Chapter # 5

RATIO, PROPORTION, INHERITANCE & PARTNERSHIP

EXERCISE 5.1

Find the ratio between the quantities (in the given orders):

Q.1 35 books and 42 books.

Solution:

35 books and 42 books

35 : 42

dividing both the terms by 5, we get

5 : 6 ***Ans***

Q.2 Rs. 11.50 and Rs. 6.75.

Solution:

Rs. *11.50* and Rs. *6.75*

Now Rs. *6.75* = *1150* Paisas

and Rs. *6.75* = *675* Paisas

∴ Ratio is *7/2 : 5*

multiplying both the terms by 2, we get

230 : 135

again dividing both the terms by 5, we get

46 : 27 ***Ans***

Q.3 3.5 meters and 5 meters.

Solution:

3.5 meters and *5* meters

Now *3.5* meter = $3\frac{1}{2}$ meters = *7/2* meters

∴ Ratio is *7/2 : 5*

multiplying both the terms by 2, we get

$7/2 \times 2 : 5 \times 2$

$= 7 : 10$ ***Ans***

Q.4 4 kilometers 70 meters and 28 kilometers 49 decameters.

Solution:

Now 4 kilometers = $4 \times 1000 = 4000$ meters

4 kilometers + 70 meters

$= 4000 + 70 = 4070$ meters

again 28 kilometers $= 28 \times 1000 = 28000$ meters

and 49 decameter $= 49 \times 10 = 490$ meters

$\therefore$ 28 kilometers + 49 decameters

$= 28490$ meters

Hence the given ratio come to

$$4070 : 28490$$

dividing both the terms by 10, we get

$$407 : 2849$$

dividing both the terms by 407, we get

$$\frac{407}{407} : \frac{2849}{407}$$

or $1 : 7$ ***Ans***

Q.5 ***2 kilograms 7 hectograms and 3 kilograms 6 hectograms.***

Solution:

Now 2 kilogram $= 2 \times 10 = 20$ hectogram

$\therefore$ 2 kilogram + 7 hectogram $= 27$ hectogram

again 3 kilogram $= 3 \times 10 = 30$ hectogram

$\therefore$ 3 kilogram + 6 hectogram

$= 30 + 6 = 36$ hectogram

So the given ratio comes to

$$27 : 36$$

dividing both the terms by 9, we get

$$27/9 : 36/9$$

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

Q.6 $3\frac{3}{4}, 2\frac{1}{2}$

Solution:

$$3\frac{3}{4} = 2\frac{1}{2}$$

$$\frac{15}{4} = \frac{5}{2}$$

$$4 \times \frac{15}{4} = \frac{2}{4} \times \frac{5}{2}$$

$$15 : 16$$

$$3 : 2 \quad \textbf{Ans}$$

Q.9 ***Hameed spent Rs. 13.50 out of an income of Rs. 20 and Iqbal spent Rs. 18 out of an income of Rs. 32. Who spent more with regard to his income?***

Solution:

Ratio between income and expenditure of Hamid

$$13.50 : 20$$

or $$13^{1/2} : 20$$

or $$27/2 : 20$$

or $$27/2 \times 2 : 20 \times 2$$

multiplying both terms by 2. we get

$$27 : 40$$

Similarly ratio between income and expenditure of Iqbal.

$$18 : 32$$

$$9 : 16$$

Now $$27 : 40 = 27/40$$

and $$9 : 16 = 9/16$$

$$27/40 \quad \text{or} \quad 9/16$$

$$80 \times \frac{27}{40} \quad \text{or} \quad \frac{9}{16} \times 80$$

multiplying both the ratios by 80, we get

$$2 \times 27 \quad \text{or} \quad 9 \times 5$$

$$54 \quad \text{or} \quad 45$$

54 is greater which corresponds to Hameed's expenditure.

Hence Hameeds expenditure is more than Iqbal. ***Ans***

Q.8 ***Wasim spent Rs. 4.50 out of Rs. 6 and Naeem spent Rs. 8 out of Rs. 12. Who spent less?***

Solution:

Ratio between income and expenditure of Waseem.

Income = 6

Expenditure = 4.50 = 41/2 = 9/2 rupees.

Ratio = 9/2 : 6

or 9 : 12

multiplying by 2

or 3 : 4

dividing both by 3

or 3/4

Similarly Ratio between income and expenditure of Naeem

Income = 12 rupees

Expenditure = 8 rupees

Ratio = 8 : 12

dividing both terms by 4, we get

or 2 : 3

or 2/3

Now which is greater

$$\frac{3}{4} \text{ or } \frac{2}{3}$$

$$\frac{12 \times 3}{4} \text{ or } \frac{12 \times 2}{2}$$

$$3 \times 3 \text{ or } 4 \times 2$$

$$9 \text{ or } 8$$

3/4 is greater which corresponds to Wasim.

Wasim *Ans*

Q.9 Raheem secured 360 marks out of 800 marks in the quarterly examination and 425 out of 900 marks in the six monthly examination. Did he progress or degress?

Solution:

Ratio is his maize obtained in quarterly examination

360 : 800

26 : 59

(dividing both terms by 10)

or $9 : 20$

(dividing both terms by 4)

or $9/20$

Similarly Ratio of his marks obtained in six monthly examination.

$425 : 900$

or $17 : 36$

(dividing both terms by 25)

or $17/36$

Now which is greater

$9/20$ or $17/36$

(L.C.M of denominators is 180)

9×9 or 5×17

81 or 85

85 is greater which corresponds to ratio of six monthly examination marks.

∴ He progressed. ***Ans***

Q.10 A bus covered a distance of 90 kilometers is 3 hours and a train covers a distance of 124 kilometers in 4 hours. Find the ratio between speeds of the bus and trains.

Solution:

In three hours the bus covers *90* kilometers.

In one hour the bus covers $90/3 = 30$ kilometers.

or the speed of the bus is 30 kilometers per hour.

Similarly:

In four hours the train covers 124 kilometers.

In one hour the train covers $124/4 = 31$ kilometer.

or the speed of train is 31 kilometers per hour.

Ratio between the speed of bus and train.

$40 : 31$ ***Ans***

EXERCISE 5.2

Q.1 ***Find the value of ▱ in the following proportions.***

(i) $\square \quad 6\frac{2}{5} = 5 : 8$ ***(ii)*** $12 : 16 = 8$

Solution (i):

$$6\frac{2}{5} = 5 : 8$$

$$\therefore \quad 8\square = 6\frac{2}{5} \times 5$$

$$\rightarrow \quad 8\square = \frac{32}{5} \times \frac{5}{1}$$

$$\rightarrow \quad = \frac{8\square}{8} = \frac{32}{8}$$

$$\therefore \quad \square = 4$$

(ii) $12 : 16 = 8 : \square$

$$\rightarrow \quad = 12\square = 16 \times 8$$

$$\therefore \quad \frac{12\square}{12} = \frac{16 \times 8}{12} = \frac{32}{3}$$

$$\therefore \quad \square = \frac{32}{3} = 10\frac{2}{3}$$ ***Ans***

Q.2 ***15 spoons of sugar are required for 6 eggs cakes. How many spoons of sugar will be required for 8 eggs cake?***

Solution:

Eggs	***Spoons***
6	15
8	x (direct proportion)

$$\therefore \quad 6/8 = 15/x$$

or $\quad 6x = 15 \times 8$ (by cross multiply)

or $\quad x = \frac{15 \times 8}{6}$

$x = 20$ spoons **Ans**

Q.3 ***24 kilometers are represented by 3 centimeters on a map. How many centimeters long line-segment will represent 80 kilometers long road?***

Solution:

Distance	***Lime segment***
24	3
80	x (direct proportion)

$$24/80 = 3/x$$

or $$24x = 3 \times 80 \text{ (cross multiply)}$$

or $$x = \frac{3 \times 80}{24}$$

$$= \frac{240}{24}$$

$$= \boxed{x = 10 \text{ kilometers}} \textbf{ Ans}$$

Q.4 ***The length of two iron bars of the same thickness are 6 dm. and 4 dm. respectively. What would be the weight of the second bar if the weight of first bar is 3 kilograms?***

Solution:

Length	***Weight***
6	3
4	x (direct proportion)

$\therefore$ $$6/4 = 3/x$$

or $$6x = 3 \times 4 \text{ (cross multiply)}$$

or $$x = \frac{3 \times 4}{6}$$

$$x = \frac{12}{6}$$

$$\boxed{x = 2 \text{ kilograms}} \textbf{ Ans}$$

Q.5 ***A truck covers a distance of 72 kilometers in 4 hours. How much distance would it cover in 6 hours.***

Solution:

Time	***Distance***
4	72
6	x (direct proportion)

$\therefore \quad 4/6 = 72/x$

or $\quad 4x = 72 \times 6$ (cross multiply)

or $\quad x = \dfrac{72 \times 6}{4}$

or $\quad x = \dfrac{432}{4}$

$\boxed{x = 108 \text{ kilometers}}$ ***Ans***

Q.6 ***The price of 10 kilogram of rice is 45.00. How much rice can be brought for Rs. 56.25?***

Solution:

Amount	***Price***
45	12
56.25	x (direct proportion)

or $\quad 45/56.25 = 12/x$

or $\quad 45x = 12 \times 56.25$ (cross multiply)

or $\quad x = \dfrac{12 \times 56.25}{45}$

or $\quad x = \dfrac{12 \times 5625}{4500}$

or $\quad x = 15$ kilogram. ***Ans***

Q.7 ***The price of 12 meter of cloth is Rs. 19.50. How much cloth can be brought for Rs.32.50?***

Solution:

Amount	***Cloth***
19.50	12

$\therefore \quad \frac{46.50}{85.25} = \frac{6}{x}$

or $46.50 \times x = 85.25 \times 6$ (cross multiply)

or $46\frac{1}{2}x = 6 \times 85\frac{1}{2}$

or $\frac{93}{2}x = 6 \times \frac{341}{4}$

or $x = \frac{6 \times 341 \times 2}{4 \times 93}$

or $x = 11$ quantals. ***Ans***

Q.10 The distance between Lahore and Rawalpindi is 290 kilometers. A train runs 48 kilometers per hour. What time would it take to cover this distance?

Solution:

Distance	***Time***
48	60 minutes
290	x (direct proportion)

$\therefore \quad \frac{48}{290} = \frac{60}{x}$

or $48x = 60 \times 290$ (cross multiply)

or $x = \frac{60 \times 290}{48} = \frac{725}{2}$ minutes

or $= 6$ hours 2 minutes 30 seconds. ***Ans***

EXERCISE 5.3

Q.1 ***Some quantity of milk is sufficient for 120 persons at the rate of 1/2 liter a person. For how many persons the same quantity of milk will be sufficient if each person is given 3/8 litre of milk?***

Solution:

If the volume of milk is decreased the number of persons will increase.

So there is inverse proportion between volume of milk and number of men.

Milk	***Men***
1/2 litre	*120*
3/8 litre	x (inverse proportion)

$$3/8x = \frac{1}{2} \times 120$$

or $$x = 3/8 \times \frac{1}{2} \times 120$$

or $x = 160$ men, ***Ans***

Q.2 ***A store of food is sufficient for 250 soldiers for 21 days. For how many days the same food will be sufficient if there arrive 100 soldiers more?***

Ratio between soldiers

$$250 \qquad 350$$

Ratio between food stuff

$$21 \qquad x$$

If the number of soldiers increase the food stuff will be sufficient for less days, hence there is inverse proportion.

$$\therefore \quad 350x = 21 \times 250$$

or $$x = \frac{21 \times 250}{350}$$

or $x = 15$ days ***Ans***

Q.3 ***400 persons had food stock for 6 days. How many persons should leave so that the same food is sufficient for 8 days?***

Solution:

Men	400	x
Food	6	8

Food stock will sufficient for more days. If number of men decreased. Hence there is inverse proportion.

$\therefore \quad 8x = 6 \times 400$

or $\quad x = \dfrac{6 \times 400}{8}$ (dividing both the sides by 8)

or $\quad x = 6 \times 50 = 300$

100 men should left. ***Ans***

Q.4 ***A train covers a certain distance in 6 hours at the speed of 27 kilometers per hour. In how many hours would it cover the same distance if the speed becomes 24 kilometers?***

Solution:

Ratio in speed $= 27 : 24$

Ratio in time $= 6 : x$

More time will be required to cover the distance if speed is decreased hence there is inverse proportion.

$27/24 = x/6$

or $24x = 6 \times 27$

or $\quad x = \dfrac{6 \times 27}{24}$ (dividing both the sides by 24)

or $\quad x = 27/4$

or $\quad 6^{1/2}$ hours. ***Ans***

Q.5 ***A train covers the distance between two cities in 4 hours and 12 minutes at the speed of 30,000 meters per hour. What time would it take to cover the same distance if the train runs at the speed of 28,000 meters per hour.***

Solution:

$$4 \text{ hours } 12 \text{ minutes} = 4\frac{12}{60}$$

$$= 4\frac{1}{5}$$

$$= \frac{21}{5}$$

Ratio between speeds = 30,000 : 28,000

Ratio between time = 21/5 : x

If speed is decreased the train would take more time to cover the distance. Hence there is inverse proportion.

$$\frac{30,000}{28,000} = \frac{x}{\frac{21}{5}} \text{ (cross multiply)}$$

or $$28,000 \times x = 30,000 \times \frac{21}{5}$$

or $$x = \frac{30,000 \times 21}{5 \times 28,000}$$

$$= 9/2 \text{ or } 4\tfrac{1}{2} \text{ hours} \quad \textit{Ans}$$

Q.6 6 men or 12 women complete a work in 10 days. In how many days 14 men and 12 women would complete the same work?

Solution:

$$12 \text{ women} = 6 \text{ men}$$

$$1 \text{ women} = \frac{6}{12} = \frac{1}{2}$$

$$12 \text{ women} = \frac{12 \times 6}{12} = 6 \text{ men}$$

$\therefore$ 14 men + 12 women

= 14 + 6 = 20 men

Work would be completed in less days if number of men s increased. Hence there is inverse proportion.

Ratio in number of men = 6 : 136/5

Ratio in number of days = $10 : x$

or $\frac{6}{20} = \frac{x}{10}$

or $20x = 60$

$x = \frac{60}{28}$

or $\boxed{x = 3 \text{ days}}$ **Ans**

Q.7 In a fort 350 men had food for 84 days. 30 out of them left the fort after 20 days. For how many days the remaining food would suffice?

Solution:

After 20 day:

No. of men = $350 - 30$

320 men

No. of days = $84 - 20$

$= 64$ days

Since number of days increases which decrease in number of men. Hence there is inverse proportion.

Ratio in number of men = $350 - 320$

Ratio in number of days = 64

$\therefore \quad \frac{350}{320} = \frac{x}{64}$ (cross multiply)

or $320x = 64 \times 350$

or $x = \frac{64 \times 350}{320}$ (dividing both sides by 320)

or $= 70$ days **Ans**

Q.8 In a girl guide camp 80 girls had food for 15 days. 40 more girls joined them after 3 days. For how many days the remaining food will suffice?

Solution:

No. of girls = 80

girls	***days***
80	$15 - 3 = 12$ days
$40 + 80 = 120$	x

$\therefore$ $120 : 80 :: 12 : x$

$120x = 80 \times 12$

$$\frac{120x}{120} = \frac{80 \times 12}{120} = 8$$

10

$\therefore$ $x = 8$

$\therefore$ 8 days *Ans*

EXERCISE 5.4

Q.1 ***The freight for carrying a luggage weighing 70 kilograms for 150 kilometers is Rs. 5. What would be the freight for carrying a luggage weighing 105 kilograms for 300 kilometers?***

Solution:

Ratio between weight $= 70 : 150$
Ratio between distance $= 105 : 300$ $\Big\}$ $:: 5 : x$

$$\therefore \quad x(70 \times 150) = 105 \times 300 \times 5$$

$$\text{or} \quad x = \frac{105 \times 300 \times 5}{70 \times 150}$$

$$\text{or} \quad = 15 \text{ rupees} \quad \textit{Ans}$$

Q.2 ***The freight for carrying a luggage weighing 10 quintals for 16 kilometers is Rs. 10. What would be the freight for carrying a luggage weighing 7 quintals for 20 kilometers?***

Solution:

Ratio between weight $= 10 : 7$
Ratio between distance $= 16 : 20$ $\Big\}$ $:: \quad 10 : x$

$$\therefore \quad x(10 \times 16) = 7 \times 20 \times 10$$

$$\text{or} \quad x = \frac{7 \times 20 \times 10}{10 \times 16}$$

$$= 35/4$$

$$\text{or} \quad x = 8.75 \text{ rupees.} \quad \textit{Ans}$$

Q.3 ***8 masons can build a 10 meters long wall in 22 days. How many masons would be required to build a 165 meters long wall in 6 days?***

Solution:

Ratio between length of wall = 10 : 165
Ratio between days required = 6 : 22
} :: 8 : x masons

$\therefore \quad x(10 \times 6) = 8 \times 165 \times 22$

or $\quad x = \dfrac{8 \times 165 \times 22}{10 \times 6}$

or $\quad x = 484$ masons. ***Ans***

Q.4 56 women can spin 42 kilograms of thread by working 10 hours a day. How much thread can 50 women spin if they work 6 hours daily?

Solution:

Ratio between No. of women = 56 : 50
Ratio between times = 10 : 6
} :: 42 : x kilograms

$\therefore \quad x(56 \times 10) = 50 \times 6 \times 42$

or $\quad x = \dfrac{50 \times 6 \times 42}{56 \times 10}$

or $\quad x = 42/2$

or $\quad x = 22.5$ kilograms. ***Ans***

Q.5 A family's expenditure on rice is Rs. 12 for 16 days if the rate of rice is Rs. 500 per quintal. What would be the expenditure for 5 days if the rate becomes Rs. 300 per quintal?

Solution:

Ratio between the rates = 500 : 000
Ratio between the days = 16 : 5
} :: 12 : x rupees

$\therefore \quad x(500 \times 16) = 12 \times 300 \times 5$

or $\quad x = \dfrac{12 \times 300 \times 5}{500 \times 16}$

or $\quad x = 9/4$ rupees

or $\quad x = 2.25$ rupees ***Ans***

Q.6 ***A contractor contracted to build a road in 20 days and he employed 30 men to work. Only 1/3 of the work was completed after 8 days. How many more men should be employed so that the work is completed within the fixed time?***

Solution:

Total time = 20 days

Remaining time = $20 - 8 = 12$ days

Remaining work = $1 - \frac{1}{3} = 2/3$

Hence $\frac{1}{3}$ work is done by 30 men in 8 days. It is now to be worked out as to how many men can do 2/3 or work 12 days.

Ratio between days = 12 : 3
Ratio between = $\frac{1}{3} = 2/3$ } :: 30 : x men

or $$x(12 \times \tfrac{1}{3}) = \frac{3 \times 2 \times 30}{3}$$

or $$x = \frac{3 \times 2 \times 30 \times 3}{3 \times 12}$$

or $$x = 40$$

more men required = $40 - 50 = 10$

= 10 men ***Ans***

Q.7 ***In a fort 800 men had food for 30 days. 400 men joined them after 10 days. For how many days the remaining food will be sufficient of the amount of ration per person is reduced to 2/3 of the earlier?***

Solution:

Present strength = 800 men

After 10 days = 800 + 400 = 1200 men

Remaining time = 30 − 10 = 20 days

Ratio between men = 1200 : 800
Ratio between ration = 3/2 : 1 } :: 20 : x days

or $x(2/3 \times 1200) = 800 \times 20 \times 1$

$$x = \frac{800 \times 20 \times 3}{2 \times 1200}$$

$\boxed{x = 20 \text{ days}}$ ***Ans***

Q.8 1200 persons had food for 40 days. How many persons should leave so that the same food is sufficient for 48days when the amount of ration per person becomes $1\frac{1}{4}$ times of the earlier?

Solution:

Ratio between days = 48 : 40
Ratio between ration = 5/4 : 1
} :: 1200 : x men

or $x(48 \times 5/4) = 1200 \times 40 \times 1$

$$x = \frac{1200 \times 40 \times 1 \times 4}{48 \times 5}$$

$x = 800$

$x = 1200 - 800 = 400$

$\boxed{x = 400 \text{ men should leave}}$ ***Ans***

Q.9 30 labourers were employed to complete a work in 8 days but only $\frac{1}{3}$ of the work could be completed after 3 days. How many more labourers should be employed to complete the work within the fixed time?

Solution:

Time = 8 days

Remaining time = 8 − 3 = 5 days

Remaining work = $1 - \frac{1}{3} = 2/3$

Hence the question comes to
30 men can do $\frac{1}{3}$ of work in 3 days.
How many men can do 2/3 of work in 5 days?
Ratio between days = 5 : 3
Ratio between work = $\frac{1}{3}$: 2/3
} :: 30 : x men

or $x(5 \times \frac{1}{3}) = 2/3 \times 30 \times 3$

or $x = 2/3 \times 30 \times 3 \times 3 \times 1/5$

or $$x = \frac{2 \times 30 \times 3 \times 3}{3 \times 5}$$

$$= 36$$

$$36 - 30 = 6$$

6 men are required more. ***Ans***

Q.10 The price of 6 meters long and 3 meters wide durree is Rs. 27. What would be the price of 8 meter long and $1\frac{1}{2}$ meter wide durree?

Solution:

Ratio between length = 6 : 8
Ratio between width = 3 : 3/2
} ∴ 27 : x rupees

or $x(3 \times 6) = 8 \times 3/2 \times 27$

or $$x = \frac{8 \times 3 \times 27}{2 \times 3 \times 6}$$

or $x = 18$ rupees ***Ans***

EXERCISE 5.5

Q.1 ***Divide 150 rupees among Saleem, Kaleem and Raheem in the ratio of 4 : 5 : 6.***

Solution:

Saleem	:	*Kaleem*	:	*Raheem*
4	:	*5*	:	*6*

Sum of the Ratios = $4 + 5 + 6 = 15$

$\therefore$ Saleem's share is $4/15 \times 150 = 40$ rupees

Kaleem's share is $5/15 \times 150 = 50$ rupees

Raheem's share is $6/15 \times 150 = 60$ rupees

Answer:

Saleem's share = 40 rupees

Kaleem's share = 50 rupees

Raheem's share = 60 rupees

Q.2 ***Divide Rs. 32.50 among A, B, C in the ratio of 3/4 : 5/6 : 7/12.***

Solution:

A	:	*B*	:	*C*
3/4	:	*5/6*	:	*7/12*

$$\frac{12\times 3}{4} : \frac{12\times 5}{6} : \frac{12\times 7}{12}$$ (Multiplying all the ratios by 12 i.e LCM of 4, 6 and 12)

$$3\times 3 : 2\times 5 : 7$$

$$9 : 10 : 7$$

Sum of the ratios = 26

Amount to be divided = $32.50 = 32\frac{1}{2} = 65/2$

Share of $A = 65/2 \times 9/26 = 45/4 = 11.25$ rupees

Share of $B = 65/2 \times 10/26 = 25/2 = 12.50$ rupees

Share of $C = 65/2 \times 7/26 = 35/4 = 8.75$ rupees

Answer:

A's Share = 11.25 rupees

B's Share = 12.50 rupees

C's Share = 8.75 rupees

Q.3 ***Divide a profit of 976 rupees among A, B, C and D in the ratio of 1 : 3/4 : 3/5 : 7/10.***

Solution:

Ratio between the Shares of *A, B, C* and *D* is

$$1 : 3/4 : 3/5 : 7/10$$

or $$1 \times 20 : \frac{20 \times 3}{4} : \frac{20 \times 3}{5} : \frac{20 \times 7}{10}$$

(multiply all the ratios by 20 i.e, L.C.M of 4, 5, and 10)

or $$20 : 15 : 12 : 14$$

Sum of the ratios = 61

Total profit = 976

Answers:

A's Share = 20/61 × 976 = 320 rupees

A's Share = 15/61 × 976 = 240 rupees

A's Share = 12/61 × 976 = 192 rupees

A's Share = 14/61 × 976 = 220 rupees

Q.4 ***Zaid, Bakr and Umar jointly started a business. After a year they gained a profit of Rs. 1,230. Divide the amount of profit among them in the ratio of 14, 15 and 12 respectively.***

Solution:

Ratio of profit among Zaid, Bakr and Umar is

$$14 : 15 : 12$$

Sum of ratios = 41

Total profit = 1230 rupees

Answers:

Zaid's Share = 1230 × 14/41 = 420 rupees

Bakr's Share = 1230 × 15/41 = 450 rupees

Umar's Share = 1230 × 12/41 = 360 rupees

Q.5 ***The fishermen fishes 690. If the ratio between their fishes is 2/3, 4/5 and 5/6, how many fishes did each of them fish?***

Solution:

Ratio between the catch of their fish is

$$= 2/3 : 4/5 : 5 : 6$$

$$= \frac{2}{3}, \frac{4}{5}, \frac{5}{6}$$

$$= \frac{30\times 2}{3} : \frac{30\times 4}{5} : \frac{30\times 5}{6}$$

$$= 20 : 24 : 25$$ (multiplying the ratios by 30)

Sum of the ratio $= 20 + 24 + 25 = 69$

Answers:

Fish fished by I fisherman $= \frac{20}{69} \times 690 = 200$

Fish fished by II fisherman $= \frac{29}{69} \times 690 = 240$

Fish fished by III fisherman $= \frac{25}{69} \times 690 = 250$

Q.6 ***The ratio of water, milk and sugar in a cap of tea is 1 : 1/8 : 3/16. Find the weight of water, milk and sugar in 1 kilogram 50 grams of tea.***

Solution:

Ratio between water, milk and sugar is

$$1 : 1/8 : 3/16$$

or $$16 \times 1 : \frac{16}{8} : \frac{16\times 3}{16}$$

(multiplying all the ratios by 16)

or $$16 : 2 : 3$$

Sum of the ratio $= 16 + 2 + 3 = 21$

Weight of tea is 1 kilogram 50 grams

i.e, $1000 + 50 = 1050$ grams

Answers:

Weight of water in tea = $16/21 \times 1050 = 800$ gm
Weight of milk in tea = $2/21 \times 1050 = 100$ gm
Weight of sugar in tea = $3/21 \times 1050 = 150$ gm

Q.7 Divide 1036 among Zafar, Mazhar and Anwar so that the ratio between the shares of Zafar and Mazhar is 3 and 4; and the ratio of shares of Mazhar and Anwar 3 : 4.

Zafar	*Mazhar*	*Anwar*
3	4	
	$\frac{1}{3}$	

Ratio between shares of Zafar and Mazhar 3 : 4

Ratio between shares of Mazhar and Anwar 3 : 4

Multiply the ratios of Zafar and Mazhar by 3 and those of Mazhar and Anwar by 4, we get the following ratios between Zafar, Mazhar and Anwar.

Zafar	*Mazhar*	*Anwar*
9	12	16

Sum of ratios = 16 + 12 + 9 = 37
Total amount = 1036 rupees

Answers:

Zafar's share = $9/37 \times 1036 = 9 \times 28 = 252$
Mazhar's share = $12/37 \times 1036 = 12 \times 28 = 336$
Anwar's share = $16/37 \times 1036 = 16 \times 28 = 448$

Q.8 Divide Rs. 5,428 among A, B and C so that the ratio between the shares of A and B is 3 and 4 and the ratio between the shares of B and C is 5 and 6.

Solution:

A	*B*	*C*
3	4	⋮
	↓	⋮
	5	6

Ratio between shares of *A* and *B* 3 : 4

Ratio between shares of *B* and *C* 5 : 6

multiplying the ratios between *A* and *B* by 5 and those between *B* and *C* by 4, we get the following ratios between *A*, *B* and C's share.

A	B	C
15	*20*	
	20	*24*
15	*20*	*24*

Sum of ratios = *15 + 20 + 24 = 59*

Total amount = *5428* rupees

Answers:

A's share = *15/59 × 5428 = 15 × 92=1380* rupees

A's share = *20/59 × 5428 = 20 × 92=1840* rupees

A's share = *24/59 × 5428 = 24 × 92=2208* rupees

Q.9 ***Tahir, Hamid and Iqbal divide among themselves a profit of Rs. 443.75 so that Hamid got 6 rupees if Tahir got 5 rupees and Iqbal got 9 rupees if Hamid got 8 rupees. Find the amount of each.***

Solution:

Tahir	*Hamid*	*Iqbal*
5	*6*	
	↓	
	8	*9*

Ratio between shares of Tahir and Hamid *5 : 6*

Ratio between shares of Hamid and Iqbal *8 : 9*

Multiplying the ratio of Tahir and Hamid by *8* and the ratio of Hamid and Iqbal by *6*, we get the following ratio between the shares of Tahir, Hamid and Iqbal.

Tahir	*Hamid*	*Iqbal*
40.	*48*	
	48	*54*
40	*48*	*54*

Sum of the ratios = *40 + 48 + 54 = 142*

Total amount of profit = *443.75*

$$443\frac{3}{4} = \frac{1775}{4} \text{ rupees}$$

According to the ratio Tahir's share comes to

$$= \frac{40}{142} \times \frac{1775}{4} = 5 \times 25 = 125 \text{ rupees}$$

According to ratio Hamid's share comes to

$$= \frac{48}{142} \times \frac{1775}{4} = 6 \times 25 = 150 \text{ rupees}$$

According to ratio Iqbal's share comes to

$$= \frac{54}{142} \times \frac{1775}{4} = 168.75 \text{ rupees}$$

Answers:

Tahir gets 125 rupees
Hamid gets 150 rupees
Iqbal gets 168.75 rupees

Q.10 Divide Rs. 1550 among A, B, C and D so that the ratio between the shares of A and B is 2 : 3 ; the ratio between the shares of B and C is 2 : 3 ; and the ratio between the shares of C and D is 3 : 4?

Solution:

A	B	C	D
2	3		
	↓		
	2	3	
		↓	
		3	4

By multiplying the ratios between A and B by 2
By multiplying the ratios between B and C by 3
By multiplying the ratios between C and D by 4 we get the following ratios between the shares of A, B, C and D.

EXERCISE 5.6

Q.1 ***Three men have a total amount of Rs. 630. If each of them gives Rs. 10 in charity then the ratio between their amounts will be 3:4:5. Find the amount of each one?***

Solution:

Total amount = Rs. *630*

Three men have contributed. Three men gave Rs. *10* each in charity Amount of charity in total = *10+10+10=30.*

The remainder after giving charity

= *630-30 = Rs . 600*

The sum left is in Radio *3:4:5* Sum of Ratio

= *3+4+5=12*

Fractions $= \frac{3}{12} : \frac{4}{12} : \frac{5}{12}$

∴ First person's contribution =

$\frac{3}{12} \times 600$ = Rs. *150* ***Ans***

II person's contribution =

$\frac{4}{12} \times 600$ = *Rs. 200* ***Ans***

III person's contrbution =

$\frac{5}{12} \times 600$ = *Rs. 250* ***Ans***

Q.2 ***Amjad, Asghar and Asad get 126 rupees. If Amjad would have got 5 rupees more, Asghar would have got 9 rupees more and Asad would have got 10 rupees more. The ratio between their shares would have been 4,5 and 6 respectively. Find the share of each one.***

Solution:

Amount of distibution = *126* rupees
Amount which exceed *5 + 9 + 10 = 24* rupees
Total amount Rs. *126 + 24 = 150* rupees
Ratio between the shares of Amjad, Asghar and Asad.

4 : 5 : 6

Sum of ratios = *4 + 5 + 6 = 15*

I Amjad's share = *4/15 × 150=40* ruppes
Amjad's will actually get *40-5=35* rupees

II Asghar's share = *5/15 × 150=50* rupees
Asghar's actual share *50–9=41* rupees

III Asad's share = *6/15 × 150=60* rupees
Asad's actual share *60-10=50* rupees

Hence

Answers:

Amjad will get *35* rupees
Asghar will get *41* rupees
Asad will get *50* rupees

Q.3 ***Munir, Bashir and Nazeer got prizes worth Rs. 192. Had Munir got prize of 11 rupees, Bashir that of 15 rupees and Nazir that of 13 rupees more. The ratio between their shares would have been 7,6 and 8 respectively. How much did each one of them get?***

Solution:

Total worth of prizes = *192* rupees
Excess of amount = *11+15+13 = 13*
Total amount = *192+39 = 231* rupees
Ratio between the shares of Munir, Bashir and Nazir

7 : 6 : 8

Sum of ratios = *7 + 6 + 8 = 21*

I Munir's share = $7/21 \times 231 = 7 \times 11 = 77$ rupees
Munir's actual share = $77 - 11 = 66$ rupees
II Bashir's share = $6/21 \times 231 = 11 \times 6 = 66$ rupees
Bashir's actual share = $66 - 15 = 51$ rupees
III Nazir's share = $8/21 \times 231 = 8 \times 11 = 88$ rupees
Nazir's actual share = $88 - 13 = 75$ rupees
Hence

Answers:

Munir will get *66* rupees
Bashir will get *51* rupees
Nazir will get *75* rupees

Q.4 Divide 81 into 3 shares so that half of first, one third of second and one-fourth of third are all equal?

Solution:

Suppose half of the 1st share = *1*
∴ 1st share = $1 \times 2 = 2$
2nd share = $1 \times 3 = 3$
3rd share = $1 \times 4 = 4$
Hence ratio between three shares = 2 : 3 : 4
Sum of the ratios = $2+3+4=9$

Answers:

∴ 1st share = $2/9 \times 81 = 18$
∴ 2nd share = $3/9 \times 81 = 27$
∴ 3rd share = $4/9 \times 81 = 36$

Q.5 Divide 195 rupees Ameena, Nasreen and Yasmeen so that twice of Ameena's share, thrice of Nasreen's and three-fourths of Yasmeen's share are all equal?

Solution:

If 2 time of Ameena's share is one then Ameena's actual share = $\frac{1}{2}$

Similarly, if 3 times of Nasreen's share is one then Nasreen's actual share = $\frac{1}{2}$

And if 3/4 times of Yasmeen's share is one then Yasmeen's actual share = 4/3.

Ratio between Ameena, Nasreen and Yasmeen's share

$= \frac{1}{2} : \frac{1}{3} : 4/3$

$= 3 : 2 : 8$ (multiplying the ratios by 6)

Sum of shares $= 3+2+8=13$

Amount of division = 195 rupees

Answers:

Ameena's share $= 3/13 \times 195 = 3 \times 15 = 45$ rupees

Nareen's share $= 2/13 \times 195 = 2 \times 15 = 30$ rupees

Yasmeen's share $= 8/13 \times 195 = 8 \times 15 = 120$ rupees

Q.6 ***Divide 1250 rupees among A, B and C so that A gets 2/3 of total shares of B and C and B gets 9/16 of the total shares of C and A?***

Solution:

A gets 2/3 of the total shares of B and C.

Suppose of B and C's share = 3

∴ A's share = 2

Total of A, B and C's share = 2+3 = 5

∴ A's share $= 2/5 \times 1250 = 2 \times 250 = 500$ rupees

Similarly B get's 9/16 of A and C's total share suppose A and C get Rs. 16.

∴ B's share will be 9/16.

Total of A, B and C's share will be $19+9=25$

∴ D's share $= 9/25 \times 1250 = 9 \times 50 = 450$ rupees

Total of *A* and *B*'s share = *500+450=950*

∴ *C*'s share = *1250–950=300* rupees

Hence:

Answers:

A's share = *500* rupees

B's share = *450* rupees

C's share = *300* rupees

Q.7 Divide a profit of 715 rupees amont Hameed, Waheed and Saeed so that Hameed's share is 4/7 of the other shares and Waheed's share is 5/8 of the other shares?

Solution:

Total amount = *715* rupees

Since Hameed's share is *4/7* of Waheed and Saeed's share i.e. if Saeed and Waheed get *7* then Waheed will get *4*.

Sum of ratios = *4+7=11*

∴ Hameed's share = *4/11×715=65×4=260*

Similarly Saeed's share = *5/8*

i.e. if Hameed and Waheed get *8* then Saeed will get *5*.

∴ Sum of ratios = *5+8=13*

Hence Saeed's share = *5/13×715=5×55=275*

Hameed's share + Saeed's share = *260+275=535*

∴ Total amount = *715*

∴ Waheed's share=*715–535=180*

Answers:

Hameed = *260* rupees

Saeed = *275* rupees

Waheed = *180* rupees

Q.8 ***Divide 112 rupees among A, B and C so that A's share is 3/4 of the total share of B and C and B's share is 3/5 of the total shares of A and C?***

Solution:

Total amount = 112 rupees
Now A's share = 3/4
i.e. if B and C get 4 then A will get 3
Hence sum of ratios = 3+4=7
So A's share = $3/7 \times 112 = 3 \times 16 = 48$ rupees
Similarly B's share=3/5
i.e. if A and C get 5 then B will get 3 Hence sum of ratios=3+5=8

$\therefore$ B's share = $3/8 \times 112 = 3 \times 14 = 42$ rupees
A's share + B's share=48+42=90 rupees
Total amount = 112 rupees
C's share = 112 − 90 = 22 rupees

Answers:

A's share = 48 rupees
B's share = 42 rupees
C's share = 22 rupees

Q.9 ***Divide 320 rupees among 5 men and 6 women so that each man gets twice that of a woman?***

Solution:

Suppose a woman get 1 rupees
$\therefore$ One man will get 2 rupees
$\therefore$ Share of 6 women = 6 rupees
$\therefore$ Share of 5 men = 10 rupees
Ratio between shares of 6 women and 5 men
Sum of ratios = 6+10=16
$\therefore$ Share of 6 women = $6/16 \times 320 = 120$
$\therefore$ Share of one woman = $120/6 = 20$ rupees
Similarly share of 5 men = $10/16 \times 320 = 200$ rupees

∴ Share of one man = 200/5=40 rupees

Answers:

One man share=40 rupees
One woman share = 20 rupees

Q.10 Divide Rs. 26.25 among A,B and C so that B gets 5/6 of A's share and C gets 2 times that of B?

Solution:

Suppose *A* gets Rs. *1*
So *B* will get *5/6* of *1=5/6*
And *C* will get *5/6×2=5/3*
Ratio between the shares *A*, *B* and *C*
1 : 5/6 : 5/3
(multiplying the ratios by 6)
or *6 : 5 : 10*
Sum of ratios = 6+5+10+21
Amount for distribution = 26.25 or 26 or 105/4

Answers:

$$A\text{'s share} = \frac{105}{4}\times\frac{6}{21} = \frac{15}{2} = 7.50 \text{ rupees}$$

$$B\text{'s share} = \frac{105}{4}\times\frac{5}{21} = \frac{25}{4} = 6.25 \text{ rupees}$$

$$C\text{'s share} = \frac{10}{4}\times\frac{10}{21} = \frac{25}{2} + = 12.50 \text{ rupees}$$

EXERCISE 5.7

Q.1 ***A person died leaving behind him a "Tarka" worth Rs. 24000. Distribute the "Tarka" among deceased's mother, widow and son so that moter get 1/6, widow 1/8 of the property and the remaining goes to the son while the payment of a debt of 4000 rupees and dower amount of 5000 rupees is due on him?***

Solution:

Total property = *24000* rupees
Debt = *4000* rupees
Dower amount = *5000*
Amount due on him = *4000+5000=9000*
Remaining amount to be distributed = *24000 – 9000 = 15000*
Wife's share = *1/8 × 15000 = 1875* (besides dower amount)
Totally wife will get = *1875 + 5000 = 6875* rupees
Mother's share = *1/6 × 15000 = 2500* rupees
Total share of life and mother (beside dower amount)

1875+2500=4375 rupees

Son will get = *15000–4375=10625*

Answers:

Wife will get = *1875* (beside dower amount)
Mother will get = *2500* rupees
Son will get = *10625* rupees

Q.2 ***A woman died. Her heirs were her husband, two daughters and a brother. A "Tarka" worth Rs. 2700 was distributed among her heirs in the ratio $\frac{1}{4}$: 2/3 : 1/12. Find share of each?***

Solution:

Deceased woman's Tarka = *2700* rupees
Heirs are : Husaband : 2 laughters & 1 brothers
Ratio between share = $\frac{1}{4}$: *2/3 : 1/12*
or *3 : 8 : 1* (multiplying the ratio *1* by *12*)
Sum of the ratio = *3+8+1=12*
Husband's share = *3/12×2700 = 3 × 225 = 675* rupees
Share of 2 daughters = *8/12×2700=8×225= 1800* rupees
∴ each daughter will get = *1800/2=900* rupees
Share of brother = *1/12×2700=1×225=225* rupees

Answers:

Share of husband = *675* rupees
Share of each daughter = *900* rupees
Share of brother = *225* rupees

Q.3 ***Wife of Zaid died leaving behind her two daughters and a son. Zaid 1/4 of Tarka of 18000 rupees. The remaining sum was deposited in the account of her children so that each daughter got half of what her son got. Find the amount of each share?***

Solution:

Total Tarka Zaid's wife = *18000* rupees
Zaid's share = $\frac{1}{4}$ *×18000=1×4500=4500* rupees
Remianing amount = *18000 − 4500 = 13500* rupees
Since share of 2 daughters = share of one son

Hence the remaining amount to be distributed into two halve.

(i) Son will get one-half.

(ii) Two daughters will equally share the ramaining half.

Son's share $= \frac{13500}{2} = 6750$ rupees

Share of two daughters = 6750 rupees

$\therefore$ Share of each daughter $= \frac{6750}{2} = 3375$ rupees

Answers:

Share of Zaid = 4500 rupees
Share of son = 6750 rupees
Share of each daughter = 3375 rupees

Q.4 ***A person died, leaving behind him a Tarka worth Rs. 30,000. Distribute the Tarka among 4 sons and 3 daughters so that each daughter get half of what a son gets. Find the share of each when a debt of Rs. 8000 is also paid out of Tarka?***

Solution:

Total value of Tarka = 30000 rupees
Amount of debt = 8000 rupees
Remaining Tarka to be distributed=30000–8000
= 22000 rupees
Now share of 1 daughter = $\frac{1}{2}$
$\therefore$ Share of 3 daughters = $3 \times \frac{1}{2} = 3/2$
Share of 4 sons = 4
Ratio between the shares = 3/2 : 4
or 3 : 8 (multiplying the shares by 2)
Sum of ratios = 3+8=11
3 daughter will get = $3/11 \times 22000 = 3 \times 2000 =$ 6000
$\therefore$ Each daughter will get = $\frac{6000}{3} = 2000$ rupees

4 sons will get=$8/11 \times 22000=8 \times 2000=16000$ rupees

$\therefore$ Each son will get = $\frac{16000}{4}$ = 4000 rupees

Answers:

Each son will get = 4000 rupees

Each daughter will get = 2000 rupees

Q.5 ***Munshi Kasim died leaving behind him a Tarka worth Rs. 56000. If a debt of Rs. 2000 rupees was due on him. Find the shares of each one according to the following scheme?***

Window's share = 1/8

Mother's she = Father's sare = 1/6

Share of two daughters = 2/3

Solution:

Total value of Tarka = 56000 rupees

Debt = 2000 rupees

Remaining tarka = $56000-2000=54000$ rupees

Ratio between the shares

Wife: Mother: Father: Two daughters

	1/8	1/6	1/6	2/3
or	3	4	4	16

(multiplying the ratios by 24)

Sum of the ratios = 27

Hence

Wife will get = $3/27 \times 54000=3 \times 2000=6000$ rupees

Mother will get = $4/27 \times 54000=4 \times 2000=8000$ rupees

Father will get = $4/27 \times 54000=4 \times 2000=8000$ rupees

2 daughters will get

$= 16/27 \times 45000=16 \times 2000=32000$ rupees

Each daughter will get = $\frac{32000}{2}$ = 16000

Answers:

Wife = *6000* rupees
Mother = *8000* rupees
Father = *8000* rupees Each daughter = *16000* rupees

Q.6 ***A person died leaving behind him 4 daughters, 6 sons and a widow. Wife got 1/8 of the property and each son got twice of what each daughter got. What will be the share of each one out of Tarka of 20000 rupees when a debt of 4000 rupees is also due on the deceased?***

Solution:

Total value of Tarka = *20000* rupees
Debt = *4000* rupees
Net tarka = $20000-4000=16000$ rupees
Share of wife = $1/8 \times 16000=2000$ rupees
Remaining tarka = $16000-2000=14000$ rupees
Suppose each son gets = 1
So each daughter will get = $\frac{1}{2}$
Share of 6 sons = $6 \times 1=6$
Share of 4 daughters = $4 \times \frac{1}{2}=2$
Ratio between shares of 6 sons and 2 daughters $= 6 : 2$
Sum of ratios = $6+2=8$
So share of 6 sons $=6/8 \times 14000=6 \times 1750=10500$ rupees

$\therefore$ Share of 1 son $= \frac{10500}{6}=1750$ rupees

Similarly share of 4 daughters

$= 2/8 \times 14000=2 \times 1750=3500$ rupees

Hence share of each daughter $= \frac{3500}{4}=875$ rupees

Answers:

Widow's share = *2000* rupees
Each son's share = *1750* rupees
Each daughter's share = *875* rupees

Q.7 On the death of a person his heirs were 3 daughters, his mother and his father. A debt of Rs. 15000 was due on him. Find the share of every heir out of Tarka worth 51000 rupees so that father and mother gets 1/6 each and each daughter gets 2/9 of the property?

Solution:

Tarka = *51000* rupees
Debt = *15000* rupees
Net Tarka = *36000* rupees
Since each daughter gets = *2/9*
∴ *3* daughters will get = $2/9 \times 3 = 2/3$
Ratio between shares of father, moter and 3 daughters

1/6 : 1/6 : 2/3
or *1 : 1 : 4* (multiplying the ratios by 6)

Sum of the ratios = *6*
Hence share of father = $1/6 \times 36000 = 6000$ rupees
Share of mother = $1/6 \times 36000 = 6000$ rupees
Share of 3 daughters = $4/6 \times 36000 = 4 \times 6000 =$ *24000* rupees
Share of 1 daughter = $\frac{24000}{3} = 8000$ rupees

Answers:

Father will get *6000* rupees
Mother will get *6000* rupees
Each daughter will get *8000* rupees

Q.8 ***Bakr died childless while his parents had also died. A debt of 4000 rupees was due on him and 5000 rupees were given to his friend Abid according to his will. $\frac{1}{3}$ of the remaining went to a school and the remaining was distributed among his two brothers and a sister so that a brother got twice of what his sister got. Find the share of each brother and sister while the value of his Tarka was 42000 rupees?***

Solution:

Total value of tarka = 42000 rupees
Debt 4000 + Given to Abid 5000=9000 rupees
Remaining tarka = 42000−9000=33000 rupees
Given to school = $\frac{1}{3} \times 33000 = 11000$ rupees
Remaining tarka = 33000−11000=22000 rupees
Now if sister gets 1
Brother will get 2
Share of 2 brothers = 4
Ratio of shares 1 : 4
Sum of ratios = 5
2 brothers will get = $4/5 \times 22000 \times 4 \times 4400 =$ 17600

Share of one brother = $\frac{17600}{4} = 4400$
Share of sister = $1/5 \times 22000 = 4400$

Answers:

Each brother gets = 8800 rupees
Sister gets = 4400 rupees

Q.9 ***Jalal died leaving behind a whidow, 3 grand sons, 2 grand daughter and their mother. 3000 rupees were paid as debt and 5000 rupees to widow, as widower's amount from the Tarka of 46400 rupees. The remaining property was distributed amount his heirs in the ratio 1/8: 7/32: 17/96: 1/6. Find the share of each heir.***

Solution:

Debt Tarka amount = Rs. 46400

n = Rs. 3000) paid

Widower's n = Rs. 5000) from

The remainder = 46400–8000=38400

Rs. 1321

Widow		Grand sons		Grand daughter		Mother
1/8	:	17/32	:	17/96	:	1/6
12	:	51	:	17	:	16

Sum of ratio = 12+51+17+26=96

I share = $\frac{12}{96} \times 38400$

= 4800 Rs.

II share = $\frac{51}{96} \times 38400$

= 20400 Rs.

III share = $\frac{17}{96} \times 38400$

= 6800 Rs.

IV share = $\frac{16}{96} \times 38400$

$= 6400$ Rs.

Widow gets: Rs. 4800

Grandson gets $= \frac{20400}{3} = 6800$ Rs.)

Grand daughter gets $= \frac{6800}{2} = 3400$ Rs) ***Ans***

Mother gets = Rs. 6400

Answer:

Mother Rs. 6400 Grandsons Rs. 6800. Grand daughter Rs. 3400 and widow Rs. 4800.

Q.10 The Tarka of a person was distributed according to his will so that 8000 rupees were paid as debt and out of remaining property 1/6 was given to mother, 1/8 to widow and Rs. 1750 were given in charity. The remaining property was distributed among 3 sons and a daughter so that each son got twice of what a daughter got. Find the share of each if the value of his Tarka was 50000 rupees?

Solution:

Total value of Tarka = 50000

Debt = 8000

Remaining tarka = $50000 - 8000 = 42000$

Paid to mother = $1/6 \times 42000 = 7000$

Paid to widow = $1/8 \times 42000 = 5250$

Given in charity = 1750

$7000 + 5250 + 1750 = 14000$ rupees

Remaining amount of tarka = $42000-14000=28000$

Now suppose each daughter get = 1

And each son will get = 2

$\therefore$ Share of one daughter = 1

Share of 3 sons = 6

Ratio between shares of daughter and sons

$1:6$

Sum of ratios = 7

Daughter gets $1/7 \times 28000=4000$

3 sons get $6/7 \times 28000=24000$

Each son will get $= \frac{24000}{3} = 8000$

Answers:

Each daughter gets = 4000 rupees

Each son gets = 8000 rupees

Widow gets = 5250 rupees

Mother gets = 7000 rupees

EXERCISE 5.8

Q.1 ***Zaid, Umar and Bakr started joint business and invested Rs. 840 rupees, 900 rupees and 720 rupees respectively. They gained a profit of Rs. 1230 after a year. Find each one's share in profit?***

Solution:

Zaid invested = *840* rupees
Umar invested = *900* rupees
Bakr inveted = *720* rupees
Ratio in profit = *840 : 900 : 720*
or *84 : 90 : 72*
or *14 : 15 : 12*
Sum of ratios = *14+15+12=41*
Amount of profit = *1230* rupees
Zaid's profit = $14/41 \times 1230$ or $14 \times 30 = 420$ rupees
Umar's profit = $15/41 \times 1230$ or $15 \times 30 = 450$ rupees
Bakr's profit = $12/41 \times 1230$ or $12 \times 30 = 360$ rupees

Answers:

Zaid *420* rupees
Umar *450* rupees
Bakr *360* rupees

Q.2 ***A invested 6300 rupees, B invested 4200 rupees and C invested 7,500 rupees in a joint business and gained a profit of 720 rupees. Find each one's share in profit?***

Solution:

A's investment *6300* rupees
B's investment *4200* rupees
C's investment *7500* rupees
Ratio in profit *6300 : 4200 : 7500*
or *63 : 42 : 75* (divided by *100*)
or *21 : 14 : 25* (divided by *3*)

Sum of ratios $21+14+25=60$
Profit 720 rupees
Hence
A's share $21/60 \times 720 = 21 \times 12 = 252$ rupees
B's share $14/60 \times 720 = 14 \times 12 = 168$ rupees
C's share $25/60 \times 720 = 25 \times 12 = 300$ rupees

Answers:

A 252 rupees
B 168 rupees
C 300 rupees

Q.3 ***Kareem invested 3000 rupees, Raheem invested 9900 rupees and Saleem invested 7200 rupees in a joint business and gained a profit of Rs. 885.50. Find each ones share in the profit?***

Solution:

Kareem's investment 3000 rupees
Raheem's investment 9900 rupees
Saleem's investment 7200 rupees
Ratio in shares 3000 : 9900 : 7200
or 30 : 99 : 72 (divided by 100)
or 4 : 11 : 8 (divided by 9)
Sum of ratios $4 + 11 + 8 = 23$
Profit 885.50
Kareem's profit $4/23 \times 885.50 = 4 \times 33.50 = 154$ rupees
Raheem's profit $11/23 \times 885.50 = 11 \times 33.50 = 423.50$ Rs.
Saleem's profit $8/23 \times 885.50 = 8 \times 33.50 = 308$ rupees

Answers:

Kareem 154.00 rupees
Raheem 423.53 rupees
Saleem 308.00 rupees

(Note: There is a printing mistake in the text-book. Kareem's investment is 3600 and not 3000).

Q.4 ***In a business 1240 rupees were gained as profit. Find the share of each partner if they invested Rs. 960 rupees 864 rupees and 1152 rupees respectively?***

Solution:

1st partner invested *960* rupees
2nd partner invested *864* rupees
3rd partner invested *1152* rupees

960 : 864 : 1152
or *60 : 54 : 72* (divided by *16*)
or *10 : 9 : 12* (divided by 6)

Sum of ratios *10+9+12=31*
Amount of profit *1240* rupees
1st partner's share in profit
$10/31 \times 1240 = 10 \times 40 = 400$ rupees
2nd partner's share in profit
$9/31 \times 1240 = 9 \times 40 = 360$ rupees
3rd partner's share in profit
$12/31 \times 1240 = 12 \times 40 = 480$ rupees

Answers:

1st partner *400* rupees
2nd partner *360* rupees
3rd partner *480* rupees

Q.5 ***A. B and C invested Rs. 3000 rupees, 3250 rupees and 3500 rupees in a joint business. After a year they gained a profit of 7240 rupees. Find the shares of each one if A got 1000 rupees out of profit money for acting as manager?***

Solution:

A's investment *3000* rupees
B's investment *3250* rupees
C's investment *3500* rupees
Ratio in investment
3000 : 3250 : 3500

or 300 : 375 : 350 (divided by 10)
or 12 : 13 : 14 (divided by 5)
Sum of ratios 12 + 13 + 14 = 39
Paid to A for acting as manager Rs. 1000
Net profit to be distributed 7240–1000=6240
A's share 12/39×6240=12×160=1920 rupees
B's share 13/39×6240=13×160=2080 rupees
C's share 14/39×6240=14×160=2240 rupees

Answers:

A = 1920 rupees
B = 2080 rupees
C = 2240 rupees

Q.6 ***A, B, C and D invested Rs. 2000, 1875, 875 and 1625 respectively in a joint business and gained a profit of Rs. 3,240 rupees after a year. Find shares of each one if C has get 100 rupees per month for acting as manager?***

Solution:

A's investment 2000 rupees
B's investment 1875 rupees
C's investment 875 rupees
D's investment 1625 rupees
Ratio in investment
2000 : 1875: 875 : 1625
or 400 : 375 : 175 : 325 (divided by 5)
or 16 : 15 : 7 : 13 (divided by 25)
Sum of ratios 16+15+7+13=51
Amount of Profit 3240 rupees
Salary of C for one year 12×100=1200 rupees
Remaining profit 3240–1200=2040 rupees
Hence

A's share $16/51 \times 2040 = 16 \times 40 = 640$ rupees

B's share $15/51 \times 2040 = 15 \times 40 = 600$ rupees

C's share $7/51 \times 2040 = 7 \times 40 = 280$ rupees

D's share $\frac{13}{51} \times 2040 = 13 \times 40$

$= 520$ rupees

Answers:

A	640 rupees
B	600 rupees
C	280 rupees
D	520 rupees

Q.7 A, B and C started a business. They invested 4600 rupees and gained a profit of 690 rupees. Find each ones share in the profit if A invested 400 rupees more than those of B and B invested 300 rupees more than those of C?

Solution:

Had A and B invested the same amount as C had invested. Then remaining capital had been.

$4600-(300+300+400)$

or $4600-1000=3600$

C's Capital $= \frac{3600}{3} = 1200$

B's Capital $= 1200+300=1500$

A's Capital $= 1500+400=1900$

Ratio between shares of A, B and C

$1900 : 1500 : 1200$

or $19 : 15 : 12$ (divided by 100)

Sum of shares $= 46$

Profit $= 690$

A's share in profit $= 19/46 \times 690 = 19 \times 15 = 285$ rupees

B's share in profit $= 15/46 \times 690 = 15 \times 15 = 225$ rupees

C's share in profit $= 12/46 \times 690 = 12 \times 15 = 180$ rupees

Answers:

A = *285* rupees

B = *225* rupees

C = *180* rupees

EXERCISE 5.9

Q.1 ***Rehman stared a business with 2400 rupees in the begining for a year. Kareem became a partner by investing 7200 rupees in the middle of the year. They gained a profit of 160 rupees at the end of the year. Find each ones share in the profit?***

Solution:

(1) Rehman's investment for 12 months = 2400
Rehman's investment for 1 month = $2400 \times 12 = 28800$

(2) Kareem's investment for 6 months = 7200
Kareem's investment for 1 month = $7200 \times 6 = 43200$
Ratio between Raheem and Kareem's share
2800 : 43,200
or 288 : 432 (divided by 100)
or 24 : 36 (divided by 12)
or 2 : 3 (divided by 12)
Sum of ratios = $2+3=5$
Amount of profit = 160 rupees
Raheem's share = $2/5 \times 160 = 2 \times 42 = 64$ rupees
Kareem's share = $3/5 \times 160 = 3 \times 32 = 96$ rupees

Answers:

Rehman = 64 rupees
Kareem = 96 rupees

Q.2 ***A, B and C started a joint business. A invested 500 rupees for 9 months, B invested 700 rupees for one year and C invested 1200 rupees for 5 months. They met a loss of 945 rupees at the end of the year. Find each ones share in the loss?***

Solution:

(1) A's investment for 9 months = 500

A's investment for 1 month = 9×500 = 4500

(2) *B's investment for 12 month = 700*

B's investment for 1 month = 12×700 = 8400

(3) *C's investment for 5 months = 1200*

C's investment for 1 months = 5×1200= 6000

Ratio in investment = *4500 : 8400 : 6000*

or *45 : 84 : 60* (dividing by *100*)

or *15 : 28 : 20* (dividing by *3*)

Sum of ratios = *15 + 28 + 20 = 63*

Total loss = *945* rupees

A's share in loss = *15/63 × 945 = 151 × 5 = 225* rupees

B's share in loss = *28/63 × 945 = 28 × 15 = 420* rupees

C's share in loss = *20/63 × 945 = 20 × 15 = 300* rupees

Answers:

A = 225 rupees

B = *420* rupees

C = *300* rupees

Q.3 ***Three partners invested 2000 rupees. 3500 rupees and 4750 rupees respectively in a joint business. Their capitals remained in the business for 6 months, 3 months and 2 months respectively. What would be share of each in a profit of 4000 rupees?***

Solution:

(1) Capital of *1st* partner for *6* months = *2000*

Capital of *1st* partner for *1* month = *6×2000= 12000*

(2) Capital of *2nd* partner for *3* months = *3500*

Capital of *2nd* partner for *1* month = *3×3500= 10500*

(3) Capital of *3rd* partner for *2* months = *4750*

Capital of *3rd* partner for *1* month = *2×4750= 9500*

Ratio between Capital invested

$12000 : 10500 : 9500$

or $120 : 105 : 95$ (divided by 100)

or $24 : 21 : 19$ (divided by 5)

Sum of ratios $= 24 + 21 + 19 = 64$

Profit = 400 rupees

Share of 1st partner in profit

$$= \frac{24}{64} \times 4000 = 3 \times 500 = 1500$$

Share of 2nd partner in profit

$$= \frac{21}{64} \times 4000 = \frac{21 \times 125}{2} = 1312.50$$

Share of 3rd partner in profit

$$= \frac{19}{64} \times 4000 = \frac{19 \times 125}{2} = 1187.50$$

Answers:

1st partner = 1500 rupees

2nd partner = 1312.50 rupees

3rd partner = 1187.50 rupees

Q.4 ***A, B and C jointly rented a pasture for 544 rupees. A grazed his 16 cattles for 6 weeks, B grazed his 22 cattles for 4 weeks and C grazed his 30 cattles for 12 weeks. How much of rent would each pay?***

Solution:

(1) A grazed for 6 weeks = 16 cattles

A grazed for 1 week = $16 \times 6 = 96$ cattles

(2) B grazed for 4 weels = 22 cattles

B grazed for 1 week = $4 \times 24 = 88$ cattles

(3) C grazed for 12 weeks = 30 cattles

C grazed for 1 week = $30 \times 12 = 360$ cattles

Ratio between the cattles grazed for one week for each partner.

$96 : 88 : 360$

or $12 : 11 : 45$ (divided by 8)

Sum of the ratios $= 12 + 11 + 45 = 68$

Rent of pasture = 544 rupees

Answers:

A will pay = $12/68 \times 544 = 12 \times 8 = 96$ rupees

B will pay = $11/68 \times 544 = 11 \times 8 = 88$ rupees

C will pay = $45/68 \times 544 = 45 \times 8 = 360$ rupees

Q.5 ***A and B jointly started a business. A invested 1470 rupees and B invested 1050 rupees. After 4 months C jointed them by investing 1890 rupees. After a year they gained a profit of 4410 rupees of the total capital. Find the share of each in the profit?***

Solution:

(1) *A*'s capital for 12 months = 1470

A's capital for 1 month = $12 \times 1470 = 17640$

(2) *B*'s capital for 12 months = 1050

B's capital for 1 month = $12 \times 1050 = 12600$

(3) *C*'s capital for 8 months = 1890

C's capital for 1 month = $8 \times 1890 = 15120$

Ratio between shares of *A*, *B* and *C*

17640 : 12600 : 15120

or 1764 : 1260 : 1512 (dividing by 10)

or 147 : 105 : 126 (dividing by 12)

or 7 : 5 : 6 (dividing by 21)

Sum of the ratios = 7 + 5 + 6 = 18

Total capital = 1470 + 1050 + 1890 = 4410

∴ Profit = 4410

A's share $= \frac{7}{18} \times 4410 = 1715$ rupess

B's share $= \frac{5}{18} \times 4410 = 1225$ rupees

C's share $= \frac{6}{18} \times 4410 = 1470$ rupees

Answers:

A = 1715 rupees
B = 1225 rupees
C = 1470 rupees

Q.6 ***A invested 750 rupees in a business. After 4 months he invested 250 rupees more and at time B joined A by invested 1500 rupees. After 3 months B took 500 rupees back and at this time C joined them by investing 5000 rupees. After a year they gained a profit of 4264 rupees. Out of this profit B was paid 52 rupees for managing the business. Find the share of each one in the profit?***

Solutions:

(1) *A's* first capital for one month = $12 \times 750 = 9000$
A's second capital for one month = $8 \times 250 = 2000$
A's total capital = $9000 + 2000 = 11000$

(2) *B's* first capital for one month = $8 \times 1500 = 12000$
B's capital for one month which was with drawn
$5 \times 500 = 2500$
B's net capital invested for one month
$12000 - 2500 = 9500$

(3) C's capital for one month = *5000*
Ratio between capitals of *A, B* and *C*
11000 : 9500 : 25000
or *110 : 95 : 250* (divided by *100*)
or *22 : 19 : 50* (divided by *5*)
Sum of ratios : $22 + 19 + 5 = 91$
Sum of ratios = *91*
Total profit = *4264*
B's salary $52 \times 12 = 624$
Net profit $4264 - 624 = 3640$
A's share in profit = $22/91 \times 3640 = 22 \times 40 = 880$

B's share in profit = $19/91 \times 3640 = 19 \times 40 = 760$

B's total share = $760 + 624 = 1384$

C's share in profit = $50/91 \times 3640 = 50 \times 40 = 2000$

Answers:

A = 880 rupees

B = 1348 rupees

C = 2000 rupees

Q.7 ***A, B and C invested in a shop in the ratio $\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$. A took half of his capital out after 4 months. 8 months after that they gained a profit of 2024 rupees. Find the share of each in the profit?***

Solution:

Ratio between the capital of A, B and C

$$\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$$

or $6 : 4 : 3$ (divided by 12)

Suppose A's capital = 6

B's capital = 4

C's capital = 3

∴ A's capital for 4 months = 6

A's capital for 1 month = $6 \times 24 = 144$

Again A's capital for remaining 8 months = 3

A's capital of remaining 1 month = $3 \times 8 = 24$

A's total investment for one month $24 + 24 = 48$

B's investment for 12 months 4

B's investment for 1 month $4 \times 12 = 48$

C's investment for 12 months 3

C's investmnet for 1 month $3 \times 12 = 36$

Ratio between the capitals of A, B and C

$$48 : 48 : 36$$

or $4 : 4 : 3$ (dividing by 12)

Sum of ratios = $4+4+3=11$

Total profit = 2024

Hence Answers:

A's share in profit = $4/11 \times 2024 = 4 \times 184 = 736$ rupees

B's share in profit = $4/11 \times 2024 = 4 \times 184 = 736$ rupees

C's share in profit = $3/11 \times 2024 = 3 \times 184 = 552$ rupees

Q.8 ***A started a business with an investment of 1200 rupees. After some time B also joined him by investing 1600 rupees. At the end of a year they divided the profit equally. When did B joined?***

Solution:

A's investment for 12 months = 1200 rupees

A's investment for 1 month = $12 \times 1200 = 14400$ rupees

As the share has been equally divided

So B's investment for one month = 14400 rupees

$\therefore$ B's capital remained in business for

$$\frac{14400}{1600} = 9 \text{ months}$$

So B joinn business after $(12-9)=3$ months. Ans

Q.9 ***A started a business with a capital of 4500 rupees B joined him afterwards by investing 5400 rupees. If at the end of the year the profit was distributed in the ratio of 2 : 1 when did B join?***

Solution:

A's capital for 12 months = 4500 rupees

A's capital for 1 months = $12 \times 4500 = 54000$ rupees

Since Ratio between A and B's share in profit = $2 : 1$

Hence B's investment for one month must be half

of what A invested for one month.

$\therefore$ B's investment for one month $= \frac{54000}{2} = 27{,}000$ rupees

B's investment $= 5400$

5400 period $= 27000$

or period $= \frac{27000}{5400} = 5$ months

B joined the busines afrer $(12-5) = 7$ months.

Ans

