

Exercise - 9.1

1. (i) Yes, As both are quantities
- (ii) No, As one is weight and other is quantity
- (iii) No, As one is time and other is distance covered.
- (iv) Yes, As both are quantities.
- (v) No, As one is length and other is temperature.

2) (i) $\frac{12}{24} = \frac{1}{2}$ Ratio 1:2

(ii) $\frac{78}{13} = \frac{6}{1}$ Ratio 6:1

$$2(ii) \frac{\text{₹} 54}{\text{₹} 6.75} = \frac{8}{1} \quad \text{Ratio} = 8:1$$

$$(iv) \frac{12g}{15g} = \frac{4}{5} \quad \text{Ratio } 4:5$$

$$(v) \frac{36L}{54L} = \frac{2}{3} \quad \text{Ratio } 2:3$$

$$(vi) \frac{950m}{95000m} = \frac{1}{100} \quad \text{Ratio } 1:100$$

$$(vii) \frac{360g}{504g} = \frac{5}{7} \quad \text{Ratio } 5:7$$

$$(viii) \begin{aligned} 1h \quad 24min &= 60 + 24 = 84min \\ 6h \quad 18min &= 360 + 18 = 378min \end{aligned}$$

$$\frac{84}{378} = \frac{2 \times 2 \times 7 \times 7}{2 \times 3 \times 3 \times 3 \times 7} = \frac{2}{9} \quad \text{Ratio } 2:9$$

$$\begin{aligned} (x) \quad 1h \quad 48min \quad 20sec \\ &= 60 \times 60 + 48 \times 60 + 20 \\ &= 3600 + 2880 + 20 \\ &= 3600 + 2900 \\ &= 6500 \end{aligned}$$

$$\therefore \text{Ratio } \frac{5 \times 4}{6500} = \frac{1}{125} \quad \text{Ratio } 1:125$$

3

Antecedent

Consequent

$$(i) \quad 1$$

$$2$$

$$(ii) \quad 6$$

$$1$$

$$(iii) \quad 8$$

$$1$$

$$(iv) \quad 4$$

$$5$$

$$\begin{array}{r} 2 \overline{) 360} \\ \underline{2} \\ 180 \\ \underline{2} \\ 90 \\ \underline{2} \\ 45 \\ \underline{3} \\ 15 \\ \underline{1} \\ 5 \\ \underline{5} \\ 0 \end{array} \quad \begin{array}{r} 2 \overline{) 504} \\ \underline{2} \\ 252 \\ \underline{2} \\ 126 \\ \underline{2} \\ 63 \\ \underline{3} \\ 21 \\ \underline{3} \\ 7 \\ \underline{7} \\ 0 \end{array}$$

$$\begin{array}{r} 2 \overline{) 84} \\ \underline{2} \\ 42 \\ \underline{3} \\ 21 \\ \underline{7} \\ 7 \\ \underline{7} \\ 0 \end{array} \quad \begin{array}{r} 2 \overline{) 378} \\ \underline{2} \\ 189 \\ \underline{3} \\ 63 \\ \underline{3} \\ 21 \\ \underline{3} \\ 7 \\ \underline{7} \\ 0 \end{array}$$

$$\begin{aligned} (ix) \quad 58p \times \text{₹} 1.45 \\ \text{₹} 1.45 = 145p \\ \frac{2 \times 58p}{145p} = \frac{2}{5} \\ \text{ratio } 2:5 \end{aligned}$$

4)

Orange concentrate = 125 mL

Orange Drink = 300 mL

Water used = $300 - 125$
 $= 175 \text{ mL}$

$$(i) \quad \frac{125}{300} = \frac{5}{12} \quad \text{Ratio } 5:12$$

$$(ii) \quad \frac{125}{175} = \frac{5}{7} \quad \text{Ratio } 5:7$$

$$(iii) \quad \frac{300}{175} = \frac{12}{7} \quad \text{Ratio } 12:7$$

$$(iv) \quad \frac{175}{125} = \frac{7}{5} \quad \text{Ratio } 7:5$$

$$(v) \quad \frac{300}{125} = \frac{12}{5} \quad \text{Ratio } 12:5$$

5)

$$\frac{\text{Gold}}{\text{Silver}} = \frac{3}{5}$$

$$\text{Gold} = 855 \text{ mg}$$

$$\frac{855}{\text{Silver}} = \frac{3}{5}$$

$$\text{Silver} = \frac{855 \times 5}{3} = 285 \times 5$$

$$= 1425 \text{ mg}$$

$$= 1 \text{ g } 425 \text{ mg}$$

6)

$$\frac{\text{Earning of Joy's Mother}}{\text{Earning of Joy's Father}} = \frac{7}{8}$$

Joy's Father Earns ₹12,640.

$$\frac{\text{Joy's Mother}}{12640} = \frac{7}{8}$$

$$\begin{aligned}\text{Joy's Mother's Earning} &= 12640 \times \frac{7}{8} \\ &= 1580 \times 7 \\ &= ₹11060 \quad \text{month.} \\ &\quad \text{Ans}\end{aligned}$$

7) Ratio is 6:11

$$\text{Total Share} = 6 + 11 = 17$$

$$\text{Total Cookies} = 85.$$

$$\begin{aligned}\text{Ajay's Share} &= \frac{6}{17} \times 85 \\ &= 30 \text{ cookies} \quad \text{Ans}\end{aligned}$$

$$\begin{aligned}\text{Anjul's Share} &= \frac{11}{17} \times 85 \\ &= 55 \text{ cookies} \quad \text{Ans}\end{aligned}$$

30, 55 cookies
total

8)

$$\frac{\text{Length}}{\text{Breadth}} = \frac{7}{5}$$

$$\text{Length} = 112 \text{ m.}$$

$$\frac{112}{\text{Breadth}} = \frac{7}{5}$$

$$\begin{aligned}\text{Breadth} &= \frac{112 \times 5}{7} \\ &= 80 \text{ m}\end{aligned}$$

$$\begin{aligned}\text{Perimeter} &= 2(l+b) \\ &= 2(112+80) \\ &= 2 \times 192 = 384 \text{ m.} \quad \text{Ans}\end{aligned}$$

9) Total ratio = 2+3+4 = 9

$$\text{Perimeter} = 99 \text{ cm}$$

9/

$$\begin{aligned}\text{Length of one side} &= \frac{2}{9} \times 99 \\ &= 22 \text{ cm}\end{aligned}$$

$$\begin{aligned}\text{Length of second side} &= \frac{3}{9} \times 99 \\ &= 33 \text{ cm}\end{aligned}$$

$$\text{Length of Third side} = \frac{4 \times 99}{9} = 44 \text{ cm}.$$

22 cm, 33 cm, 44 cm Ans

10/

$$\text{Total Ratio} = 7+8+9 = 24$$

$$\text{Total Money} = 1560.$$

$$\begin{aligned}\text{First share} &= \frac{7}{24} \times 1560 \\ &= 7 \times 65 = 455\end{aligned}$$

$$\begin{aligned}\text{Second share} &= \frac{8}{24} \times 1560 = 8 \times 65 \\ &= 520\end{aligned}$$

$$\begin{aligned}\text{Third share} &= \frac{9}{24} \times 1560 = 9 \times 65 \\ &= 585\end{aligned}$$

₹ 455, ₹ 520, ₹ 585 Ans

11/

$$\text{Total Ratio} = 12+11+10 = 33$$

$$\begin{aligned}\text{Red Bulbs} &= \frac{12}{33} \times 4752 \\ &= 12 \times 144 \\ &= 1728 \text{ bulbs}\end{aligned}$$

$$\begin{aligned}\text{Blue Bulbs} &= \frac{11}{33} \times 4752 \\ &= 11 \times 144 \\ &= 1584 \text{ bulbs}\end{aligned}$$

Ex - 9.1

6/9/17.

$$\text{Yellow Bulbs} = \frac{10}{33} \times 4752$$

$$= 10 \times 144$$

$$= 1440 \text{ bulbs.}$$

Red	Blue	Yellow	
1728,	1584,	1440	<u>Ans</u>

Exercise - 9.2

1 (i) $1:1$ and $7:7$

or $\frac{1}{1}$ and $\frac{7}{7}$

By cross multiplication

$$1 \times 7 = 7$$

$$1 \times 7 = 7$$

as $7 = 7$, $\therefore$ Ratios are in proportion.

(yes)

1 (i)

1:7 and 7:1

or $\frac{1}{7}$ and $\frac{7}{1}$

cross multiply.

$$1 \times 1 = 1$$

$$7 \times 7 = 49$$

As $1 \neq 49$, The ratios are not in proportion
(No)

(ii)

2:6 and 13:39.

or $\frac{2}{6}$ and $\frac{13}{39}$

By cross multiplication.

$$2 \times 39 = 78$$

$$6 \times 13 = 78.$$

As $78 = 78$, The ratios are in proportion
(Yes)

(iv)

17:19 and 15:17.

$\frac{17}{19}$ and $\frac{15}{17}$

By Cross multiplication

$$17 \times 17 = 289.$$

$$15 \times 19 = 285$$

As $289 \neq 285$, Hence they are not
in proportion (No)

(v)

3.2:4 and 8:10.

$\frac{3.2}{4}$ and $\frac{8}{10}$

By cross multiplication.

$$3.2 \times 10 = 32$$

$$4 \times 8 = 32$$

As $32 = 32$, hence ratios are in
proportion. (Yes)

1 (vi) $8:5$ and $11:6.875$.

or $\frac{8}{5}$ and $\frac{11}{6.875}$

By cross multiplication.

$$8 \times 6.875 = 55$$

$$11 \times 5 = 55$$

As $55 = 55$, Hence ratios are in proportion. (yes)

2 (i)

$5:10$ & $15:30$

To be in proportion.

The product of extremes should be equal to product of means.

$$\text{Product extremes} = 5 \times 30 = 150$$

$$\text{Product of means} = 10 \times 15 = 150$$

As both are equal hence in proportion

(ii)

$2:4$ & $6:8$

$$\text{Product of extremes} = 2 \times 8 = 16$$

$$\text{Product of means} = 4 \times 6 = 24$$

$$\text{As } 16 \neq 24$$

They are not in proportion.

(iii)

$24:6$ and $108:27$

$$\text{Product of extremes} = 24 \times 27 = 648$$

$$\text{Product of means} = 108 \times 6 = 648$$

$$\text{As } 648 = 648$$

Hence they are in proportion.

(iv)

$1.1:2.2$ and $3.3:9.9$.

$$\text{Product of extremes} = 1.1 \times 9.9 = 10.89$$

$$\text{Product of means} = 2.2 \times 3.3 = 7.26$$

$$\text{As } 10.89 \neq 7.26$$

2(iv) They are not in proportion.

2(v) $1.1 : 2.2$ and $3.3 : 6.6$.

$$\text{Product of extremes} = 1.1 \times 6.6 = 7.26$$

$$\text{Product of means} = 2.2 \times 3.3 = 7.26$$

$$\text{As } 7.26 = 7.26$$

Hence they are in proportion.

(vi) $\frac{1}{2} : 1$ and $\frac{3}{5} : 1\frac{1}{5}$ or $\frac{3}{5} : \frac{6}{5}$

$$\text{Product of extremes} = \frac{1}{2} \times \frac{6}{5} = \frac{6}{10} = \frac{3}{5}$$

$$\text{Product of means} = 1 \times \frac{3}{5} = \frac{3}{5}$$

$$\text{As } \frac{3}{5} = \frac{3}{5}$$

Hence in proportion.

(vii)

$8 : 40$ and $40 : 200$

$$\text{Product of extremes} = 8 \times 200 = 1600$$

$$\text{Product of means} = 40 \times 40 = 1600$$

$$\text{As } 1600 = 1600$$

Hence in proportion.

(viii)

$588 : 84$ and $84 : 12$

$$\text{Product of extremes} = 588 \times 12 = 7056$$

$$\text{Product of means} = 84 \times 84 = 7056$$

$$\text{As } 7056 = 7056$$

Hence in proportion

(ix)

$10 : 20$ and $20 : 30$.

$$\text{Product of extremes} = 10 \times 30 = 300$$

$$\text{Product of means} = 20 \times 20 = 400$$

$$\text{As } 300 \neq 400$$

They are not in proportion.

3(i)

$$3:27::1:x$$

Product of extremes and means are equal.

$$3 \times x = 27 \times 1$$

$$x = \frac{27 \times 1}{3} = 9 \text{ Ans}$$

(ii)

$$5:x::55:11$$

Product of extremes and means are equal

$$5 \times 11 = x \times 55$$

$$x = \frac{5 \times 11}{55} = 1$$

(iii)

$$x:12::21:7$$

Product of extremes and means are equal.

$$x \times 7 = 12 \times 21$$

$$x = \frac{12 \times 21}{7} = 36$$

(iv)

$$13:52::x:11$$

Product of extremes and means are equal.

$$13 \times 11 = x \times 52$$

$$x = \frac{13 \times 11}{52} = \frac{11}{4} = 2\frac{3}{4} = 2.75 \text{ Ans}$$

(v)

$$6:19.8::x:16.5$$

Product of extremes is equal to product of means.

$$x \times 19.8 = 6 \times 16.5$$

$$x = \frac{6 \times 16.5}{19.8} = 5 \text{ Ans}$$

3 (vi) 9, 18, x equals $9:18::18:x$.

Product of extremes and means are equal.

$$9 \times x = 18 \times 18.$$

$$x = \frac{18 \times 18}{9} = 36 \text{ Ans}$$

(vii) x, 5, 25 equals $x:5:5:25$.

Product of extremes and means are equal.

$$x \times 25 = 5 \times 5$$

$$x = \frac{5 \times 5}{25} = 1 \text{ Ans}$$

(viii) 8, 44, x equals $8:44::44:x$

Product of extremes and means are equal.

$$8 \times x = 44 \times 44.$$

$$x = \frac{44 \times 44}{8} = 242 \text{ Ans}$$

4 (i) 80, 2, 10, 16.

$$80:10::16:2$$

$$\text{check : } 80 \times 2 = 16 \times 10.$$

$$160 = 160$$

(ii) 11, 24, 22, 12

$$11:22::12:24.$$

$$\text{check } 11 \times 24 = 22 \times 12$$

$$264 = 264$$

(iii) 10,000 : 100 :: 1000 : 10 Ans

$$10,000 \times 10 = 100 \times 1000$$

$$100,000 = 100,000.$$

(iv) 30, 35, 7, 6

4(iv)

$$30:6::35:7. \text{ Ans}$$

Check

$$30 \times 7 = 6 \times 35$$

$$210 = 210.$$

4(v)

$$10, 1000, 100$$

10, 100, 100, 1000. , Proportion in

$$10:100::100:1000. \text{ Ans}$$

Check.

$$10 \times 1000 = 100 \times 100$$

$$10,000 = 10,000.$$

4(vi)

$$6, 54, 18$$

$$6, 18, 18, 54.$$

Proportion in

$$6:18::18:54. \text{ Ans}$$

Check

$$6 \times 54 = 18 \times 18$$

$$324 = 324.$$

Exercise-9.3

(i) $3:12::1:4.$

As $3 \times 4 = 12 \times 1$

$$12 = 12$$

They are in direct proportion.

(ii) $17:1::85:5.$

$$17 \times 5 = 85 \times 1$$

$$85 = 85$$

As product of extremes & means are equal, hence in direct proportion

(iii) $10:5::2:4$

$$10 \times 2 = 5 \times 4$$

$$20 = 20$$

$\therefore$ It is inverse proportion.

(iv) $7:35::20:4.$

$$As\ 7 \times 20 = 35 \times 4.$$

$$140 = 140.$$

$\therefore$ It is Inverse proportion

1(v) $18:6 :: 18:54.$

As $18 \times 18 = 6 \times 54.$

$\therefore 324 = 324$

It is inverse proportion

(vi)

$23:1 :: 115:5.$

As product of extremes = Product of means

$23 \times 5 = 1 \times 115.$

$115 = 115$

They are in direct proportion.

2)

As more men will make more earthen pots. It is direct proportion

$35:245 :: 70:x$

$35 \times x = 245 \times 70$

$x = \frac{245 \times 70}{35} = 490$ earthen pots
Ans

3)

As more men will take less time to make 245 earthen pots, it is inverse proportion.

Proportion is.

$35:70 = \text{Inverse of } 1:x$

$35:70 :: x:1$

$35 \times 1 = 70 \times x$

$x = \frac{35}{70} = \frac{1}{2}$ day. Ans

Ex-93

Q119.

4)

As more speed will take less time. It is inverse proportion.

Speed of Train = 110 km/h

Time = 18h

Speed of helicopter = 180 km/h

Time = x

$110 : 180 :: \text{Inverse of } 18 : x$

or $110 : 180 :: x : 18$

$\therefore 110 \times 18 = x \times 180$

$x = \frac{110 \times 18}{180} = 11 \text{ h}$ Ans

5)

As distance will increase with time. It is direct proportion.

Distance = 5 km

Time = $\frac{1}{2}$ hour

And Distance = x km

And time = 2 hours

$\therefore$ Proportion is

$\frac{1}{2} : 2 \text{ hour} :: 5 \text{ km} : x \text{ km}$

$\frac{1}{2} \times x = 2 \times 5$

$x = \frac{2 \times 5 \times 2}{1} = 20 \text{ km}$ Ans

Exercise - 9.5		
	Speed	Distance
(i)	80 km/h	240 km
(ii)	50 km/h	200 km
(iii)	25 km/h	150 km
(iv)	30 km/h	2500 m
(v)	108 km/h	126 m
(vi)	9 km/h	5 m
(vii)	80 km/h	14.4 km
(viii)	21.6 km/h	600 cm
(ix)	10.8 km/h	450 cm
(x)	194.4 km/h	162 m
		Time
		3 h
		<u>4 h</u>
		6 h
		5 min
		<u>7 min</u>
		2 sec
		<u>10 min 48 sec</u>
		1 sec
		1.5 sec
		3 sec

2)

$$\text{Distance} = 1134 \text{ km}$$

$$\text{Speed} = 180 \text{ km/h}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{1134}{180} = 6.3 \text{ h} \\ = 6 \text{ h } 18 \text{ min}$$

3)

$$\text{Distance} = 5.6 \text{ km.}$$

$$\text{Speed} = 56 \text{ km/h}$$

$$\text{time} = \frac{\text{Distance}}{\text{Speed}} = \frac{5.6}{56} = \frac{1}{10} \text{ h.}$$

$$= 6 \text{ minutes } \underline{\text{Ans}}$$

Since it has to come back.
also.

$$\text{Total time} = 6 + 6 = 12 \text{ minutes}$$

or.

$$\text{Distance} = 5.6 \times 2 \text{ [Since it has to come back]}$$

$$\text{Speed} = 56 \text{ km/h}$$

$$\text{Time} = \frac{5.6 \times 2}{56}$$

$$= \frac{1}{5} \text{ h.}$$

$$= \frac{60}{5} = 12 \text{ minutes } \underline{\text{Ans}}$$

4)

$$\text{Distance of one lap} = 400 \text{ m.}$$

$$\text{Distance of 15 laps} = 400 \times 15 = 6000 \text{ m.}$$

$$= 6 \text{ km.}$$

$$\text{Time taken} = 8 \text{ minutes.}$$

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{6}{8} \text{ km/min.}$$

$$= \frac{6}{8} \times \frac{60}{1} \text{ km/h}$$

$$= 45 \text{ km/h}$$

$$= 45 \text{ km/h}$$

5)

$$\text{Speed} = 2.5 \text{ m/2 Secs.}$$

$$= 1.25 \text{ m/sec.}$$

$$\text{Time} = 3 \text{ minutes} = 180 \text{ Sec}$$

$$\text{Distance} = \text{Speed} \times \text{Time}$$

$$= 1.25 \times 180 \text{ m} = 225 \text{ m.}$$

Ex - 9.5

6/9/25.

6)

Length = 100 m.

Breadth = 75 m.

Perimeter of field = $2(100 + 75) = 350$ m.

Laps = 5.

Total Distance = 350×5 .

= 1750 m. = 1.75 km.

time = $\frac{1}{4}$ h.

Speed = $\frac{\text{Distance}}{\text{time}} = \frac{1.75}{\frac{1}{4}} = 1.75 \times 4$
= 7 km/h. Ans

7)

Total distance will be length of train and length of platform.

= $100 + 150 = 250$ m = 0.25 km

Speed = 90 km/h.

time = $\frac{\text{Distance}}{\text{Speed}} = \frac{0.25}{90}$ h.

= $\frac{0.25}{90} \times 60 \times 60$ min/sec.

= $\frac{15 \times 60}{90} = 10$ Sec Ans