SIMPLE INTEREST SOLUTION

1. (b) Rate (दर)% = 4%

Simple Interest
(साधारण ब्याज) = Rs. 150

Time (समय) = 6 months (माह)

$= \frac{6}{12} = \frac{1}{2}$ year

Let the principal (मूलधन) = Rs. P

We know (हम जानते हैं),

$$\boxed{SI = \frac{P \times R \times T}{100}}$$

Where (जहाँ),

SI → Simple Interest (साधारण ब्याज)

P → Principal (मूलधन)

R → Rate (दर)

T → Time (समय)

$\Rightarrow 150 = \frac{P \times 4 \times 1}{2 \times 100}$

$\Rightarrow P = \frac{150 \times 200}{4}$ = **Rs. 7500**

2. (a) Let principal (माना कि मूलधन) = 6P,

Hence, Amount (मिश्रधन) = $6P \times \frac{7}{6} = 7P$

$\therefore$ SI = 7P – 6P = P

Time (समय) = 3 years (वर्ष)

$$\boxed{SI = \frac{P \times R \times T}{100}}$$

$\Rightarrow P = \frac{6P \times R \times 3}{100}$

$\Rightarrow R = \frac{100}{18} = \frac{50}{9} = \mathbf{5\frac{5}{9}\%}$

Alternate:-

Note: In such type of questions to save your valuable time try to think like that.

नोट: इस प्रकार के प्रश्नों में नीचे दी गयी विधि के अनुसार सोचने का प्रयास करें।

Amount — Principal

7 — 6

+1

Required Rate% = $\frac{1}{6} \times \frac{100}{3} = \mathbf{5\frac{5}{9}\%}$

3. (d) **Note** → SI for every year will be same.

नोट: प्रत्येक वर्ष के लिए साधारण ब्याज बराबर होगा।

$\therefore$ Simple Interest for 3 years
(3 वर्षों का साधारण ब्याज) = 3 × 5 = 15%

Simple Interest for 4 years
(4 वर्षों का साधारण ब्याज) = 4 × 5 = 20%

Difference in interest (ब्याज का अंतर)
= (20 – 15) = 5%

According to question (प्रश्नानुसार),
5% of sum = 42

Sum = $\frac{42}{5} \times 100$ = **Rs. 840**

4. (c) Let the rate of interest for two different sources is r_1 and r_2 respectively.

माना कि दो अलग-अलग स्रोतों से ब्याज दर क्रमशः r_1 और r_2 है।

According to the question (प्रश्नानुसार),

$\frac{1500 \times r_1 \times 3}{100} - \frac{1500 \times r_2 \times 3}{100} = 13.50$

$4500\ r_1 - 4500\ r_2 = 1350$

$(r_1 - r_2) = \frac{1350}{4500} = 0.3\%$

Hence, Required difference in rates
(दरों का अभीष्ट अंतर) = 0.3%

Alternate:- / वैकल्पिक विधि:-

Let the difference in rates (माना कि दरों का अंतर) = d%

According to the question (प्रश्नानुसार),

$d = \frac{13.50}{1500} \times \frac{100}{3} = \frac{1350}{4500}$ = **0.3%**

5. (a) Let the sum lent at 8% is x then sum lent at 10% is (10000 – x)

माना कि 8% ब्याज दर पर x रुपये कर्ज दिया गया तथा 10% दर पर $(10000 - x)$ रुपये का कर्ज दिया गया।

According to the question (प्रश्नानुसार),

$$x \times \frac{8}{100} \times 1 + (10000 - x) \times \frac{10}{100} \times 1$$

$$= 10000 \times \frac{9.2}{100} \times 1$$

$$\frac{8x}{100} + \frac{10(10000-x)}{100} = 920$$

$8x + 100000 - 10x = 92000$

$-2x + 100000 = 92000$

$-2x = 92000 - 100000$

$-2x = -8000$

$x = 4000$

Hence, Amount lent at (8% ब्याज दर पर कर्ज दी गयी राशि) 8% = Rs. 4000

Amount lent at (10% ब्याज दर पर कर्ज दी गयी राशि) 10% = (10000 – 4000)

= Rs. 6000

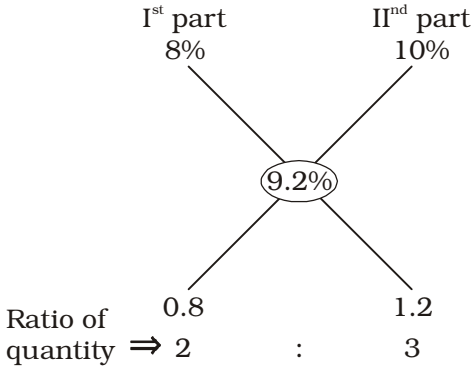
Alternate:-/वैकल्पिक विधि:-

Note:- In such type questions to save your valuable time follow the given below method.

नोट: इस प्रकार के प्रश्नों में अपने बहुमूल्य समय के बचत के लिए आप नीचे दी गयी विधि का प्रयोग कर सकते हैं।

By alligation Method (मिश्रण नियम के द्वारा)

(i)



According to the question (प्रश्नानुसार),

(2 + 3) units = Rs. 10,000

5 units = Rs. 10,000

1 unit = Rs. 2,000

Hence amount invested at 8% (8% की दर पर निवेश की गयी राशि) = 2 units (यूनिट)

= 2 × 2000 = Rs. 4000

Amount invested at 10% (10% की दर पर निवेश की गयी राशि) = 3 units (यूनिट)

= 3 × 2000 = **Rs. 6000**

6. (c) Time = 2 years 3 months

$$= 2 + \frac{3}{12} = \frac{9}{4} \text{ years}$$

We know $\boxed{SI = \frac{P \times R \times T}{100}}$

P = Rs. 1600, T = $\frac{9}{4}$ years, SI = Rs. 252

Put values in the above formula (उपरोक्त विधि में मान रखने पर),

$$\Rightarrow 252 = \frac{1600 \times R \times 9}{4 \times 100}$$

$$\Rightarrow 252 = 36\,R$$

$$\Rightarrow R = \frac{252}{36} = 7\%$$

7. (b) Let the principal

(माना कि मूलधन) = 9 units

Hence simple interest

$$\text{(साधारण ब्याज)} = \frac{4}{9} \times 9 = 4 \text{ units}$$

Let, Rate of interest (ब्याज दर) = R%

R = T (Given)

By using formula,

$$\boxed{SI = \frac{P \times R \times T}{100}}$$

$$4 = \frac{9 \times R \times R}{100} \Rightarrow R^2 = \frac{400}{9}$$

$$R = \frac{20}{3} = \mathbf{6\frac{2}{3}\%}$$

8. (c) Principal = Rs. 400,

Amount = Rs. 480

Simple Interest = Rs. (480 – 400)

= Rs. 80
Time = 4 years

$$\text{Rate\%} = \frac{\text{SI} \times 100}{\text{P} \times \text{T}}$$

$$\text{Rate\%} = \frac{80\times100}{400\times4} = \frac{8000}{1600} = 5\%$$

New rate of interest = (5 + 2) = 7%

$$\text{Interest} = \frac{400\times7\times4}{100} = 112$$

Hence amount = Rs. (400 + 112)
= **Rs. 512**

Alternate:-

Note:- In such type of questions to save your valuable time follow the given below method.

नोट:- इस प्रकार के प्रश्नों में अपने बहुमूल्य समय के बचत के लिए आप नीचे दी गयी विधि का प्रयोग कर सकते हैं।

Increased in rates (दर में वृद्धि = 4 × 2 = 8%
Hence increased in amount (मिश्रधन में वृद्धि)

$$= 400 \times \frac{8}{100} = 32$$

Hence new amount (नया मिश्रधन)
Rs. (480 + 32) = Rs. 512

9. (a) Let principal
(माना कि मूलधन) = 5 units

$$\text{Hence interest} = 5 \times \frac{2}{5} = 2 \text{ units}$$

Time = 10 years,
By using formula,

$$\text{Rate\%} = \frac{2}{5}\times\frac{100}{10} = \mathbf{4\%}$$

Alternate:-

Note:- In such type of questions to save your valuable time follow the given below method.

नोट:- इस प्रकार के प्रश्नों में अपने बहुमूल्य समय के बचत के लिए आप नीचे दी गयी विधि का प्रयोग कर सकते हैं।

Principal Interest

5 $\xrightarrow{+\frac{2}{5}}$ 2

$$= \frac{2}{5}\times\frac{100}{10} = \mathbf{4\%}$$

10. (c) Principal Interest

5 $\xrightarrow{+\frac{2}{5}}$ 2

$$\text{Required time} = \frac{2}{5}\times\frac{100}{8} = \mathbf{5 \text{ years}}$$

11. (a) Principal (मूलधन) = Rs. 1750
Let the first part (माना कि पहला भाग) = x
Hence second part (इसलिए दूसरा भाग)
= (1750 – x)
According to the question (प्रश्नानुसार),

$$x \times \frac{8}{100} \times 1 = (1750 - x) \times \frac{6}{100} \times 1$$

$4x = 5250 - 3x$
$7x = 5250$
$x = 750$
First part (पहला भाग) = Rs. 750
∴ Second part (दूसरा भाग)
= Rs. (1750 – 750)
= Rs. 1000
Required interest (अभीष्ट ब्याज)

$$= 750 \times \frac{8}{100} = \text{Rs. } 60$$

Alternate:-

Note:- In such type of questions to save your valuable time follow the given below method.

नोट:- इस प्रकार के प्रश्नों में अपने बहुमूल्य समय के बचत के लिए आप नीचे दी गयी विधि का प्रयोग कर सकते हैं।

Let, Principal (माना कि मूलधन) = 100
usits in both cases (दोनों स्थितियों में)

	Ist part		**IInd part**		**Total**
Principal →	$100_{\times3}$	:	$100_{\times4}$	$\xrightarrow{+}$	700 units
Interest →	$8_{\times3}$	:	$6_{\times4}$		

Note: Interest is same in both cases (दोनों स्थितियों में ब्याज बराबर होगा।)

According to the question (प्रश्नानुसार),
700 units = Rs. 1750

1 unit = Rs. $\frac{1750}{700}$

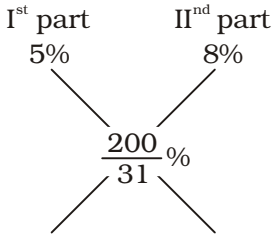
24 units = Rs. $\frac{1750}{700} \times 24$ = Rs. 60

Hence, required interest (अभीष्ट ब्याज)
= **Rs. 60**

12. (d) Avg. rate of interest (औसत ब्याज दर)

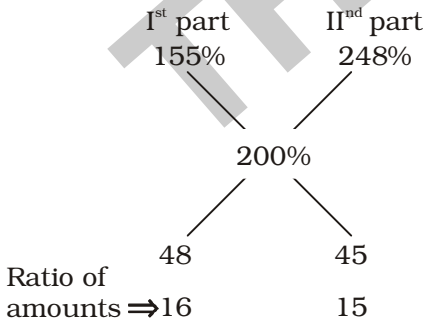
$= \frac{300}{1550} \times \frac{100}{3} = \frac{200}{31}\%$

By using mixture and Alligation Rule (मिश्रण नियम के द्वारा),



Note: Always remember to solve such type of questions multiply by 31 in both parts.

नोट: इस प्रकार के प्रश्नों का हल करते हुए हमेशा दोनों भाग 31 से गुणा करें।

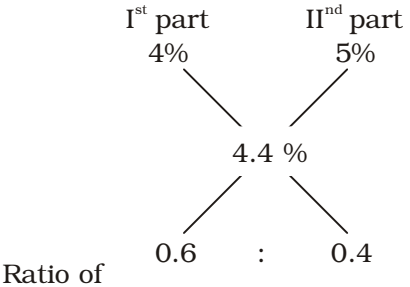


Required Ratio (अभीष्ट अनुपात) = 16 : 15

13. (b) Avg. rate of interest (औसत ब्याज दर)

$= \frac{440}{5000} \times \frac{100}{2} = 4.4\%$

By using mixture and alligation rule (मिश्रण नियम के द्वारा),



Hence Required Ratio (अभीष्ट अनुपात)
= 3 : 2

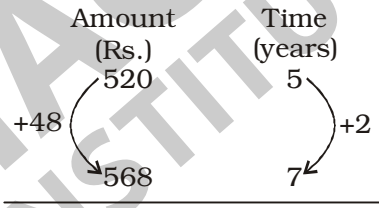
14. (b) Time (समय) = 4 years (वर्ष)

Let sum = 5 units

Hence interest = $5 \times \frac{1}{5}$ = 1 unit

Required rate% = $\frac{1}{5} \times \frac{100}{4}$ = 5%

15. (a)



Hence interest in 2 years = Rs. 48

∴ Interest in 1 years = Rs. $\frac{48}{2}$ = Rs. 24

∴ Interest in 5 years = Rs. 24 × 5
= Rs. 120

∴ We know,

SI = Amount – Principal

Principal = Rs. (520 – 120) = **Rs. 400**

16. (c) Let the latter amount = Rs. x

According to the question,

$\frac{500 \times 12 \times 4}{100} + \frac{x \times 10 \times 4}{100}$

$240 + \frac{4x}{10} = 480$

$\frac{4x}{10} = 240$

$x = 600$

Hence latter amount = **Rs. 600**

Alternate:-

Note: In such type of questions to save your valuable time follow the given below

method.

नोट:- इस प्रकार के प्रश्नों में अपने बहुमूल्य समय के बचत के लिए आप नीचे दी गयी विधि का प्रयोग कर सकते हैं।

Interest on first part (पहले भाग पर ब्याज)

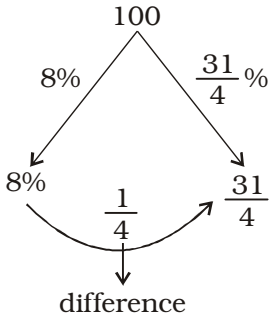
$= \frac{500\times12\times4}{100}$ = Rs. 240

Remaining interest (शेष ब्याज) = Rs. (480 – 240) = Rs. 240

Hence Required amount (अभीष्ट मिश्रधन)

$= \frac{240}{(4\times10)}\times100$ = **Rs. 600**

17. (c) Let initial capital (मात्रा कि आरंभिक संपत्ति) = 100 units



According to the question (प्रश्नानुसार),

$\frac{1}{4}$ unit = Rs. 61.50

1 unit = Rs. 61.50 × 4 = Rs. 246

100 units = Rs. 24600

Hence, Required capital (अभीष्ट संपत्ति) = **Rs. 24600**

Alternate:-

Difference in percentage (% में अंतर)

$= 8\% - \frac{31}{4}\%$

$\frac{1}{4}\% = 61.50$

100% = 24600

18. (d) Let sum lent to c = Rs. x

According to the question (प्रश्नानुसार),

Total interest of 4 years (4 वर्षों का कुल ब्याज) = 4 × 7% = 28%

S.I. received from B (B से प्राप्त साधारण ब्याज)

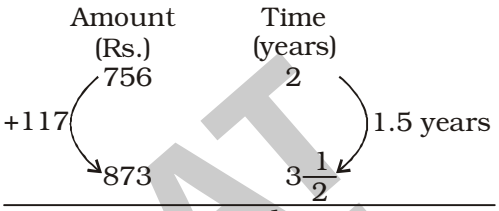
$= 2500 \times \frac{28}{100}$ = Rs. 700

Remaining S.I. that is received from C (C से प्राप्त शेष साधारण ब्याज)

= Rs. 1120 – Rs. 700 = Rs. 420

Principal (मूलधन) = $420 \times \frac{100}{28}$ = Rs. 1500

19. (d)



Hence interest in $1\frac{1}{2}$ years = Rs. 117

Interest in 1 year = $\frac{117}{3}\times2$ = Rs. 78

Interest in 2 years = Rs. 78 × 2 = Rs. 156

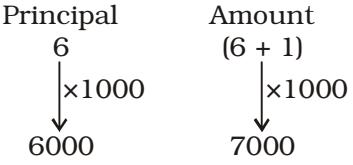
∴ Principal = Rs. (756 – 156) = Rs. 600

Required rate % = $\frac{78}{600}\times100$ = **13%**

20. (c) Amount = Rs. 7000

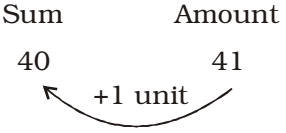
Total interest in 5 years

$= 5\times\frac{10}{3}\% = \frac{50}{3}\% = \frac{1}{6}$



Hence Required principal = **Rs. 6000**

21. (a) Time = 4 years



Required rate% = $\frac{1}{40}\times\frac{100}{1}\times4$ = **10%**

22 (d) Let the sum = Rs. P, $T_1 = \frac{8}{12}$ yrs,

$T_2 = \frac{15}{12}$ years

According to the question,

$$\frac{P\times5\times15}{100\times12} - \frac{P\times4\times8}{100\times12} = 129$$

$$\Rightarrow \frac{43P}{1200} = 129$$

$\Rightarrow$ P = Rs. 3600

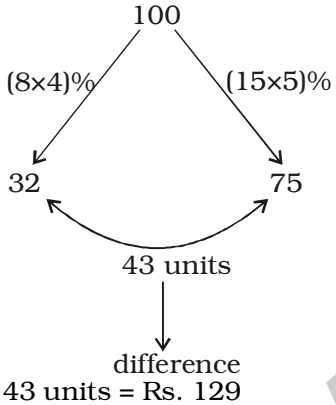
Hence required sum (अभीष्ट योग)

= **Rs. 3600**

Alternate:-

Let sum (माना कि योग) = 100 units

According to the question,



43 units = Rs. 129

1 unit = Rs. 3

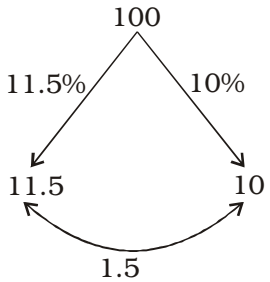
100 units = Rs. 3 × 100 = Rs. 300

yearly sum = Rs. 12 × 300 = Rs. 3600

Note:- Time is given in months and rate% is given per annum. Hence we multiplied the answer by 12.

नोट:- समय माह में दिया गया है और दर प्रतिशत वार्षिक है इसलिए हमने उत्तर को 12 से गुणा कर दिया है।

23. (a) Let the sum = 100 units



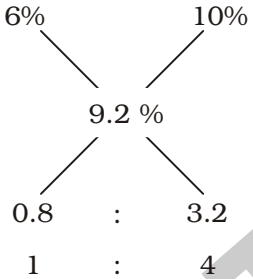
According to the question,

1.5 units = 55.50

$$1 \text{ units} = \frac{55.50}{1.5}$$

$$100 \text{ units} = \frac{55.50}{1.5}\times 100 = \text{Rs. } 3700$$

24. (c) same as question no. 5 we will use the alligation method (प्रश्न संख्या 5 की तरह हम यहाँ भी मिश्रण नियम का प्रयोग करेंगे)



$\Rightarrow$ Parts are $\frac{1000}{(4+1)}\times4, \frac{1000}{(4+1)}\times1$

$\Rightarrow$ 800, 200

25. (d) Total interest paid in 3 years (3 वर्षों में कुल ब्याज का भुगतान) = 12 × 3 = 36%

Interest (ब्याज) = Rs. 5400

According to the questions (प्रश्नानुसार),

36% of sum = Rs. 5400

1% of sum = Rs. $\frac{5400}{36}$

sum = $\frac{5400}{36}\times100$ = Rs. 15000

Hence, required sum (अभीष्ट योग)

= **Rs. 15000**

26. (c)

	Amount (Rs.)	Time (years)	
+55.20	1012	$2\frac{1}{2}$	$+1\frac{1}{2}$ years
	1067.20	4	

Interest in $\frac{3}{2}$ years = Rs. 55.20

Interest in $\frac{3}{2}$ years = Rs. 55.20

Interest in 1 year (1 वर्ष में ब्याज)

$= \frac{55.20}{3}\times2$ = Rs. 36.80

Interest in 4 years (4 वर्षों में ब्याज)

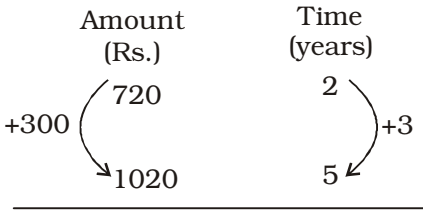
= 36.80 × 4 = Rs. 147.2

Principal = Amount – Interest

= 1067.20 – 147.20 = Rs. 920

Required Rate% = $\frac{36.80}{920} \times 100 =$ **4%**

27. (a)



Interest in 3 years = Rs. 300
Interest in 1 years = Rs. 100
Interest in 2 years = Rs. 100 × 2 = **Rs. 200**
Required Sum = 720 – 200 = **Rs. 520**

28. (d) Number of days in a years
(1 वर्ष में दिनों की संख्या) = 365
Total money (कुल रुपये) = 1 × 365
= Rs. 365
Time = 1 year,
Rate% = 5%

Sum = $\frac{365 \times 100}{5 \times 1}$ = **Rs. 7300**

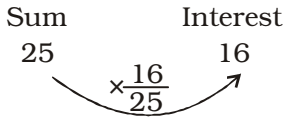
29. (d) Let the amount invested (माना कि निवेश की गयी राशि) = Rs. P
According to the question,

$\frac{P \times 9 \times 2}{100} + \frac{P \times 10 \times 2}{100} = 760$

$\frac{(18P+20P)}{100} = 760$

38P = 76000, P = 2000
Alternate:-
Total interest percent (कुल ब्याज दर)
= (9 × 2)% + (10 × 2)%
⇒ 38% = 760
⇒ 100% = 2000
Hence required principal = Rs. 2000

30. (a) Let sum = 25 units

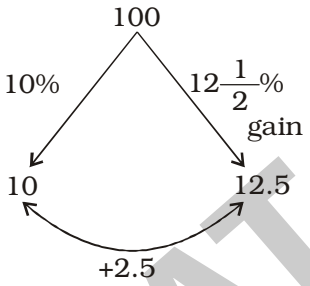


Time(t) = Rate(R%)
(Given)

$16 = \frac{25 \times R \times R}{100} \Rightarrow R^2 = 64$

R = 8%

31. (a) Let the principal (माना कि मूलधन)
= 100 units



According to the question,
2.5 units = Rs. 1250

1 unit = Rs. $\frac{1250}{2.5}$ = Rs. 500

100 units = Rs. 500 × 100 = Rs. 50,000
Hence, total principal (कुल मूलधन)
= Rs. 50,000
Alternate:-

$12\frac{1}{2}\% - 10\% = 2.5\%$

2.5% = 1250 (given)
100% = 50000

32. (c) T_1 = 15 months = $\frac{15}{12}$ years,

$R_1 = 7\frac{1}{2}\% = \frac{15}{2}\%$

T_2 = 8 months = $\frac{8}{12}$ years,

$R_2 = 12\frac{1}{2}\% = \frac{25}{2}\%$

Let the principal = P
According to the question,

$\frac{P \times 15 \times 15}{12 \times 2 \times 100} - \frac{P \times 25 \times 8}{12 \times 2 \times 100} = 32.50$

$\frac{225P}{2400} - \frac{200P}{2400} = 32.50$

$$\frac{25P}{2400} = 32.50 \Rightarrow P = \text{Rs. } 3120$$

Hence required principal = **Rs. 3120**

33. (a) Sum Amount

72 81

+9

interest

By using formula,

$$\text{Time} = \frac{9}{72} \times \frac{100 \times 4}{25} = \textbf{2 years}$$

34. (a) Total days =

May June July Aug. Sept

21 + 30 + 31 + 31 + 10

= 123 days

By using formula,

$$SI = \frac{7300 \times 5 \times 123}{100 \times 365} = \text{Rs. } 123$$

35. (c) Gain% = $\left(6\frac{1}{4}\% \times 2\right) - (4 \times 2)\%$

= 12.5% – 8% = 4.5%

Principa = Rs. 5000

$$\text{Required gain} = 5000 \times \frac{4.5}{100} = \textbf{Rs. 225}$$

36. (c) Principal = Rs. 16000, Interest = Rs. 700

Avg. rate of interest (औसत ब्याज दर)

$$= \frac{700}{16000} \times 100 = \frac{35}{8}\%$$

Now, By alligation Rule (मिश्रण नियम के द्वारा),

Ist part IInd part

4% × 8 5% × 8

$\left(\frac{35}{8}\%\right) \times 8$

Note: To make your calculation easier multipling each part by 8.

नोट: अपनी गणना को आसान करने के लिए प्रत्येक भाग को 8 से गुणा कर दें।

Ist part IInd part

32% 40%

35%

Ratio of amounts ⇒ 5 : 3

$$\text{Required part (अभीष्ट भाग)} = \frac{16000}{(5+3)} \times 5$$

= **Rs. 10,000**

37. (b) Let principal = P,

∴ Amount = 3 P

Interest = 3P – P = 2P

According to the question,

$$2P = \frac{P \times R \times 20}{100} \Rightarrow R = 10\%$$

Let after t year it will become double (माना कि t वर्ष के बाद यह दोगुना हो जाएगा)

Hence, interest = 2P – P = P

$$P \Rightarrow \frac{P \times 10 \times t}{100} \Rightarrow t = \textbf{10 years}$$

Alternate:-

Note: In such type of questions to save your valuable time follow the given below method.

नोट: इस प्रकार के प्रश्नों में अपने बहुमूल्य समय के बचत के लिए आप नीचे दी गयी विधि का प्रयोग कर सकते हैं।)

Principal Amount Interest Time (Years)

1 → 3 (diff.) → 2 ×$\frac{1}{2}$ → 1 20 ×$\frac{1}{2}$ → 10

1 → 2 (diff.)

Hence required time = 10 years

38. (c) Let the first part = x

∴ second part = $(1500 - x)$

According to the question,

$$\frac{x \times 10 \times 5}{100} = \frac{(1500 - x) \times 12.5 \times 4}{100}$$

$50x = (1500 - x)50$

$x = 1500 - x$

$2x = 1500$

$x = 750$

Hence sum lent on 12.5%

$= (1500 - 750) =$ **Rs. 750**

39. (d) Time (t) = 5 years

loan amount : interest amount

= 5 : 2

कर्ज राशि : ब्याज राशि = 5 : 2

$$\text{Rate of interest} = \frac{2}{5} \times \frac{100}{5} = 8\%$$

Let, Principal = 100

Principal : Interest rate

$$100 \xrightarrow{\times \frac{1}{4}} 25 \quad : \quad 8 \xrightarrow{\times \frac{1}{4}} 2$$

Hence Required ratio = **25 : 2**

40. (c) Let the of interest = R%

$\Rightarrow$ According to question

$\Rightarrow$ Interest in 2 yrs = 83.20 – 64

$$\Rightarrow R\% = \frac{S.I. \times 100}{P \times T}$$

$$\Rightarrow R\% = \frac{19.20 \times 100}{64 \times 2}$$

$$\Rightarrow R\% = \frac{30}{2} = 15\%$$

Therefore, Amount of Rs. 86 will be in four years by 15% rate of interest (अत:, 86 रुपये की राशि 4 वर्षों में 15% ब्याज दर से होगी।)

$$\Rightarrow S.I = \frac{86 \times 15 \times 4}{100} = \text{Rs. } 51.6$$

$\Rightarrow$ Amount = Principal + S.I.

= 86 + 51.6 = Rs. 137.60

41. (d) Half yearly Rate (अर्धवार्षिक दर) $= \frac{6}{2} = 3\%$

$$\text{Effective Rate \%} = 3 + 3 + \frac{3 \times 3}{100}$$

= 6.09%

42. (a) Let principal = 10P

$$\text{interest} = 10P \times \frac{3}{10} = 3P$$

According to the question,

Case (i):

$$3P = \frac{10P \times R \times 6}{100} \Rightarrow R = 5\%$$

Case (ii):

Interest = Principal = 10P

$$10P = \frac{10P \times 5 \times t}{100}$$

t = 20 years

43. (a) Let the principal in each case

(माना कि प्रत्येक स्थिति में मूलधन) = 100 units

According to the question,

	I[st] part	II[ND] PART	III[rd] part
Principal ⟶	$100_{\times 6}$	$100_{\times 3}$	$100_{\times 2}$
Rate% ⟶	10	12	15
Time ⟶	6	10	12
Interest ⟶	$60_{\times 6}$	$120_{\times 3}$	$180_{\times 2}$

Interest $\rightarrow$ Interest is same in each, so equal the interest. (प्रत्येक स्थितियों में ब्याज बराबर होगा, इसलिए ब्याज को बराबर करने पर)

Hence required ratio = 600 : 300 : 200 of sum 6 : 3 : 2

Alternate:-

When Interest is equal then sum of amount will be distributed in following ratio. (जब ब्याज बराबर होता है तब राशि निम्न अनुपात में वितरित होती है)

= Required ratio of sum (राशि का अभीष्ट अनुपात)

$$= \frac{1}{R_1T_1} : \frac{1}{R_2T_2} : \frac{1}{R_3T_3}$$

$$= \frac{1}{6 \times 10} : \frac{1}{10 \times 12} : \frac{1}{12 \times 15}$$

$$= \frac{1}{60} : \frac{1}{120} : \frac{1}{180} \Rightarrow 6 : 3 : 2$$

44. (d) Principal = Rs. 1000, Rate = 5%
Interest for first 10 years

$= \frac{1000\times5\times10}{100}$ = Rs. 500

After 10 years principal = (1000 + 500)
= Rs. 1500
Remaining interest = Rs.(2000 – 1500)
= Rs. 500
Required Rate%

$= \frac{500}{1500}\times\frac{100}{5} \Rightarrow \frac{100}{15}=\frac{20}{3}=6\frac{2}{3}$ yrs

Total time = $\left(10+6\frac{2}{3}\right)$ years

= $\mathbf{16\frac{2}{3}}$ **years**

45. (d) **Amount(Rs.) : Time (years)**

5200 → 5680 (×480) : 5 → 7 (×2 years)

Interest in 2 years = Rs. 480

Interest in 1 year = Rs. $\frac{480}{2}$

= Rs. 240
Interest in 5 years = Rs. 240 × 5
= Rs. 1200
Principal = Rs. (5200 – 1200)
= Rs. 4000

Required Rate% = $\frac{240}{4000}\times100$ = **6%**

46. (a) Let the Rate of interest (माना कि ब्याज)
= R%
According to the question,

$\frac{400\times R\times2}{100}+\frac{550\times R\times4}{100}+\frac{1200\times R\times6}{100}$

= 1020
8R + 22R +72R = 1020
102R = 1020
R = **10%**

47. (a) By using formula,

$4200 = \frac{29400\times R\times6}{100}$

$R = \frac{4200}{294\times6}=\frac{700}{294}=\frac{100}{42}=\frac{50}{21}$

$R = 2\frac{8}{21}\%$

48. (b) Principal Amount
6000 → 7200 (+1200)

By using formula,

Rate% = $\frac{1200}{6000}\times\frac{100}{4}$ = 5%

New rate (नयी दर)% = $5\times\frac{3}{2}$ = 7.5%

Interest after 5 years (5 वर्ष के बाद ब्याज)

= $\frac{6000\times7.5\times5}{100}$ = Rs. 2250

Hence, amount = Rs. (6000 + 2250)
= Rs. 8250

49. (c) **Note:-** For detailed method of this question check solution of earlier question. (विस्तार में हल जानने के लिए पहले के प्रश्नों के हल देखे)

Principal	Amount	Interest	Time (years)
1	3	2	15
×3	diff.	×2	×2
1	5 → diff.	4	30
×5			

Hence, Required time
(अभीष्ट समय) = 30 years

50. (c) Let the required time = t years
According to the question,

$\frac{500\times4\times6.25}{100}=\frac{400\times5\times t}{100}$

5 × 4 × 625 = 400 × 5 × t

$t = \frac{625}{100}=\frac{25}{4}=\mathbf{6\frac{1}{4}}$ **years**

51. (b) Principal Interest

16 → 1

$+\frac{1}{16}$

Let Rate of interest = R%

Time = R

By using formula,

$1 = \frac{16 \times R \times R}{100}$

$\Rightarrow R^2 = \frac{100}{16}$

$R = \frac{10}{4} \Rightarrow R = \mathbf{2\frac{1}{2}\%}$

52. (c) Let after t year amount will be equal. (माना कि t वर्ष के बाद राशि बराबर हो जाएगी)

According to the question,

$800 + \frac{800 \times 12 \times t}{100} = 910 + \frac{910 \times 10 \times t}{100}$

$800 + 96t = 910 + 91t$

$5t = 110$

$t = \mathbf{22\ years}$

Hence, after 22 years the amount will be equal. (22 वर्ष के बाद राशि बराबर होगी)

53. (c) Principal Amount Interest

$4_{\times 5}$: $5_{\times 5}$ $\xrightarrow[\text{diff.}]{}$ $1_{\times 5}$

$5_{\times 4}$: $7_{\times 4}$ $\xrightarrow[\text{diff.}]{}$ $2_{\times 4}$

Note:- Principal will be same so equate the principal.

नोट:- मूलधन बराबर होगा, इसलिए मूलधन को बराबर करने पर।

Principal Amount Interest

20 : 25 $\xrightarrow[\text{diff.}]{}$ 5

20 : 28 $\xrightarrow[\text{diff.}]{}$ 8 (+3)

Interest in 3 years = 3 units

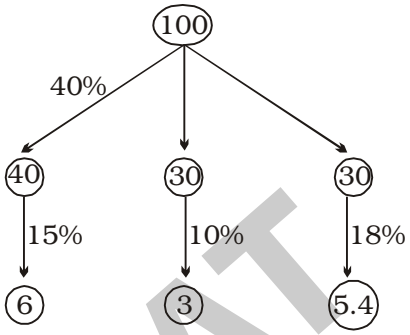
Interest in 1 year = $\frac{3}{3}$ = 1 unit

Required Rate% = $\frac{1}{20} \times 100 = \mathbf{5\%}$

54. (c) 40% = $\frac{2}{5}$, 50% = $\frac{1}{2}$

Let the total amount = 100

According to the question,



Required Rate of interest

$= \frac{(6+3+5.4)}{100} \times 100 = \mathbf{14.4\%}$

55. (c) Principal = Rs. 15600,

Rate% = 10%

$SI = \frac{15600 \times 10 \times 2}{100}$ = Rs. 3120

Now, New principal for next two years (अगले दो वर्षों के लिए नया मूलधन)

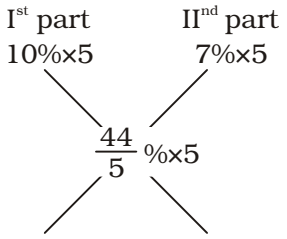
= 15600 + 3120 = Rs. 18720

New SI = $\frac{18720 \times 10 \times 2}{100}$ = Rs. 3744

Hence Required SI = Rs. 3744

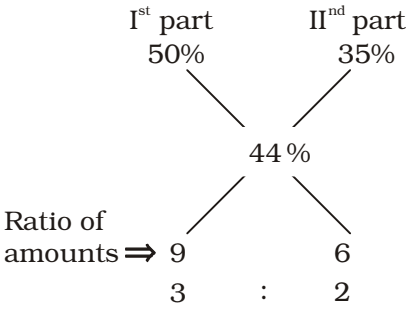
56. (a) Avg. rate of interest (औसत ब्याज दर)

$= \frac{396}{1500} \times \frac{100}{3} = \frac{132}{5 \times 3} = \frac{44}{5}\%$



Note:- for easy calculation multiply by 5 in each part of the given data in above figure.

नोट:- अपनी गणना को आसान करने के लिए दिए गए तथ्यों के प्रत्येक भाग को 5 से गुणा करें।



According to the question,
(3+2) units = Rs. 1500
5 units = Rs. 1500
1 unit = Rs. 300
3 units = Rs. 300 × 3 = Rs. 900
Hence, amount lent at 10% (10% ब्याज दर पर कर्ज दी गयी राशि) = Rs. 900

57. (b) **Note:- I**n such type of questions to save your valuable time follow the given below method.
नोट: इस प्रकार के प्रश्नों में अपने बहुमूल्य समय के बचत के लिए आप नीचे दी गयी विधि का प्रयोग कर सकते हैं।

Value of Installment =

$$\frac{\text{Principal}\times 100}{\text{time}\times 100+(t_{n-1}+t_{n-2}+.....1)\times \text{Rate}\%}$$

Principal = Rs. 800, Rate = 4%,
Time = 4 years

$$\text{Installment} = \frac{848\times 100}{4\times 100+(3+2+1)\times 4}$$

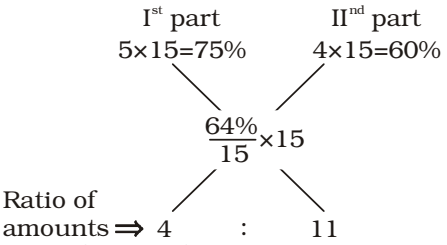
$$= \frac{848\times 100}{(400+24)} = \frac{848\times 100}{424} = \text{Rs. } 200$$

58. (b) Avg rate of interest (औसत ब्याज दर)

$$= \frac{2560}{60000}\times 100$$

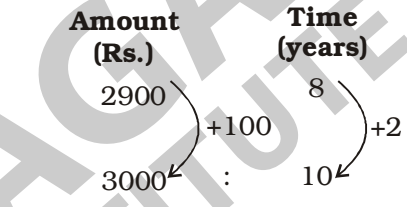
$$= \frac{256}{60} = \frac{64}{15}\%$$

Now By using alligation method (मिश्रण नियम के द्वारा),



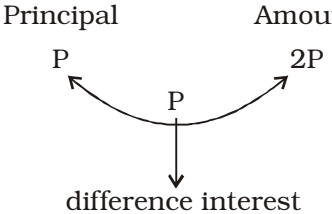
According to the question,
(4+1) units = Rs. 60,000
15 units = Rs. 60,000
1 unit = Rs. 4,000
11 units = Rs. 4000 × 11 = Rs. 44000
Hence, amount spend on 4% (4% पर खर्च की गयी राशि) = Rs. 44000

59. (d)



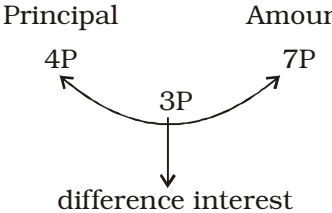
Interest in 2 years = Rs. 100
Interest in 1 year (1 वर्ष का ब्याज)
$= \text{Rs. } \frac{100}{2} = \text{Rs. } 50$
Interest in 8 years (8 वर्षों का ब्याज)
= 50 × 8 = Rs. 400
∴ Hence principal = 2900 – 400
= Rs.2500
Required Rate% = $\frac{50}{2500}\times 100 = 2\%$

60. (c) According to the question,



$$\text{Rate}\% = \frac{P}{P}\times\frac{100}{12} = \frac{25}{3} = \mathbf{8\frac{1}{3}\%}$$

61. (c)

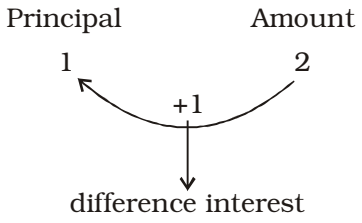


Required Rate%

$$= \frac{3P}{4P} \times \frac{100}{4} = \frac{75}{4} = \mathbf{18\frac{3}{4}\%}$$

62. (d) According to the question,

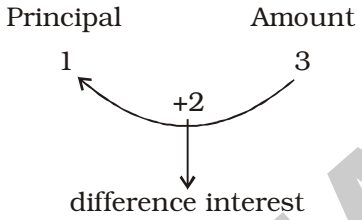
Case(i): time = 5 years



$$\text{Required Rate\%} = \frac{1}{1} \times \frac{100}{5}$$

$$= \frac{100}{5} = 20\%$$

Case (ii)



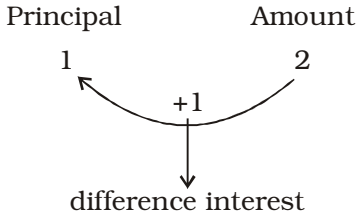
Required Rate%

$$= \frac{2}{1} \times \frac{100}{12} = \frac{50}{3} = \mathbf{16\frac{2}{3}\%}$$

Hence, Lower Rate (कम दर)%

$$= \mathbf{16\frac{2}{3}\%}$$

63. (d) According to the question,



Rate% = 15%

$$\text{Required time} = \frac{1}{1} \times \frac{100}{15} = \frac{20}{3}$$

$$= \mathbf{6\frac{2}{3}\ years}$$

64. (a) Let the first part (माना कि पहला भाग)

= Rs. x

∴ Hence second part (दूसरा भाग)

= Rs. $(12000 - x)$

According to the question,

$$\frac{x \times 12 \times 3}{100} = \frac{(12000 - x) \times 9 \times 16}{2 \times 100}$$

$36x = 72(12000 - x)$

$x = 24000 - 2x$

$3x = 24000$

x = Rs. 8000

Ist part = Rs. 8000

IInd part = Rs. (12000 – 8000) = Rs. 4000

Hence maximum part (अधिकतम भाग)

= Rs. 8000

Alternative:-

Note:- In such type of questions to save your valuable time follow the given below method.

नोट:- इस प्रकार के प्रश्नों में अपने बहुमूल्य समय के बचत के लिए आप नीचे दी गयी विधि का प्रयोग कर सकते हैं।

Let two parts are P_1 and P_2 respectively.

(माना कि दो भाग क्रमशः P_1 तथा P_2 है)

According to the question,

$$P_1 \times \frac{36}{100} \times 1 = P_2 \times \frac{9}{2} \times \frac{16}{100} \times 1$$

$P_1 \times 4 = 8P_2$

$P_1 = 2\ P_2$

$$\frac{P_1}{P_2} = \frac{2}{1} \Rightarrow P_1 : P_2 = 2 : 1$$

Hence greater part (बड़ा भाग)

$$= \frac{12000}{(2+1)} \times 2 = \mathbf{Rs.\ 8000}$$

65. (c) Remaining amount (शेष राशि)

= 50,000 – (8000 + 2400)

= Rs. 18000

Let rate of interest (माना कि ब्याज दर) = R%

According to the question (प्रश्नानुसार),

$$\frac{8000}{100}\times\frac{11}{2}\times1+\frac{24000\times6}{100}\times1+\frac{18000\times R}{100}$$

$= 3680$

$$\frac{44000}{100}+\frac{144000}{100}+\frac{1800R}{100}=3680$$

$$\frac{188000}{100}+\frac{18000R}{100}=3680$$

$$\frac{18000R}{100}=3680-1880$$

$180R = 1800$

$R = 10\%$

Hence, Required Rate (अभीष्ट दर)%

$= 10\%$

66. (a) Let time = t years

According to the question,

$$t=\frac{1080}{3000}\times\frac{100}{12}=3 \text{ years}$$

67. (b) Principal Interest

4P P

time = Rate% (Given)

Now by using formula,

$$P=\frac{4P\times R\times R}{100}\Rightarrow R^2=\frac{100}{4}$$

$$R=\frac{10}{2}\Rightarrow R=\mathbf{5\%}$$

68. (c) Total interest rate for

$x = 7.5 \times 4 = 30\%$

Total interest rate for

$y = 7.5 \times 5 = 37.5\%$

Difference in rates = (37.5 – 30)%

$= 7.5\%$

According to the question,

7.5% of sum = 150

$$1\% \text{ of sum} = \frac{150}{7.5}$$

Individual sum (व्यक्तिगत योग)

$$=\frac{150}{7.5}\times100=\textbf{Rs. 2000}$$

Hence Required sum = **Rs. 2000**

69. (a) In two years extra rate% (2 वर्षों में अतिरिक्त ब्याज दर) = 3 × 2 = 6%

Extra amount = Rs. 72 (Given)

According to the question,

6% of sum = Rs. 72

$$1\% \text{ of sum} = \text{Rs. } \frac{72}{6}$$

$$\text{Sum} = \frac{72}{6}\times100=\textbf{Rs. 1200}$$

Hence required sum = **Rs. 1200**

70. (d)

Amount (Rs.)	:	Time (years)
880		2
+40		+1 years
920	:	3

1 year interest = Rs. 40

2 years interest = Rs. 40 × 2 = Rs. 80

Hence sum = Rs. (880 – 80) = **Rs. 800**

71. (d) Let the Rate% = R

According to the question,

$$\frac{5000\times2\times R}{100}+\frac{3000\times4\times R}{100}=2200$$

$100R + 120R = 2200$

$220R = 2200$

$R = 10\%$

Hence required rate% = 10%

72. (a) By using formula,

$$\text{Installment} = \frac{6450\times100}{4\times100+(3+2+1)\times5}$$

$$=\frac{6450\times100}{4\times100+(3+2+1)\times5}$$

$$=\frac{6450\times100}{430}$$

Installment = Rs. 1500

Hence value of installment

= Rs. 1500

Note:- We have explained formula in previous questions.

नोट:- पिछले प्रश्न में हमने इस विधि पर विस्तार से चर्चा की है।

73. (c)

Amount (Rs.)	:	Time (years)
850		3
+75 ↓		+1 years ↓
925	:	4

1 year interest = Rs. 75
3 years interest = Rs. 75 × 3 = Rs. 225
Hence, Required sum
= Rs. (850 – 225) = **Rs. 625**

74. (c) Principal Amount

P → 2P (+P)

↓ difference interest

Required time = $\frac{P}{P} \times \frac{100}{25} \times 4$ = **16 yrs**

75. (c)

Principal	Amount		Interest	Time (Years)
1	2	diff. →	1	10
			×2 ↓	×2 ↓
1	3	diff. →	2	20

Hence required time = 20 years
Note:- We have explained such type of questions in detail in previous questions.
नोट:- पिछले प्रश्नों में हमने इस प्रकार के प्रश्नों को विस्तारपूर्वक समझाया है।

76. (c) According to the question,

Principal Interest
9P → P ($\times \frac{1}{9}$)

Rate% = time = R (given)
By using formula,

$P = \frac{9P \times R \times R}{100} \Rightarrow R^2 = \frac{100}{9}$

$R = \frac{10}{3} \Rightarrow R = 3\frac{1}{3}\%$

77. (c) $16\frac{2}{3}\% = \frac{1}{6}$ → Interest / → Principal

Let principal = 6
Interest = 6
Let time = t years
By using formula

$6 = \frac{6 \times 50 \times t}{3 \times 100}$ $t = \Rightarrow$ **6 years**

Alternative:-
Note:- In such type of questions to save your valuable time think like the given way.
नोट:- इस प्रकार के प्रश्नों में अपने बहुमूल्य समय की बचत के लिए दिए गए तरीके से सोचने का प्रयास करें।

Rate% = $16\frac{2}{3}\% = \frac{1}{6}$ → Interest / → Principal

Represents for 1 years
According to the question,
Principal = interest
6 = 1 × 6
Hence time = 1 × 6 = 6 years
Note:- If interest will be six times then time will also be six times.
नोट:- यदि ब्याज छः गुणा होता है, तो समय भी छः गुणा होगा।

78. (b) Let the difference between Rates (माना कि ब्याज दरों के बीच का अंतर) = d%
According to the question,

$d = \frac{2.50}{500} \times \frac{100}{2}$ = **0.25%**

79. (d) More interest paid in 3 years (3 वर्षों में दिया गया अतिरिक्त ब्याज) = 2.5 × 3 = 7.5%
According to the question,
7.5% of sum = Rs. 540

1% of sum = Rs. $\frac{540}{7.5}$

Sum = $\frac{540}{7.5} \times 100$ = Rs. 7200

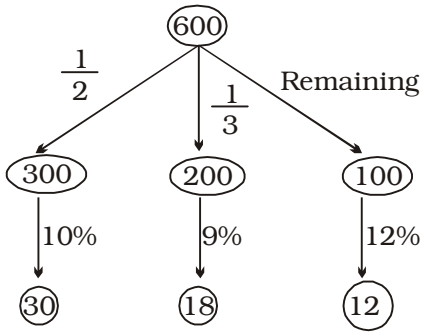
80. (a) More interest paid in 2 years (2 वर्षों में दिया गया अतिरिक्त ब्याज) = 2 × 1 = 2%
According to the question,
2% of sum = Rs. 24

1% of sum = Rs. $\frac{24}{2}$

Total sum = Rs. $\frac{24}{2} \times 100$ = **Rs. 1200**

81. (b) Let the total capital (माना कि कुल संपत्ति) = Rs. 600

According to the question,



Total interest = (30+18+12)= Rs. 60

Required rate% = $\frac{60}{600} \times 100 = 10\%$

Alternate:

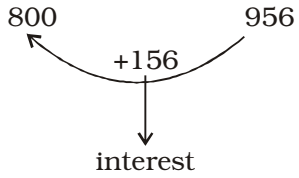
Let the total amount = Rs. 6

Total average rate of interest (कुल औसत ब्याज दर)

$= \frac{(3\times10\%)+(2\times3\%)+(1\times12\%)}{6}$

$= \frac{(30+18+12)}{6}\% = 10\%$

82. (c) Principal Amount



Rate% = $\frac{156}{800} \times \frac{100}{3} = \frac{52}{8} = \frac{13}{2}\%$

Increased in Rates = $\left(\frac{13}{2}+4\right)\% = 10.5\%$

New interest = $\frac{800\times10.5\times3}{100}$ = Rs. 252

Hence, amount = Rs. (800 + 252)
= Rs. 1052

Alternate:-

Note: In such type of questions to save your valuable time follow the given below method.

नोट:- इस प्रकार के प्रश्नों में अपने बहुमूल्य समय के बचत के लिए आप नीचे दी गयी विधि का प्रयोग कर सकते हैं।

Increased in Rates (दर में वृद्धि) = 4 × 3
= 12%

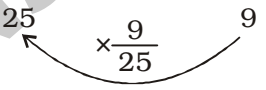
Hence increased in amount (मिश्रधन में वृद्धि)

= 800 × $\frac{12}{100}$ = Rs. 96

Hence total amount (कुल मिश्रधन)
= (96 + 956) = Rs. 1052

Hence, Required amount (अभीष्ट मिश्रधन)
= **Rs. 1052**

83. (a) Principal Amount

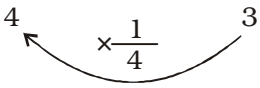


Let rate of interest = R%,
Time = 6 years
By using formula,

R = $\frac{9}{25} \times \frac{100}{6}$ = **6%**

Hence, required rate% = **6%**

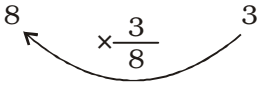
84. (a) Principal Amount



By using formula,

Rate% = $\frac{1}{4} \times \frac{100}{5}$ = 5%

85. (b) Principal Amount



Time = $6\frac{1}{4}$ years = $\frac{25}{4}$ years

By using formula,

Required Rate% = $\frac{3}{8}\times\frac{100}{25}\times 4$ = **6%**

86. (b) According to the question,

Principal	Interest
10	3

Rate% = 10%

Time = $\frac{3}{10}\times\frac{100}{10}$ = 3 years

87. (c) Let the amount invested (माना कि निवेश की गयी राशि) = Rs. P

According to the question,

$P + \frac{P\times 10\times 4}{100} = 770$

$P + \frac{4P}{10} = 770$

$\frac{14P}{10} = 770 \Rightarrow P = \frac{770\times 10}{14}$ = **Rs. 550**

Hence, Required invested amount (अभीष्ट निवेशिक राशि) = **Rs. 550**

Alternate:

10% = $\frac{1}{10}$ → Interest / → Principal

Interest in 4 years = 1 × 4 = 4

Amount = (interest + principal)

= 4 + 10 = 14

According to the question,

14 units = 770

1 unit = $\frac{770}{14}$

10 units = $\frac{770}{14}\times 10$ = Rs. 550

The amount invested = Rs. 550

88. (b) Rate% = 12%, Principal = Rs. 1860

Amount = Rs. 2641.20

Interest = Rs. (2641.20 – 1860)

= Rs. 781.20

By using formula,

Required time = $\frac{781.20\times 100}{1860\times 12}$ = **$3\frac{1}{2}$ yrs**

89. (b) 20% = $\frac{1}{5}=\frac{1}{5}\frac{\text{decrease}}{\text{Initial}}$

Initial		Final	
5	×	4	×
5		4	
25		16	
×400		×400	
10,000		6400	

Hence, population after two years (2 वर्ष के बाद जनसंख्या) = Rs. 6400

90. (c) Principal → Amount

P → 2P

P

(interest)

Required time (अभीष्ट समय) = $\frac{P}{P}\times\frac{100}{2}$

= **$8\frac{1}{3}$ years** = 8 years 4 months

91. (b) Let the capital = Rs. P

and Rate% = R%

According to the question,

$\frac{P\times R\times 1}{100}=\frac{P\times 5\times 2}{100}$ = R = **10%**

92. (d) Principal → Amount

10 → 12 (+2 interest)

Required rate of interest (अभीष्ट ब्याज दर)

= $\frac{2}{10}\times\frac{100}{1}$ = 20%

93. (a) Let two parts are P_1 and P_2 respectively,

माना कि दो भाग क्रमशः P_1 और P_2 है।

According to the question,

$$\frac{P_1 \times 3 \times 12}{100} = \frac{P_2 \times 9 \times 16}{2 \times 100}$$

$36 P_1 = 72 P_2$

$$\frac{P_1}{P_2} = \frac{72}{36} = \frac{2}{1}$$

P1 : P2 = 2 : 1

Hence, required ratio (अभीष्ट अनुपात)

= **2 : 1**

94. (c) Capital after paying income tax (आयकर देने के बाद संपत्ति)

⇒ 4% – 3.75%

.25% = 48

$$100\% = \frac{48}{25} \times 100 = 19200$$

Capital without paying Income tax (आयकर देने के बाद संपत्ति)

4% – 3.75%

⇒ .25% = 48

$$100\% = \frac{48}{25} \times 100 = 19200$$

⇒ Capital without paying Income tax of rate of and Rs. paise (आयकर अदा करने से पहले मूल राशि)

19200 = Capital × 96%

Net Capital = 20000

95. (d) Total profit = $\frac{20000 \times 10 \times 1}{100}$

= Rs. 2000

According to the question,

Case (I): Interest = $\frac{12000 \times 8 \times 1}{100}$

= Rs. 960

Remaining interest (profit) = (2000 – 12000) = Rs. 1040

Remaining principal = (20000 – 12000) = Rs. 8000

$$\text{Required Rate \%} = \frac{1040}{8000} \times 100 = 13\%$$

Alternate:-

Total money = Rs. 20000

I	:	II
12000	:	8000
3	:	2

Let the second part will be given at R% rate of interest (माना कि दूसरे भाग को r प्रतिशत ब्याज दर पर दिया गया)

⇒ We know that (हम जानते हैं कि)

Total average rate of interest (कुल औसत ब्याज दर)

$$\Rightarrow \frac{(3 \times 8)\% + (2 \times R\%)}{3 + 2} = 10\%$$

⇒ 24% + 2R = 50%

⇒ 2R = 26%

⇒ R = 13%

96. (b) Principal = Rs. 12000,

Rate% = 10%

Interest paid by the person in 5 years (5 वर्षों में व्यक्ति द्वारा दिया गया ब्याज)

$$= \frac{12000 \times 10 \times 5}{100} = \text{Rs. } 6000$$

Interest received by the person after 3 years (3 वर्षों के बाद व्यक्ति द्वारा प्राप्त किया गया ब्याज)

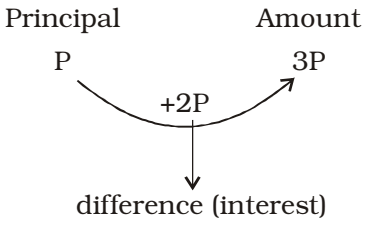
= Rs. (6000 – 3320) = Rs. 2680

By using formula,

$$\text{Rate\%} = \frac{2680}{12000} \times \frac{100}{3} = \frac{67}{9} = 7\frac{4}{9}\%$$

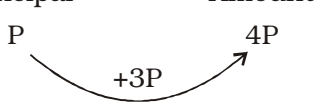
Hence required Rate% = $7\frac{4}{9}\%$

97. (d) **Case(I):**



$$\text{Required Rate\%} = \frac{2P}{P} \times \frac{100}{8} = 25\%$$

Case(II):

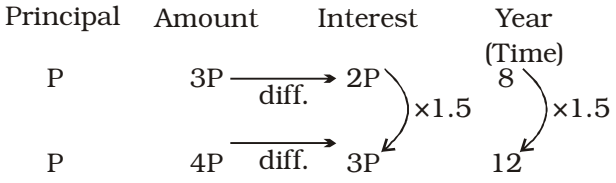


Required time = $\frac{3P}{P} \times \frac{100}{25}$ = 12 years

Alternate:-

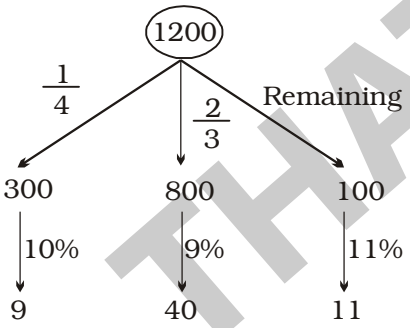
Note:- In such type of questions to save your valuable time follow the given below method.

नोट:- इस प्रकार के प्रश्नों में अपने बहुमूल्य समय के बचत के लिए आप नीचे दी गयी विधि का प्रयोक कर सकते हैं।



Hence, Required time (अभीष्ट समय)
= 12 years

98. (b) Let total capital (माना कि कुल संपत्ति)
= 1200 units
According to the question,



Total interest = (9 + 40 + 11) = 60

Required rate% = $\frac{60}{1200} \times 100 = 5\%$

Alternate:-

Let the total amount (माना कि कुल राशि)
= 12
Total average rate of interest (कुल औसत ब्याज दर)

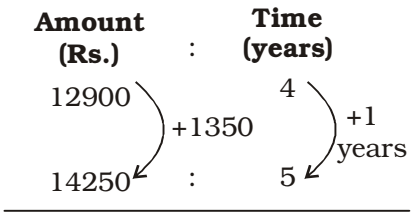
= $\frac{(3\times3)\% + (8\times5)\% + (1\times11)}{12}\%$ = **5%**

99. (c) Total interest in 365 days
= 365 × 2 = Rs. 730

By using formula,

Sum = $\frac{730}{5\times1} \times 100$ = Rs. 14600

100. (d)



Interest paid in 2 years = Rs. 120
Interest paid in 1 year = Rs. 60
Interest paid in 3 years = 60 × 3
= Rs. 180
Principal = Rs. (1380 – 180)
= Rs. 1200

Required Rate% = $\frac{60}{1200} \times 100 = 5\%$

101. (c) A
Interest paid by the person in 1 year
(1 वर्ष में व्यक्ति द्वारा दिया गया ब्याज) = Rs. 1350
Interest paid by the person in 4 years
(4 वर्ष में व्यक्ति द्वारा दिया गया ब्याज)
= Rs. 1350 × 4 = Rs. 5400
Principal (मूलधन) = Rs. (12900 – 5400)
= Rs. 7500

Rate (दर)% = $\frac{1350}{7500} \times 100 = 18\%$

102. (b) Let Rate of Interest (माना कि ब्याज दर) = R%
According to the question (प्रश्नानुसार),

$\frac{500\times4\times R}{100} + \frac{600\times3\times R}{100} = 190$

20R + 18R = 190
38R = 190
R = 5%
Hence, Required Rate (अभीष्ट दर)% = 5%

Alternate:-

Note:- In such type of questions to save your valuable time follow the given below method.

नोट:- इस प्रकार के प्रश्नों में अपने बहुमूल्य समय के बचत के लिए आप नीचे दी गयी विधि का प्रयोग कर सकते हैं।

Let Rate of interest = 1%

Case(I): Interest $(I_1) = \frac{500\times4\times1}{100} = 20$

Case(II): Interest $(I_2) = \frac{500\times4\times1}{100} = 18$

According to the questions,

Interest		Rate%
38		38
↓ ×5		↓ ×5
190		5%

Hence required Rate% = 5%

103. (a) According to the question,

$$\frac{4000\times3\times x}{100} = \frac{5000\times12\times2}{100}$$

$12000x = 120000$

$x = 10\%$

104. (d) Let the time is 't' years and the rate of interest is R%.

माना कि समय 't' वर्ष है तथा ब्याज दर R% है।

According to the question,

Case(I): $y = \frac{x\times R\times t}{100}$ ....(i)

Case (II): $z = \frac{y\times R\times t}{100}$ ....(ii)

By dividing equation (i) by equation (ii)

$$\frac{y}{z} = \frac{x\times R\times t}{y\times R\times t} \Rightarrow y^2 = zx$$

105. (a) Extra interest Rate% = 2 × 3 = 6%

According to the question,

6% of sum = Rs. 300

1% of sum = Rs. $\frac{300}{16}$ = Rs. 50

Total sum = 50 × 100 = Rs. 5000

106. (d) **Note:-** For detailed explanation of such type of questions follow the solution of previous questions.

नोट:- इस प्रकार के प्रश्नों का विस्तृत विवेचन देखने के लिए पिछले प्रश्नों के हल को देखें।

Increased in rates in 4 years (4 वर्षों में वर्धित दर) = 1 × 4 = 4%

Hence, interest = $\frac{2400\times4}{100}$ = Rs. 96

Total amount after 4 years (4 वर्षों के बाद कुल मिश्रधन) = Rs. (3264 + 96) = Rs. 3360

107. (c) Let the money borrowed by Nitin

(माना कि नीतिन के द्वारा लिया गया कर्ज) = Rs. P

According to the question,

$$\frac{P\times6\times3}{100}+\frac{P\times9\times5}{100}+\frac{P\times13\times3}{100} = \text{Rs. } 8160$$

$$\frac{18P}{100}+\frac{45P}{100}+\frac{39P}{100} = \text{Rs. } 8160$$

$$\frac{102P}{100} = \text{Rs. } 8160$$

$\Rightarrow P = \text{Rs. } \frac{8160\times100}{102} = \text{Rs. } 8000$

Alternate:-

Note: In such type of questions to save your valuable time follow the given below method.

नोट:- इस प्रकार के प्रश्नों में अपने बहुमूल्य समय के बचत के लिए आप नीचे दी गयी विधि का प्रयोग कर सकते हैं।

Let principal = Rs. 100

Total interest

$$= \frac{100\times6\times3}{100}+\frac{100\times9\times5}{100}+\frac{100\times13\times13}{100}$$

= 18 + 45 + 39 = 102 units

According to the question,

102 units = Rs. 8160

1 unit = Rs. $\frac{8160}{102}$ = Rs. 80

100 units = Rs. 8000

Hence sum = Rs. 8000

Alternate:-

Total rate of Interest in 11 years (11 वर्षों के कुल ब्याज दर) = (6×3)% + (5×9)% + (3+13)%

102% = 8160

100% = 8000

∴ Sum = Rs. 8000

108 (c) Let sum = 100 units
Total interest

$$= \frac{100\times7\times4}{100}+\frac{100\times5\times4}{100}$$

= 28 + 20 = 48 units
According to the question (प्रश्नानुसार),
48 units = Rs. 960

$$1 \text{ unit} = \text{Rs. } \frac{960}{48} = \text{Rs. } 20$$

100 units = Rs. 20 × 100 = Rs. 2000
Total sum = Rs. 2000
Alternate:-
Total rate of interest he gained (उसे प्राप्त कुल ब्याज दर)
⇒ (7 + 5) × 4%
⇒ 48% = 960 (given)
⇒ 100% = 2000
∴ total sum = 2000

109. (a) Let time = t years
According to the question,

$$\frac{8000\times3\times t}{100}=\frac{6000\times5\times4}{100}$$

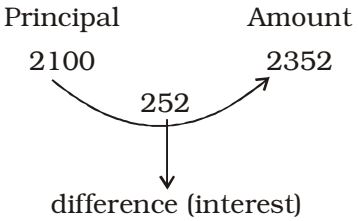
240t = 1200
t = 5 years
Hence required time = 5 years

110. (a) **Note:-** For detailed explanation of such type of questions follow the solution of previous question,
नोट:- इस प्रकार के प्रश्नों को विस्तार में हल देखने के लिए पिछले प्रश्नों के हल को ध्यान से देखें।
Increased interest in 3 years = 3 × 3 = 9%

$$\text{Hence, increased amount} = \frac{800\times9}{100}$$

= Rs. 72
Total amount = (920 + 72) = **Rs. 992**

111. (a) According to the question,



Time = 2 years,
Let Rate = R%

$$R = \frac{252}{2100}\times\frac{100}{2} = 6\%$$

New rate of interest = (6 – 1) = 5%

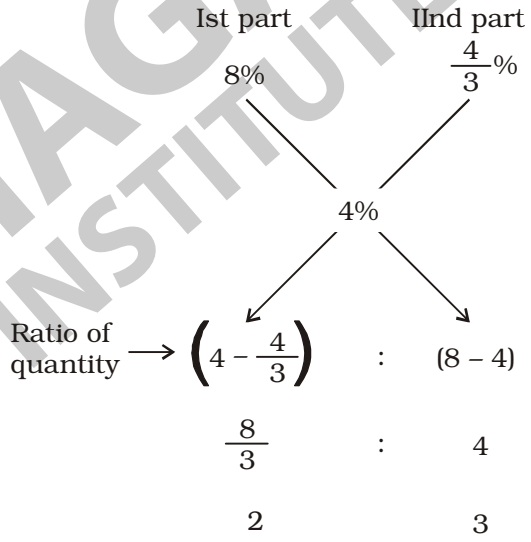
$$\text{New interest} = \frac{2100\times5\times2}{100} = \text{Rs. } 210$$

Hence Required interest = Rs. 210

112. (a) Avg. rate of interest (औसत ब्याज दर)

$$= \frac{800}{20000}\times100 = 4\%$$

By alligation Rule (मिश्रण नियम के द्वारा),



$$\text{Required sum} = \frac{20000}{(2+3)}\times2$$

= **Rs. 8000**

113. (d) Difference between their rates he gained from both boys (दोनों लड़कों से प्राप्त ब्याज दर में अंतर)
⇒ 15 × 5% – 12 × 4%
⇒ 75% – 48%
⇒ 27% = 1350 (Given)
⇒ 100% = Rs. 5000

114. (d) Let Principal (मूलधन) = Rs. P
Amount (मिश्रधन) = Rs. 2 P

Simple Interest (साधारण ब्याज) = 2P – P = Rs. P

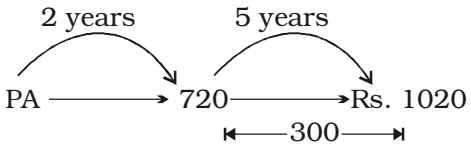
Using formula $\boxed{S.I = \frac{P \times R \times T}{100}}$

$P = \frac{P \times T \times R}{100}$, $P = \frac{P \times 25 \times T}{4 \times 100}$

$400 = 25T = T = \frac{400}{25}$

Time = 16 Years

115. (b)



⇒ According to figure (चित्रानुसार)

⇒ SI for 5 years = Rs. 300

⇒ SI for 1 year = Rs. 60

⇒ SI for 2 years = 60 × 2 = 120

⇒ Principal amount (मूलधन) = Amount after 2 years – 2 years SI = 720 – 120

⇒ Principal amount (मूलधन) = Rs. 600

116. (d) According to the question, (प्रश्नानुसार)

$\frac{3000 \times 5 \times R}{100 \times 2} - \frac{2000 \times 5 \times R}{100 \times 2} = 125$

$\frac{1}{200}[15000R - 10000R] = 125$

$\frac{5000R}{200} = 125 \Rightarrow R = \mathbf{5\%}$

117. (d) ATQ $= \frac{8 \leftarrow \text{S.I}}{25 \leftarrow \text{SUM}}$

Time = $\frac{R}{2}$, Rate = R

Now $8 = \frac{25 \times R \times R}{100 \times 2}$

$= \left[S.I = \frac{P.R.T}{100}\right]$

$8 = \frac{R^2}{4 \times 2} \Rightarrow 64 = R^2$

$R = 8\%$

118. (d) According to the question, (प्रश्नानुसार)

A B C

$A + \left(\frac{A \times 5 \times 2}{100}\right) = B + \left(\frac{B \times 5 \times 3}{100}\right) = C + \left(\frac{C \times 5 \times 4}{100}\right)$

110 A = 115B = 120C

22A = 23B = 24C

Ratio of Amount (By using L.C.M of 22, 23 and 24) (मिश्रधन का अनुपात ल.स. का प्रयोग करने पर)

276 : 264 : 253

A's loan (A का ऋण) = $\frac{276}{793} \times 7930 = \mathbf{2760}$

119. (c) According to the question, (प्रश्नानुसार)

Interest = 1 Rs. per day

∴ Interest in one year = 1 × 365 = Rs. 365

$\therefore S.I. = \frac{P \times R \times T}{100}$

$365 = \frac{P \times 5 \times 1}{100}$

$P = \frac{365 \times 100}{5} = 73 \times 100 = \text{Rs. } 7300$

120. (a) According to the question, (प्रश्नानुसार)

Let Principal (मूलधन) = Rs. x

Amount (मिश्रधन) = Rs. $4x$

Interest (ब्याज) = $4x - x$ = Rs. $3x$

$\therefore S.I = \frac{P \times R \times T}{100}$

$3x = \frac{x \times 15 \times T}{100}$

300 = 15T = T = 20 years.

121. (c) According to the question,

Amount (मिश्रधन) = Rs. 3144.

Rate (दर) = 8%

Let, Principal (मूलधन) = Rs. x

Time (समय)

$= \frac{30 + 29 + 31 + 30 + 31 + 30 + 31 + 7}{366}$

$= \frac{219}{366}$

$\therefore S.I = \frac{P \times R \times T}{100}$

$3144 - x = \frac{x \times 8 \times 219}{100 \times 366} = \text{Rs. } 3000$

122. (c) Total price of T.V (T.V का मूल्य) = Rs. 16000

$\Rightarrow$ Initial Payment (प्रथम किस्त) = Rs. 4000

$\Rightarrow$ Remaining amount (बचा हुआ धन)

= Rs. 12000

$\Rightarrow$ Simple interest in 15 months for (15 महीने का साधारण ब्याज) Rs. 12000

$\Rightarrow S.I = \frac{P \times R \times T}{100}$

$\Rightarrow S.I = \frac{12000 \times 12 \times 15}{100 \times 12}$

$\Rightarrow$ S.I = Rs. 1800

$\Rightarrow$ With S.I, total amount to be paid for principal Amount (साधारण ब्याज पर कुल मिश्रधन) Rs. 12000

= Rs. (12000 + 1800) = Rs. 13800

$\Rightarrow$ Therefore, total amount he pays for the T.V. is (T.V का कुल मूल्य)

= 4000 + 13800 = Rs. 17800

123. (a) $\frac{P}{S.I} = \frac{10}{3}$

Let Principal (मूलधन) = 10

S.I for 5 years = 3

S.I for 1 year = 0.6

$\text{Rate} = \frac{SI}{\text{Principal}} \times 100$

$= \frac{0.6}{10} \times 100 = 6\%$

124. (d) 10% of Rs. 3 lacs — 30,000; 6% of Rs. 3 lacs — 18,000

24,000 [2000×12 = 24000]

6000 : 6000

1 : 1

Diff. = 0

So amount deposited (जमा राशि)

= 1,50,000 each

and difference (अंतर) = 0

125. (b) Sum of the 12 years age (12 वर्ष आयु का कुल योग) = Rs. 100,000

Sum of the 18 years age (18 वर्ष आयु का कुल योग) $\Rightarrow P + \frac{P \times R \times T}{100}$

$\Rightarrow 100{,}000 + \frac{100{,}000 \times 6 \times 6}{100}$

$\Rightarrow$ 100,000 + 36000 $\Rightarrow$ 136,000

Total expenses (6 years) (कुल खर्च)

= 3000 × 6 = Rs. 18,000

Amount attained (कुल धन)

$\Rightarrow$ 136,000 – 18,000 = 1,18000

126. (a) No. of days (कुल दिन) = 146 days

$SI = \frac{P \times T \times R}{100} = \frac{36000 \times 9.5 \times 146}{100 \times 365}$

= Rs. 1368

127. (a) Rate = 5% $\quad 3\frac{1}{2}\%$

Increase by $1\frac{1}{2}\%$

$1\frac{1}{2}\% = 105$

$\text{Sum} = 100\% = 105 \times \frac{2}{3} \times 100$

= **Rs. 7,000**

128. (c) Time = 18 + 28 + 31 + 30 + 31 + 8

= 146 days

Simple interest (साधारण ब्याज)

$= \frac{12{,}000 \times 146 \times 15}{365 \times 100}$

Simple interest (साधारण ब्याज) = Rs. 720

Amount (मिश्रधन) = Rs. (12,000 + 720)

= Rs. 12,720

129. (b) $\frac{x \times (r+3) \times t}{100} - \frac{x \times r \times t}{100} = 300$

$$\frac{xrt + 3xt - xrt}{100} = 300$$

[time = 2 years]

$3 \times x \times 2 = 300 \times 100$

$$x = \frac{300 \times 100}{6}$$

x = Rs. 5,000

value of $4x = 4 \times 5{,}000$

= Rs. 20,000

130. (a) Simple Interest for one year = $\frac{240}{3}$

= Rs. 80

Simple Interest for two year

= 80 × 2 = Rs. 160

Difference for 2 year = 170 – 160

= Rs. 10

$$\text{Rate\%} = \frac{10}{80} \times 100 = 12\frac{1}{2}\%$$

131. (a) $P + S.I. = \frac{P \times R \times T}{100} + P$

$$2200 = \frac{P \times 5 \times T}{100} + P$$

$2200 \times 100 = 5PT + 100P$ .....(i)

$$2320 = \frac{P \times 8 \times T}{100} + P$$

$2320 \times 100 = 8PT + 100P$

$2320 \times 100 = 3PT + 5PT + 100P$ .....(ii)

Value of eq. (i) put in eq. (ii)

$2320 \times 100 = 3PT + 2200 \times 100$

$3PT = 120 \times 100$

$PT = 4000$

Value of PT in eq. (i)

$2200 \times 100 = 5 \times 4000 + 100P$

$220000 - 20000 = 100P$

$$P = \frac{20000}{100}$$

P = Rs. 2,000

$$200 = \frac{2000 \times 5 \times T}{100}$$

$$T = \frac{200}{100} = 2 \text{ years.}$$

Alternate:-

(8 – 5)% = 2320 – 2200

3% = 120

1% = 40

5% = 200

Principal = 2200 – 200

= Rs. 2,000

$$S.I. = \frac{P \times R \times T}{100}$$

$$200 = \frac{2000 \times 5 \times T}{100}$$

$$T = \frac{2000 \times 5 \times T}{100}$$

$$T = \frac{200}{100} = 2 \text{ years}$$