

PROPORTION

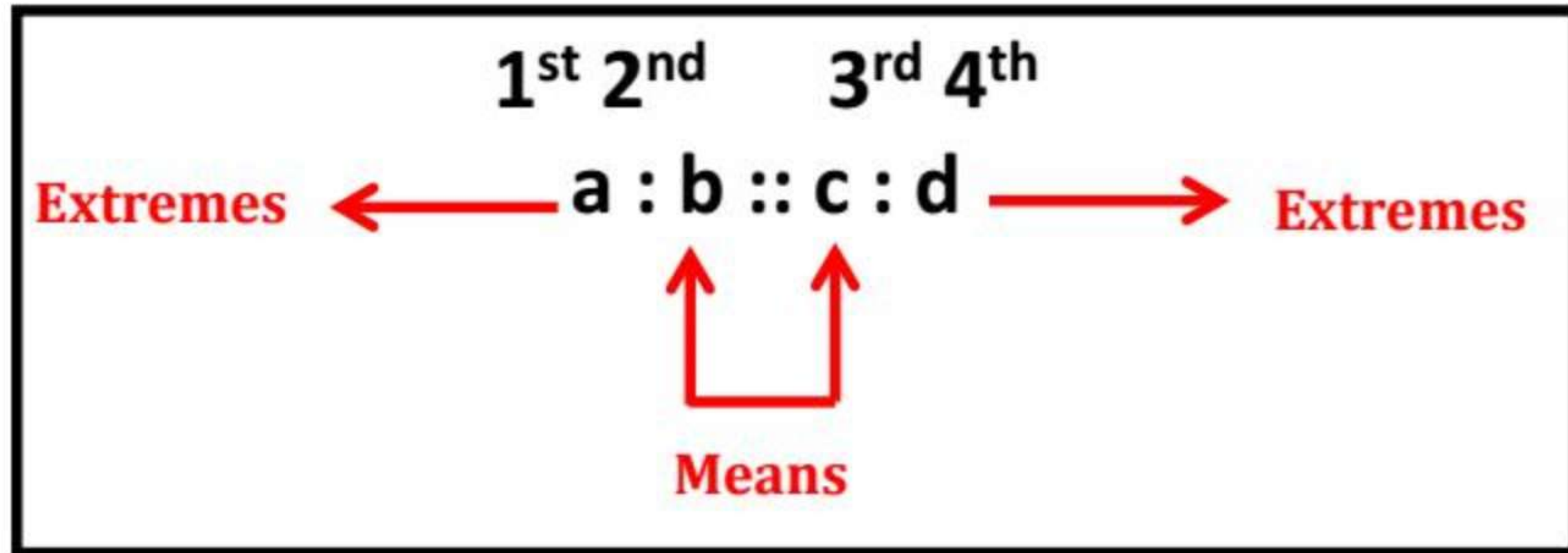
समानुपात

Class Notes by Aditya Ranjan Sir

Definition – When two ratios are equal they are said to be in proportion

If $a:b = c:d$ Then $a:b::c:d$

This is expressed by saying that a is to b as c is to d, and proportion is written as



✓✓

$$a:b = c:d$$

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

$$a:b::c:d$$

↓
-proportion

i) 4 numbers $\rightarrow$ 3 numbers given, 1 number = ?

ii) 3 numbers $\rightarrow$ 2 " " , 1 number = ?

iii) add / subtract = ?

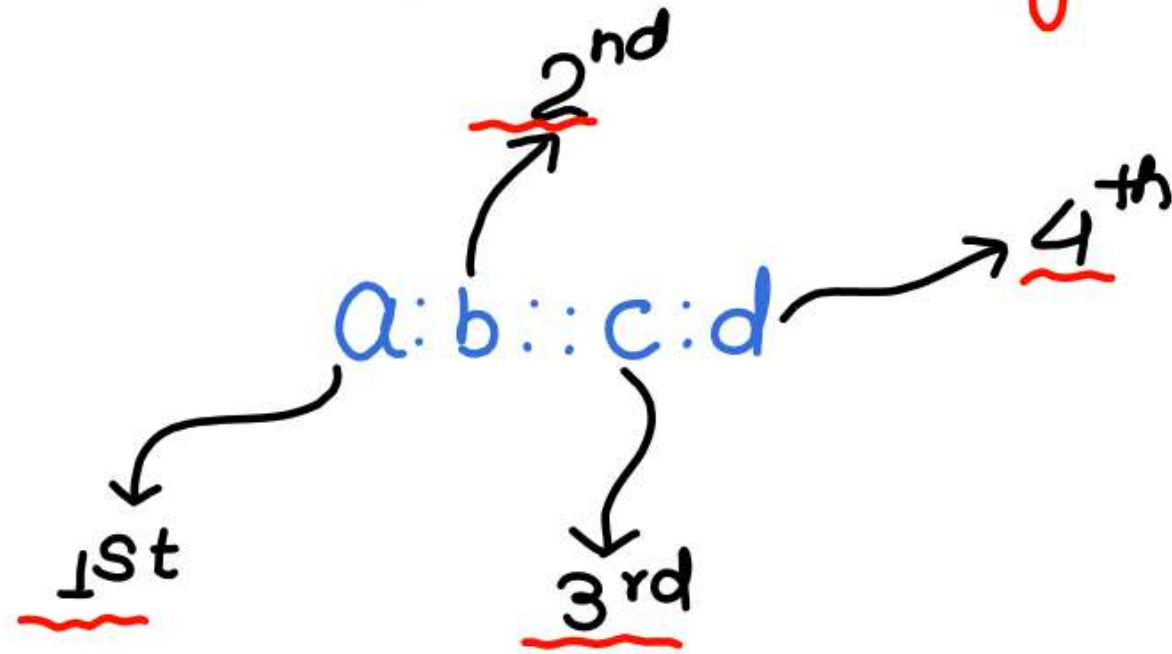
If four quantities are in proportion, the product of the extremes is equal to that of the means.

$$**a:b :: c:d**$$

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

$$**ad=bc**$$

i) 4 numbers - 3 numbers are given = ?



1st proportion

$$a : b :: c : d$$

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

$$\Rightarrow a = \frac{bc}{d}$$

Q. Find 1st proportion of 3, 4 and 6.

Ans $x : 3 :: 4 : 6$

$$\frac{x}{\cancel{3}} = \frac{\cancel{4} 2}{\cancel{6} 2}$$

$$x = 2$$

$$x : 3 :: 4 : 6$$

$$x = 2$$

**When Three
Numbers are given**

First Proportion

A diagram showing the proportion $x : 6 :: 12 : 24$. The terms are arranged in two pairs: x and 6 on the left, and 12 and 24 on the right. Green arrows point from x to 24 and from 6 to 12 , representing the cross-products. Blue arrows point from 12 to 6 and from 24 to x , representing the division to solve for x .

$$x = \frac{12}{4} \times 3$$

1. The first proportional of three numbers 6, 12 and 24 is :

तीन संख्याएँ 6, 12 और 24 का प्रथम अनुपात क्या होगा?

(a) 3
(c) 7

(b) 4
(d) 6

$$\therefore x = 3$$

Q. find 1st proportion of 7, 24 and 25.

Ans

$$\underline{x} : \underline{7} :: \underline{24} : \underline{25}$$

$$\Rightarrow \frac{x}{7} = \frac{24}{25}$$

$$\Rightarrow x = \frac{168}{25} \checkmark$$

2nd Proportion

$$a : \textcircled{b} :: c : d$$

↗ 2nd

$$\frac{a}{b} = \frac{c}{d}$$
$$\Rightarrow \textcircled{\frac{ad}{c} = b}$$

Q. Find 2nd proportion of 6, 8, 10.

Ans

$$\underline{6} : \underline{x} :: \underline{8} : \underline{10}$$

$$3 \frac{\cancel{6}}{x} = \frac{\cancel{8}}{\cancel{10}} \times \frac{2}{5}$$

$$\Rightarrow \textcircled{\frac{15}{2} = x}$$

Second Proportion

$$\underline{28} : \underline{x} :: \underline{4} : \underline{5}$$

Diagram showing cross-multiplication: a green arrow from 28 to 5 is labeled $\times 11$, and a green arrow from 4 to x is labeled $\times 11$.

$$x = 35$$

2. The second proportional of three numbers

28, 4 and 5 is :

तीन संख्याएँ 28, 4 और 5 का द्वितीय अनुपात क्या होगा?

(a) 39

(b) 48

✓ (c) 35

(d) 40

Q. Find 2nd proportion of 4, 7 and, 8

Ans

$$\underline{4} : \underline{x} :: \underline{7} : \underline{8}$$

$$\Rightarrow \frac{4}{x} = \frac{7}{8}$$
$$\Rightarrow \frac{32}{7} = x$$

3rd proportion

$$a : b :: \textcircled{c} : d$$

↗ 3rd

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

$$\Rightarrow \textcircled{\frac{ad}{b} = c}$$

Q. Find 3rd proportion of 8, 9, 10

Ans

$$\underline{8} : \underline{9} :: \underline{x} : \underline{10}$$

$$\frac{8}{9} = \frac{x}{10}$$

$$\Rightarrow \textcircled{\frac{80}{9} = x}$$

Third Proportion

A diagram showing the proportion $2 : 3 :: x : 15$. Red arrows indicate the relationship between the terms: an arrow from 2 to x is labeled 'x5', and an arrow from 3 to 15 is also labeled 'x5'.

3. The third proportional of three numbers

2, 3 and 15 is :

तीन संख्याएँ 2, 3 और 15 का तृतीय अनुपात क्या होगा?

☒ (a) 10

(b) 20

(c) 30

(d) 40

Q. Find 3rd proportion of 11, 12, 13.

Ans

$$\underline{11} : \underline{12} :: \underline{x} : \underline{13}$$

$$\Rightarrow \frac{11}{12} = \frac{x}{13}$$

$$\Rightarrow \frac{143}{12} = x$$

4th proportion

$$a : b :: c : \textcircled{d} \xrightarrow{4^{\text{th}}}$$

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

$$\Rightarrow \textcircled{d = \frac{bc}{a}}$$

Q. find 4th proportion of 9, 17, 3

Ans

$$\underline{9} : \underline{17} :: \underline{3} : \underline{x}$$

$$\Rightarrow \frac{3 \cancel{x}}{17} = \frac{\cancel{3}}{x}$$

$$\Rightarrow \textcircled{x = \frac{17}{3}}$$

Fourth Proportion

$$\underline{7} : \underline{16} :: \underline{21} : \underline{x}$$

$\overset{\times 3}{\curvearrowright}$
 $\underset{\times 3}{\curvearrowleft}$

$x = 48$

4. The fourth proportional to 7, 16, 21 is:
7, 16, 21 का चतुर्थानुपाती है।

ICAR MAINS, 10/07/2023 (Shift-1)

(a) 54

(c) 45

(b) 48

(d) 51

5. The fourth proportional to the numbers 5, 6 and 8 is:

संख्याओं 5, 6 और 8 का चतुर्थानुपाती क्या है?

SSC CHSL 24/05/2022 (Shift-03)

$$\underline{5} : \underline{6} :: \underline{8} : \underline{x}$$

$$\Rightarrow \frac{5}{6} = \frac{8}{x}$$

$$\Rightarrow x = \frac{48}{5} = 9.6$$

(a) 9.8

(c) 9

✓ (b) 9.6

(d) 9.5

6. The fourth proportional to 5, 8 and 30 is:

5, 8 और 30 का चौथा समानुपाती क्या होगा?

SSC CHSL 27/05/2022 (Shift- 01)

(a) 50

(b) 60

☒ (c) 48

(d) 90

$$\underline{5} : \underline{8} :: \underline{30} : \underline{x}$$

$$x = 8 \times 6 = 48$$

$$\underline{2 : 5 :: 6 : x}$$

Diagram showing cross-multiplication: $2 \times x = 5 \times 6$

$x = 15$

7.

$$\underline{6 : 8 :: 9 : y}$$

$$\cancel{2} \cancel{6} = \cancel{9} 3$$

$y = 12$

$x : y$
 $\cancel{18} : \cancel{12}$
 $3 : 4$

What is the ratio of the fourth proportional of 2, 5, 6 and the fourth proportional of 6, 8, 9?

2, 5, 6 के चतुर्थानुपाती और 6, 8, 9 के चतुर्थानुपाती का अनुपात क्या है?

SSC CGL 02/12/2022 (Shift- 03)

(a) 3 : 2

(b) 5 : 3

(c) 3 : 4

✓ (d) 5 : 4

8. What is the fourth proportional of

$$\underline{\frac{1}{72}} : \underline{\frac{1}{168}} :: \underline{\frac{1}{150}} : \underline{x}$$

$$\frac{\frac{1}{72}}{\frac{1}{168}} = \frac{\frac{1}{150}}{\frac{x}{1}}$$

$$\frac{1 \times 168}{1 \times 72} = \frac{1}{x \times 150}$$

$$\Rightarrow x = \frac{1}{350}$$

$$\frac{1}{72}, \frac{1}{168}, \frac{1}{150} ?$$

$\frac{1}{72}, \frac{1}{168}, \frac{1}{150}$ का चतुर्थानुपाती क्या है?

SSC Phase X 02/08/2022 (Shift-02)

(a) $\frac{1}{250}$

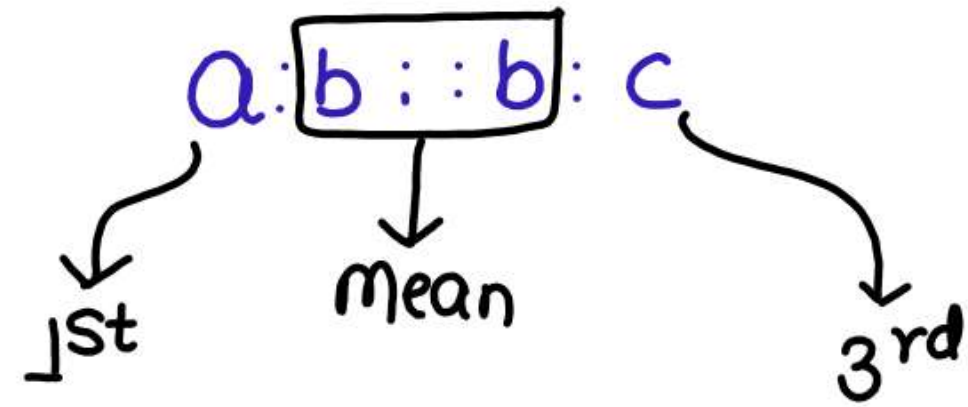
(b) $\frac{1}{275}$

(c) $\frac{1}{375}$

✓ (d) $\frac{1}{350}$

**When Two Numbers
are given**

when 2 numbers are given



1st proportion

$$a:b::b:c$$

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

$$\Rightarrow \boxed{a = \frac{b^2}{c}}$$

Q. Find first proportion of 2, 3.

Ans

$$x : \underline{2} :: \underline{2} : \underline{3}$$

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

$$\Rightarrow \boxed{x = \frac{4}{3}}$$

When two numbers are given (first proportion)

9. The first proportional of two numbers 3 and 5 is :

$$\underline{x} : \underline{3} :: \underline{3} : \underline{5}$$

$$\Rightarrow \frac{x}{3} = \frac{3}{5}$$

$$\Rightarrow x = \frac{9}{5} = 1.8$$

दो संख्याएँ 3 और 5 का प्रथम अनुपात क्या होगा?

(a) 1.6

(c) 1.2

☒ (b) 1.8

(d) 1.4

MEAN PROPORTION

Mean Proportion

$$a : \underbrace{b :: b} : c$$

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

$$\Rightarrow \textcircled{ac = b^2}$$

$$\Rightarrow \textcircled{b = \sqrt{ac}}$$

Q. Find mean proportion of 9 and 16.

ans

$$\begin{aligned} \text{m.p} &= \sqrt{9 \times 16} \\ &= 3 \times 4 \\ &= \textcircled{12} \end{aligned}$$

If three quantities a , b and c are in continued proportion, then

$$a : b :: b : c$$

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

$$b^2 = ac,$$

$$\text{Therefore } b = \sqrt{ac}$$

b is said to be a mean proportional between a and c , and a, c are respectively said to be first and third proportional to b .

Mean Proportion

10. Find the mean proportion of 3 and 27.

3 और 27 का मध्यानुपाती (mean proportion)
ज्ञात कीजिए।

SSC CHSL 24/05/2022 (Shift-02)

(a) 5

(b) 10

(c) 6

(d) 9

$$\begin{aligned} \text{m.p} &= \sqrt{3 \times 27} \\ &= \sqrt{81} \\ &= 9 \end{aligned}$$

MEAN PROPORTION

$$\begin{aligned}\text{Ans} &= \sqrt{144 \times 225} \\ &= 12 \times 15 \\ &= \underline{180}\end{aligned}$$

11. Find the mean proportional between 144 and 225.

144 और 225 के बीच का मध्यानुपाती ज्ञात कीजिए।

SSC CHSL 31/05/2022 (Shift- 02)

(a) $\frac{4}{5}$

(b) $\frac{27}{2}$

✓ (c) 180

(d) $\frac{5}{4}$

m-1

$$m.p = \sqrt{\frac{(a^3+b^3)}{(a-b)} \times \frac{(a^2-b^2)}{(a^2-ab+b^2)}}$$

$$= \sqrt{\frac{(a+b)\cancel{(a^2+b^2-ab)}}{\cancel{(a-b)}} \times \frac{\cancel{(a-b)}(a+b)}{\cancel{(a^2-ab+b^2)}}}$$

$$= \sqrt{(a+b)^2}$$

$$= (a+b)$$

12.

Find the mean proportion of $\frac{a^3+b^3}{a-b}$ and

$$\frac{a^2-b^2}{a^2-ab+b^2}.$$

$\frac{a^3+b^3}{a-b}$ और $\frac{a^2-b^2}{a^2-ab+b^2}$ का मध्यानुपाती ज्ञात कीजिए।

SSC CGL 06/12/2022 (Shift- 03)

(a) 1

(b) ☒ $a+b$

(c) $\frac{a+b}{a-b}$

(d) $\sqrt{a+b}$

$a=2$ $b=1$

12. Find the mean proportion of $\frac{a^3 + b^3}{a - b}$ and

$$\frac{a^2 - b^2}{a^2 - ab + b^2}.$$

$$\left(\frac{8+1}{1}\right), \frac{(4-1)}{(4-2+1)}$$

$$= 9, 1$$

$$m.p = \sqrt{9 \times 1} = 3$$

$\frac{a^3 + b^3}{a - b}$ और $\frac{a^2 - b^2}{a^2 - ab + b^2}$ का मध्यानुपाती ज्ञात कीजिए।

SSC CGL 06/12/2022 (Shift- 03)

(a) 1

1

(b) $a + b$

$(2+1)$

(c) $\frac{a+b}{a-b} = \frac{2+1}{2-1} = \frac{3}{1}$

(d) $\sqrt{a+b}$

$\sqrt{2+1}$

$a=4$ $b=1$

12. Find the mean proportion of $\frac{a^3 + b^3}{a - b}$ and

$$\frac{a^2 - b^2}{a^2 - ab + b^2}.$$

$\frac{a^3 + b^3}{a - b}$ और $\frac{a^2 - b^2}{a^2 - ab + b^2}$ का मध्यानुपाती ज्ञात कीजिए।

SSC CGL 06/12/2022 (Shift- 03)

(a) 1

(b) $a + b$ s

(c) $\frac{a + b}{a - b} \cdot \frac{s}{3}$

(d) $\sqrt{a + b}$ $\sqrt{s}$

Handwritten solution:

$$\begin{aligned} \text{m.p.} &= \sqrt{s \cdot \frac{6s}{3} \times \frac{1s}{13} s} \\ &= \sqrt{2s} \\ &= \textcircled{s} \end{aligned}$$

An arrow points from the circled 's' to the fraction $\frac{1s}{13}$ in the expression above.

$b=0$

12. Find the mean proportion of $\frac{a^3 + b^3}{a - b}$ and

$$\frac{a^2 - b^2}{a^2 - ab + b^2}.$$

$\frac{a^3}{a}$ और $\frac{a^2}{a^2}$ का मध्यानुपाती ज्ञात कीजिए।

SSC CGL 06/12/2022 (Shift- 03)

(a) 1

(b) a

(c) ~~$\frac{a}{a}$~~

(d) $\sqrt{a}$

$Q^2, 1$
 $m.p = \sqrt{Q^2 \times 1} = Q$

13. If A is the mean proportion of 24 and 6. B is the mean proportion of 81 and 9. Find the value of $3A + B$.

यदि A, 24 और 6 का माध्य अनुपात है। B, 81 और 9 का माध्य अनुपात है। $3A + B$ का मान ज्ञात कीजिए।

SSC MTS 09/05/2023 (Shift-03)

$$\left. \begin{aligned} A &= \sqrt{24 \times 6} \\ &= \sqrt{6 \times 4 \times 6} \\ &= 6 \times 2 \\ &= 12 \end{aligned} \right\} \begin{aligned} B &= \sqrt{81 \times 9} \\ &= 9 \times 3 \\ &= 27 \end{aligned}$$

(a) 33
(c) 63

(b) 32
(d) 55

$$\begin{aligned} \therefore 3A + B &= 36 + 27 \\ &= 63 \end{aligned}$$

3rd proportion

$$\underline{a} : \underline{b} :: \underline{b} : \underline{c}$$

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

$$\Rightarrow \textcircled{c = \frac{b^2}{a}}$$

Q. Find 3rd proportion of 4 and 5

Ans

$$\underline{4} : \underline{5} :: \underline{5} : \underline{x}$$

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

$$\Rightarrow x = \frac{25}{4}$$

Third PROPORTION

14. The third proportional to 32 and 40 is:

32 और 40 का तीसरा समानुपाती कितना होगा?

ICAR MAINS, 10/07/2023 (Shift-2)

(a) 56

(b) 48

(c) 42

(d) 50

$$\begin{aligned} \text{Ans} &= \frac{40^2}{32} \\ &= \frac{40 \times 40}{32} \\ &= \frac{10 \times 10}{4} \\ &= 25 \end{aligned}$$

So

15. What is the third proportion to 15 and 24?

15 और 24 का तृतीयानुपात क्या है?

SSC CHSL 24/05/2022 (Shift- 01)

$$\begin{aligned} \text{ans} &= \frac{24^2}{15} \\ &= \frac{24 \times \cancel{24}^8}{\cancel{15}^5} \\ &= \frac{192}{5} \\ &= 38\frac{2}{5} \end{aligned}$$

(a) $38\frac{4}{5}$

(b) $37\frac{2}{5}$

✓ (c) $38\frac{2}{5}$

(d) $37\frac{4}{5}$

$$\left. \begin{array}{l} 3^{\text{rd}} = 27 \\ \frac{x^2}{3} = 27 \\ \Rightarrow x^2 = 81 \\ \Rightarrow \boxed{x = 9} \end{array} \right\} \begin{array}{l} 3^{\text{rd}} = 8 \\ \frac{y^2}{2} = 8 \\ \Rightarrow y^2 = 16 \\ \Rightarrow \boxed{y = 4} \end{array}$$

$$\begin{array}{l} x:y \\ 9:4 \end{array}$$

16. If the third proportion of 3 and x is 27 and the third proportion of 2 and y is 8, then find $x : y$.

यदि 3 और x का तृतीय अनुपात 27 है और 2 और y का तृतीय अनुपात 8 है, तो $x : y$ ज्ञात करें।

SSC MTS 03/05/2023 (Shift-02)

(a) 7 : 9

(b) 4 : 5

(c) 3 : 7

(d) 9 : 4

SOME MIX TCS QUESTIONS

4th = ? 12, 24, 24

$$\frac{12}{24} :: \frac{24}{x}$$

$x = 54$

A, 36

$$A : 36 :: 36 : 54$$

$$12 \frac{A}{36} = \frac{36}{54} \frac{2}{3}$$

$$A = 24 \checkmark$$

17. The fourth proportion to 12, 24 and 27 is the same as the third proportion to A and 36. What is the value of A?

12, 24 और 27 का चतुर्थानुपात, A और 36 के तृतीयानुपात के बराबर है। A का मान ज्ञात कीजिए।

SSC CGL 05/12/2022 (Shift- 03)

- (a) 22
(c) 26

- (b) 24
(d) 20

8, 20

$$8 : 20 :: 20 : p$$

$$\frac{8}{20} = \frac{20}{p}$$

$$p = 50$$

3, 5, 24

$$3 : 5 :: 24 : Q$$

$$Q = 40$$

$$\begin{aligned} 2p + Q \\ = 100 + 40 \\ = 140 \end{aligned}$$

18. If p is the third proportional to 8, 20 and q is the fourth proportional to 3, 5, 24, then find the value of $(2p + q)$.

यदि 8, 20 का तृतीयानुपाती p है और 3, 5, 24 का चतुर्थानुपाती q है, तो $(2p + q)$ का मान ज्ञात कीजिए।

SSC CGL 11/04/2022 (Shift- 03)

- ✓ (a) 140
(c) 90

- (b) 126
(d) 104

$$\begin{aligned} \text{m.p.} &= \sqrt{1.8 \times 3.2} \\ &= \sqrt{\frac{18 \times 32}{100}} = \sqrt{\frac{9 \times 64}{100}} = \frac{3 \times 8}{10} \\ &= \underline{\underline{2.4}} \end{aligned}$$

$$\underline{5} : \underline{3} :: \underline{3} : \underline{x}$$

$$\frac{5}{3} = \frac{3}{x}$$

$$\Rightarrow x = \frac{9}{5} = 1.8$$

$$\text{Ans} = 2.4 - 1.8 = \underline{\underline{0.6}}$$

19. What is the difference in the mean proportional between 1.8 and 3.2 and the third proportional to 5 and 3?

1.8 और 3.2 के बीच मध्यानुपात और 5 और 3 के तृतीयानुपात में अंतर ज्ञात करें।

SSC CGL 17/08/2021(Shift- 02)

- (a) 0.6
(c) 0.5

- (b) 0.4
(d) 0.7

✓
P.G.W
20. Find the ratio between the fourth proportional of 12, 16, 6 and the third proportional of 4, 6.

12, 16, 6 के चतुर्थानुपात और 4, 6 के तृतीयानुपात के मध्य अनुपात ज्ञात करें।

SSC CGL 18/08/2021(Shift- 01)

(a) 11 : 5

(b) 3 : 2

(c) 4 : 3

(d) 8 : 9

$$2y-1 : 6 :: 6 : 12$$

$$2y-1=3$$

$$\Rightarrow 2y = 4 \quad \therefore y=2$$

$$2x+7 : 5 :: 39 : 15$$

$$2x+7=13$$

$$\Rightarrow 2x = 6$$

$$x=3$$

$$x+2y = 3+4 = 7$$

21. If the third proportion to $2y - 1$ and 6 is 12 and the fourth proportion to $2x + 7$, 5 and 39 is 15, then find the value of $x + 2y$.

यदि $2y - 1$ और 6 का तीसरा अनुपात 12 है और $2x + 7$, 5 और 39 का चौथा अनुपात 15 है, तो $x + 2y$ का मान ज्ञात कीजिए।

CRPF HCM 01/03/2023 (Shift - 02)

(a) 3

(b) 5

☒ (c) 7

(d) 4

$$39 : 117 :: 17 : y$$

Handwritten diagram showing the proportion $39 : 117 :: 17 : y$. An arrow labeled $\times 3$ points from 39 to 117. Another arrow labeled $\times 3$ points from 17 to y .

$$y = 51$$

Handwritten solution $y = 51$ circled in blue.

22. If the four numbers, 39, 117, 17 and y are in proportion, then find the value of y

यदि चार संख्याएँ, 39, 117, 17 और y समानुपात में हैं, तो y का मान ज्ञात कीजिए।

CGL PRE, 14/07/2023 (Shift-1)

(a) 49

(c) 57

(b) 51

(d) 85

①. Add

a, b, c, d

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

②. Subtract

a, b, c, d

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

$$x = \left| \frac{ad - bc}{(a+d) - (b+c)} \right|$$

PROPORTION AFTER ADDITION OR SUBTRACTION

4, 10, 12, 24

$$x = \frac{4 \times 24 - 10 \times 12}{28 - 22}$$

$$= \frac{-24}{6}$$

$$= 4$$

23. Which number should be added in 4, 10, 12 and 24 each to make these numbers in proportion.

4, 10, 12, 24 में प्रत्येक में कौन सी संख्या जोड़ी जानी चाहिए जिससे परिणामी संख्याएँ समानुपातिक हो?

(a) 9

(b) 3

(c) 6

(d) 4

PROPORTION AFTER ADDITION OR SUBTRACTION

① $\frac{4+9}{10+9} \quad \frac{12+9}{24+9}$

$\frac{13}{19} \neq \frac{21}{33} = \frac{7}{11}$

② $\frac{4+4}{10+4} \quad \frac{12+4}{24+4}$
 $\frac{4}{7} \neq \frac{8}{28} = \frac{2}{7}$

23. Which number should be added in 4, 10, 12 and 24 each to make these numbers in proportion.

4, 10, 12, 24 में प्रत्येक में कौन सी संख्या जोड़ी जानी चाहिए जिससे परिणामी संख्याएँ समानुपातिक हो?

(a) 9

(b) 3

(c) 6

✓ (d) 4

6, 7, 15, 17

$$x = \left| \frac{6 \times 17 - 7 \times 15}{23 - 22} \right|$$

$$= \left| \frac{102 - 105}{1} \right| = \textcircled{3}$$

24. Which number when added to each of the numbers 6, 7, 15, 17 will make the resulting numbers proportional.

किस संख्या को 6, 7, 15, 17 के प्रत्येक संख्या में जोड़ा जाए की चारों संख्याएँ समानुपातिक हो जाए?

(a) 5

(c) 6

(b) 3

(d) 4

14, 36, 20, 54

$$\text{ans} = \left| \frac{14 \times 54 - 36 \times 20}{68 - 56} \right|$$

$$= \left| \frac{\overset{7}{\cancel{14}} \times \overset{9}{\cancel{54}} - \overset{3}{\cancel{36}} \times \overset{2}{\cancel{20}}}{\underset{2}{\cancel{12}} - \underset{2}{\cancel{12}}} \right|$$

$$= |63 - 60|$$

$$= \textcircled{3}$$

25. What is the least number subtracted from 14, 36, 20 and 54 so that these numbers become proportional?

14, 36, 20, 54 में प्रत्येक पद में से कम-से-कम क्या घटाया जाए कि ये संख्याएँ समानुपाती हो जाएं?

✓ (a) 3
(c) 4

(b) 2

(d) 5

24, 31, 29, 37

$$\begin{aligned}
 x &= \left| \frac{24 \times 37 - 31 \times 29}{64 - 60} \right| \\
 &= \left| \frac{899 - 899}{4} \right| \\
 &= \frac{100}{4} \text{ (25)}
 \end{aligned}$$

26. What number should be subtracted from each of the numbers 27, 31, 29 and 37 so that the remainders are proportional?

संख्याओं 27, 31, 29 और 37 में से प्रत्येक से कौन-सी संख्या घटाई जाए कि प्राप्त शेष संख्याएं समानुपाती हो

ICAR MAINS, 08/07/2023 (Shift-2)

(a) 25
(c) 30

(b) 27
(d) 20

24, 40, 33, 57

$$x = \left| \frac{\overset{3}{\cancel{24}} \times 57}{\cancel{8}} - \frac{\overset{5}{\cancel{40}} \times 33}{\cancel{8}} \right|$$

$$= |171 - 165| = \textcircled{6}$$

$$\therefore \frac{5x+12}{4x+15} = \frac{\cancel{42}}{\cancel{39}} \frac{14}{13}$$

27. If x is subtracted from each of 24, 40, 33 and 57, the numbers, so obtained are in proportion. The ratio of $(5x + 12)$ to $(4x + 15)$ is

24, 40, 33 और 57 में से प्रत्येक से x घटाने पर प्राप्त संख्याएं समानुपात में हैं। $(5x + 12)$ और $(4x + 15)$ का अनुपात ज्ञात करें।

SSC CGL 23/08/2021(Shift- 02)

(a) 4 : 3

(c) 7 : 4

(b) 14 : 13

(d) 7 : 5

54, 49, 22, 21

$$x = \left| \frac{\overset{21}{\cancel{54} \times \cancel{21}} - \overset{11}{\cancel{49} \times \cancel{22}}}{\cancel{42} - \cancel{42}} \right|$$

$$= \left| \frac{567 - 539}{2} \right|$$

$$= \textcircled{14}$$

$$\frac{8x-25}{7x-26} = \frac{112-25}{98-26} = \frac{87}{72} = \frac{29}{24}$$

28. When x is subtracted from each of the numbers 54, 49, 22 and 21, the numbers so obtained are in proportion. The ratio of $(8x - 25)$ to $(7x - 26)$ is:

संख्याओं 54, 49, 22 और 21 में से प्रत्येक से x को घटाने पर प्राप्त संख्याएं समानुपात में हैं। $(8x - 25)$ और $(7x - 26)$ का अनुपात ज्ञात करें।

SSC CGL 23/08/2021(Shift- 03)

✓ (a) 29 : 24

(b) 15 : 13

(c) 27 : 26

(d) 5 : 4

2, 3, 30, 35

$$x = \left| \frac{2 \times 35 - 3 \times 30}{37 - 33} \right|$$

$$= \left| \frac{-90^S}{4} \right| = \textcircled{5}$$

$$\text{Ans} = \sqrt{12 \times 3} = \textcircled{6}$$

29. When x is added to each of 2, 3, 30 and 35, then the numbers obtained in this order, are in proportion. What is the mean proportional between $(x + 7)$ and $(x - 2)$?

जब x को 2, 3, 30 और 35 में जोड़ा जाता है तो इस क्रम में प्राप्त होने वाली संख्याएँ समानुपात में है। $(x + 7)$ तथा $(x - 2)$ के बीच मध्य समानुपाती ज्ञात करें।

SSC CGL, Tier II 11/09/2019

(a) 7

(b) 4

(c) 6

(d) 5

30.H.W

What number must be added to each of the number 8, 13, 26 and 40 so that the number obtained in this order are in proportion?

किस संख्या को 8, 13, 26 और 40 में जोड़ा जाना चाहिए ताकि इस क्रम में प्राप्त संख्याएँ समानुपात में हो?

SSC CHSL, 16/10/2020 (Shift- 02)

(a) 2

(b) 3

(c) 1

(d) 4