : (3b + 5d + 11f)$?
यदि $a : b = c : d = e : f = 5 : 7$, तो अनुपात $(3a + 5c + 11e) : (3b + 5d + 11f)$ क्या है?

(SSC CGL 2024 Pre)

[A] 7:11

~~[C] 5:7~~

[B] 3:7

[D] 11:7

$$\frac{3a + 5c + 11e}{3b + 5d + 11f} = \frac{5}{7}$$

45. If $\frac{p}{q} = \frac{r}{s} = \frac{t}{u} = \frac{5}{2}$ then find the value of $(ap^3 - br^3 + ct^3)/(aq^3 - bs^3 + cu^3) = ?$

यदि $\frac{p}{q} = \frac{r}{s} = \frac{t}{u} = \frac{5}{2}$ है, तो $(ap^3 - br^3 + ct^3)/(aq^3 - bs^3 + cu^3)$ का मान ज्ञात कीजिए।

[A] 25

[B] $\frac{5}{2}$

[C] $\frac{25}{4}$

[D] 15.625

$$\frac{ap^3 - br^3 + ct^3}{aq^3 - bs^3 + cu^3} = \left(\frac{5}{2}\right)^3 = \frac{125}{8}$$

46. If $\frac{x}{y} = \frac{p}{q} = \frac{r}{s} = \frac{216}{125}$ then find $\frac{\sqrt[3]{x}-2\sqrt[3]{p}+5\sqrt[3]{r}}{\sqrt[3]{y}-2\sqrt[3]{q}+5\sqrt[3]{s}} = ?$

यदि $\frac{x}{y} = \frac{p}{q} = \frac{r}{s} = \frac{216}{125}$ है, तो $\frac{\sqrt[3]{x}-2\sqrt[3]{p}+5\sqrt[3]{r}}{\sqrt[3]{y}-2\sqrt[3]{q}+5\sqrt[3]{s}} = ?$ ज्ञात कीजिए।

(SSC CGL PRE 2021)

[A] $\frac{36}{25}$

[C] 1.2 ✓

[B] $\frac{36}{125}$

[D] 1.3

$= \sqrt[3]{\frac{216}{125}} = \frac{6}{5}$

47. If $\frac{a_1}{b_1} = \frac{a_2}{b_2} = \frac{a_3}{b_3}$ and $\frac{5a_1^2 + 6a_2^2 + 7a_3^2}{5b_1^2 + 6b_2^2 + 7b_3^2} = 9$, then find $\frac{a_1}{b_1} + \frac{a_1a_2}{b_1b_2} + \frac{a_1a_2a_3}{b_1b_2b_3}$?

यदि $\frac{a_1}{b_1} = \frac{a_2}{b_2} = \frac{a_3}{b_3}$ और $\frac{5a_1^2 + 6a_2^2 + 7a_3^2}{5b_1^2 + 6b_2^2 + 7b_3^2} = 9$ है, तो $\frac{a_1}{b_1} + \frac{a_1a_2}{b_1b_2} + \frac{a_1a_2a_3}{b_1b_2b_3}$ ज्ञात कीजिए?

[A] 40

[C] 30

[B] 39

[D] 36

3 + 9 + 27

48. If $a:b = c:d$, then which of the following ratio is equal to $a:c$?
यदि $a:b = c:d$, तो निम्नलिखित में से कौन सा अनुपात $a:c$ के बराबर है?

[A] $a:d$

[B] $b:c$

[C] $a+d:b+c$

[D] $a+b:c+d$

$$\frac{a}{b} = \frac{c}{d}$$

$$\frac{a}{c} = \frac{b}{d} = \frac{a+b}{c+d}$$

50. Find a , if $(x+y+z) \neq 0$ & $\frac{x}{3x+y+z} = \frac{y}{x+3y+z} = \frac{z}{x+y+3z} = 2a$?

a ज्ञात कीजिये, यदि $(x+y+z) \neq 0$ & $\frac{x}{3x+y+z} = \frac{y}{x+3y+z} = \frac{z}{x+y+3z} = 2a$ है?

[A] $1/15$

[B] $1/10$

[C] $1/5$

[D] $\frac{1}{2}$

$$\frac{\cancel{x+y+z}}{5 \cdot (\cancel{x+y+z})} = 2a$$

$$\frac{1}{5} = 2a$$

$$\frac{1}{10} = a$$

51. If $\frac{a}{b+c} = \frac{b}{c+a} = \frac{c}{a+b}$, then which one of the following statements is correct?
यदि $\frac{a}{b+c} = \frac{b}{c+a} = \frac{c}{a+b}$ है, तो निम्नलिखित में से कौन-सा कथन सही है?

(CDS 2019)

[A] Each fraction is equal to 1 or -1 प्रत्येक भिन्न 1 या -1 के बराबर है।

[B] Each fraction is equal to $\frac{1}{2}$ or 1./ प्रत्येक भिन्न $\frac{1}{2}$ या 1 के बराबर है।

[C] Each fraction is equal to $\frac{1}{2}$ or -1./ प्रत्येक भिन्न $\frac{1}{2}$ या -1 के बराबर है।

[D] Each fraction is equal to $\frac{1}{2}$ only./ प्रत्येक भिन्न केवल $\frac{1}{2}$ के बराबर है।

$$\frac{a}{b+c} = \frac{b}{c+a} = \frac{c}{a+b} = \frac{a+b+c}{a+b+c}$$

यदि $a+b+c \neq 0$

$\frac{1}{2}$ ✓

if, $a+b+c=0$

-1 ✓

$x, y, z \in +ve$

52. If $\frac{z}{x-2y} = \frac{2z+x}{2y} = \frac{2x}{z}$, then find the value of $\frac{x+y+z}{z} = ?$

यदि $\frac{z}{x-2y} = \frac{2z+x}{2y} = \frac{2x}{z}$, तो $\frac{x+y+z}{z}$ का मान क्या होगा?

[A] $\frac{35}{16}$

[C] $\frac{44}{18}$

[B] $\frac{37}{12}$

[D] $\frac{41}{12}$

$x : y : z$
 $3 : \frac{7}{6} : 2$

$= 18 : 7 : 12$

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

$\frac{z}{2y} = 3$
 $\Rightarrow y = \frac{z}{6}$

$\frac{x}{z} = \frac{3}{2}$

53. If $\frac{P}{Q} = \frac{Q}{R} = \frac{R}{S} = k$, then what is $\frac{P^3 + Q^3 + R^3}{Q^3 + R^3 + S^3}$ equal to?

यदि $\frac{P}{Q} = \frac{Q}{R} = \frac{R}{S} = k$, तो $\frac{P^3 + Q^3 + R^3}{Q^3 + R^3 + S^3}$ किसके बराबर है?

UPSC CDS (II) 2026

$= k^3 = \frac{P}{Q} \times \frac{Q}{R} \times \frac{R}{S}$

[A] $\frac{P}{S}$

[C] $\frac{S}{P}$

[B] $\frac{R}{Q}$

[D] $\frac{Q}{R}$

49. If $\frac{p}{q} = \frac{r}{s}$, then find $\left(\frac{p+q}{r+s}\right)^2$?

यदि $\frac{p}{q} = \frac{r}{s}$, तो $\left(\frac{p+q}{r+s}\right)^2$ ज्ञात कीजिए?

[A] $\frac{pq}{rs}$ $= \frac{p}{s} \times \frac{q}{r}$

[B] $\frac{pr}{qs}$

[C] $\left(\frac{p-r}{q-s}\right)^2$

[D] 1

$$\frac{p}{q} = \frac{r}{s} = \frac{p+r}{q+s}$$

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54. If $p - q : q - r : r - s = 3 : 4 : 7$, then what is the value of $(p + s) : r$?

यदि $p - q : q - r : r - s = 3 : 4 : 7$ है, तो $(p + s) : r$ का मान क्या है?

(SSC GD 2026)

[A] 2:1

[B] 1:2

[C] 3:1

[D] 1:3

$$\textcircled{3} + \textcircled{4} = \textcircled{7}$$

$$p - r = r - s$$

$$p + s = 2r$$

$$\frac{p + s}{r} = \frac{2}{1}$$