

Ratio

1. $A : B = 3 : 4$

$$B : C = 8 : 9$$

Find $A : C$

$$\frac{A}{B} = \frac{3}{4}$$

$$\frac{B}{C} = \frac{8}{9}$$

$$\frac{A}{B} \times \frac{B}{C} = \frac{A}{\cancel{B}} \times \frac{\cancel{B}}{9 \times 3} = \frac{2}{3}$$

$$A : C = 2 : 3$$

2. Out of daily income of ₹ 120, a labourer spends ₹ 90 on food and shelter and saves the rest. Find the ratio of his

(i) Spending to income

(ii) Savings to income

$$\text{Income} = ₹ 120$$

$$\text{Spending} = ₹ 90$$

$$\text{Savings} = ₹ 120 - ₹ 90 = ₹ 30$$

(i) Ratio of spending to income

$$= ₹ 90 : ₹ 120$$

$$= \frac{₹ 90}{₹ 120}$$

$$= \frac{90}{120}$$

$$= \frac{3}{4}$$

$$= 3 : 4 \text{ Ans}$$

(ii) Savings : Income = ₹ 30 : ₹ 120

$$= \frac{30}{120} = \frac{1}{4} = 1 : 4$$

(3) Heights of Anshul and Dhruva are 1.04m and 78cm respectively.

Divide 35 sweets between them in the ratio of their heights

$$\begin{aligned} \text{Height of Anshul} &= 1.04\text{m} \\ &= 104\text{cm} \end{aligned}$$

$$\text{'' '' Dhruva} = 78\text{cm}$$

Ratio of Anshul and Dhruva

$$= 104\text{cm} : 78\text{cm}$$

$$= \frac{104}{78}$$

$$= \frac{4}{3}$$

$$= 4:3$$

Sum of the terms of ratio = $4+3=7$

$$\text{Anshul gets} = \frac{4}{7} \times 35$$

$$= 20$$

$$\text{Dhruva gets} = \frac{3}{7} \times 35$$

$$= 15$$

Ans: - Anshul gets = 20 sweets

Dhruva " = 15 "

④ A certain sum of money has been divided into two parts in the ratio 9:13. If the 2nd part is ₹260 find the total amount.

Let 1st part be $9x$ [x = constant]
 " 2nd " " $13x$

A/q $13x = 260$
 $x = \frac{260}{13} = 20$

1st part = $9x$
 $= 9 \times 20$
 $= ₹180$

Ans : total part = ₹ $(260 + 180)$
 $= ₹440$

⑤ The ratio of the present age of Anjali and Ashu is 2:3. Five years hence, the ratio of their ages will be 3:4.

Find their present ages.

Let present age of Anjali = $2x$ yrs

" " " " Ashu = $3x$ "

After five year Anjali's age will be = $2x + 5$

" " " " Ashu's " = $(3x + 5)$

A/q $\frac{2x+5}{3x+5} = \frac{3}{4}$

Anjali's age = 2×5
 $= 10$ yrs

Ashu's age = 3×5
 $= 15$ yrs

4 $(2x + 5) = 3(3x + 5)$

$\Rightarrow 8x + 20 = 9x + 15$

$8x - 9x = 15 - 20 \Rightarrow -x = -5$
 $x = 5$

(6) The present age of A and B are in the ratio 5:6.

Three years ago, their age ~~were~~ were in the ratio 4:5.

Find their present age.

Let a present age of A = $5x$ years

" " " B = $6x$ years

3 years ago age of A was = $(5x-3)$ yrs

3 " " " B " = $(6x-3)$ yrs

A/Q

$$\frac{5x-3}{6x-3} = \frac{4}{5}$$

$$5(5x-3) = 4(6x-3)$$

$$\Rightarrow 25x - 15 = 24x - 12$$

$$\Rightarrow 25x - 24x = 15 - 12$$

$$\therefore x = 3$$

~~Present age of A = $5x = 5 \times 3 = 15$ yrs~~

~~" " " B = $6x = 6 \times 3 = 18$ yrs~~

Present age of A = $5 \times 3 = 15$ yrs

" " " B = $6 \times 3 = 18$ yrs

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$$A : B = 5 : 8$$

$$B : C = 18 : 25$$

Find $A : B : C$

$$A : B = 5 : 8 \quad \text{--- (1)}$$

$$B : C = 18 : 25 \quad \text{--- (2)}$$

values of B respectively 8, 18

L-CM of 8, 18

$$\begin{array}{r} 2 \overline{) 8, 18} \\ 4 \overline{) 9} \end{array}$$

$$\begin{aligned} \text{LCM} &= 2 \times 4 \times 9 \\ &= 72 \end{aligned}$$

$$\begin{aligned} A : B &= 5 : 8 \quad | \times 9 \\ &= 45 : 72 \end{aligned}$$

$$\begin{aligned} B : C &= 18 : 25 \quad | \times 4 \\ &= 72 : 100 \end{aligned}$$

$$\therefore A : B : C = 45 : 72 : 100 \quad \underline{\text{Ans}}$$

8) ₹ 180 is divided among three children in the ratio $\frac{1}{3} : \frac{1}{4} : \frac{1}{6}$. Find the share of each child.

$$\text{Given ratio} = \frac{1}{3} : \frac{1}{4} : \frac{1}{6}$$

L.C.M of 3, 4, 6

$$\begin{array}{r} 2 \overline{) 3, 4, 6} \\ 3 \overline{) 3, 2, 3} \\ 1 \overline{) 2, 1} \end{array}$$

$$\begin{aligned} \text{L.C.M} &= 2 \times 3 \times 2 \\ &= 12 \end{aligned}$$

$$\frac{1}{3} : \frac{1}{4} : \frac{1}{6}$$

$$= \frac{1}{3} \times 12 : \frac{1}{4} \times 12 : \frac{1}{6} \times 12$$

$$= 4 : 3 : 2$$

Sum of the terms of ratio

$$= 4 + 3 + 2$$

$$= 9$$

$$\text{1st child gets} = \frac{180 \times 4}{9}$$

$$\text{2nd child gets} = \frac{180 \times 3}{9} = ₹ 60$$

$$\text{3rd child gets} = \frac{180 \times 2}{9} = ₹ 40$$

Ans