

Simple & Compound Interest Exercise

EXERCISE

- Out of a certain sum, $\frac{1}{3}$ rd is invested at 3%, $\frac{1}{6}$ th at 6% and the rest at 8%. If the simple interest for 2 years from all these investments amounts to ₹600, find the original sum.
(a) ₹4000 (b) ₹5000
(c) ₹6000 (d) ₹7000
- A sum of money lent out at simple interest amounts to ₹1008 in 2 years and ₹1164 in $3\frac{1}{2}$ years. Find the rate % p.a.
(a) 13% (b) 14%
(c) $12\frac{1}{2}$ % (d) 15%
- A sum of money lent out at simple interest amounts to ₹720 after 2 years and to ₹1,020 after a further period of 5 years. Find the sum and the rate %.
(a) ₹500, 10% (b) ₹600, 10%
(c) ₹500, 12% (d) ₹600, 12%
- A sum was put at simple interest at a certain rate for 4 years. Had it been put at 2% higher rate, it would have fetched ₹56 more. Find the sum.
(a) ₹500 (b) ₹600
(c) ₹700 (d) ₹800
- Simple interest on a certain sum is 16 over 25 of the sum. Find the rate per cent and time, if both are equal.
(a) 8% and 8 years (b) 6% and 6 years
(c) 10% and 10 years (d) 12% and 12 years
- A father left a will of ₹68,000 to be divided between his two sons aged 10 years and 12 years such that they may get equal amount when each attains the age of 18 years. If the money is reckoned at 10% p.a. Find how much each gets at the time of the will.
(a) ₹30,000, ₹38,000
(b) ₹28,000, ₹40,000
(c) ₹32,000, ₹36,000
(d) cannot be determined.
- If there are three sum of money P, Q and R so that P is the simple interest of Q and Q is the simple interest of R, rate r% and the time are same in each case, then the relation of P, Q and R is given by
(a) $P^2 = QR$ (b) $Q^2 = PR$
(c) $R^2 = PQ$ (d) $PQR = 100$
- In how many minimum number of complete years, the interest on ₹212.50 P at 3% per annum will be in exact number of rupees?
(a) 6 (b) 8
(c) 9 (d) 7
- A milk man borrowed ₹2,500 from two money lend. For one loan, he paid 5% p.a. and for the other, he paid 7% p.a. The total interest paid for two years was ₹275. How much did he borrow at 7% rate?
(a) ₹600 (b) ₹625
(c) ₹650 (d) ₹675
- What annual instalment will discharge a debt of ₹4,200 due in 5 years at 10% simple interest?
(a) ₹500 per year (b) ₹600 per year

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- (c) `700 per year (d) `800 per year
11. Adam borrowed some money at the rate of 6% p.a. for the first two years, at the rate of 9% p.a. for the next three years, and at the rate of 14% p.a. for the period beyond five years. If he pays a total interest of `11,400 at the end of nine years, how much money did he borrow?
- (a) `10,000 (b) `12,000
(c) `14,000 (d) `16,000
12. A person borrows `5000 for 2 years at 4% p.a. simple interest. He immediately lends it to another person at $6\frac{1}{4}\%$ p.a. for 2 years. Find his gain in the transaction per year.
- (a) `112.50 (b) `125
(c) `150 (d) `167.50
13. A certain amount earns simple interest of `1750 after 7 years. Had the interest been 2% more, how much more interest would it have earned?
- (a) `35 (b) `245
(c) `350 (d) cannot be determined
14. What will be the ratio of simple interest earned by certain amount at the same rate of interest for 6 years and that for 9 years?
- (a) 1:3 (b) 1:4
(c) 2:3 (d) Data inadequate
15. Two equal sums of money were invested, one at 4% and the other at 4.5%. At the end of 7 years, the simple interest received from the latter exceeded to that received from the former by `31.50. Each sum was:
- (a) `1,200 (b) `600
(c) `750 (d) `900
16. Nitin borrowed some money at the rate of 6% p.a. for the first three years, 9% p.a. for the next five years and 13% p.a. for the period beyond eight years. If the total interest paid by him at the end of eleven years is `8160, how much money did he borrow?
- (a) `8000 (b) `10,000
(c) `12,000 (d) Data inadequate
17. An automobile financier claims to be lending money at simple interest, but he includes the interest every six months for calculating the principal. If he is charging an interest of 10%, the effective rate of interest becomes:
- (a) 10% (b) 10.25%
(c) 10.5% (d) None of these
18. A lent `5000 to B for 2 years and `3000 to C for 4 years on simple interest at the same rate of interest and received `2200 in all from both of them as interest. The rate of interest per annum is:
- (a) 5% (b) 7%
(c) $7\frac{1}{8}\%$ (d) 10%
19. A sum of `725 is lent in the beginning of a year at a certain rate of interest. After 8 months, a sum of `362.50 more is lent but at the rate twice the former. At the end of the year, `33.50 is earned as interest from both the loans. What was the original rate of interest?

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- (a) 3.6% (b) 4.5%
(c) 5% (d) None of these
20. The difference between the simple interest received from two different sources on Rs.1500 for 3 years is ₹13.50. The difference their rates of interest is:
(a) 0.1% (b) 0.2%
(c) 0.3% (d) 0.4%
21. The rates of simple interest in two banks A and B are in the ratio 5:4. A person wants to deposit his total savings in two banks in such a way that he received equal half-yearly interest from the both. He should deposit the savings in banks A and B in the ratio.
(a) 2:5 (b) 4:5
(c) 5:2 (d) 5:4
22. The price of a T.V. set worth ₹20,000 is to be paid in 20 instalments of ₹1000 each. If the rate of interest be 6% per annum, and the first instalment be paid at the time of purchase, then the value of the last instalment covering the interest as well will be:
(a) ₹1050 (b) ₹2050
(c) ₹3000 (d) None of these
23. Mr. Thomas invested an amount of Rs.13,900 divided in two different schemes A and B at the simple interest rate of 14% p.a. and 11% p.a. respectively. If the total amount of simple interest earned in 2 years be Rs.3508, what was the amount invested in scheme B?
(a) ₹6400 (b) ₹6500
(c) ₹7200 (d) ₹7500
24. An amount of ₹1,00,000 is invested in two types of shares. The first yields an interest of 9% p.a. and the second, 11% p.a. If the total interest at the end of one year is $9\frac{3}{4}\%$, then the amount invested in each share was:
(a) ₹52,500; ₹47,500
(b) ₹62,500; ₹37,500
(c) ₹72,500; ₹27,500
(d) ₹82,500; ₹17,500
25. David invested certain amount in three different schemes A, B and C with the rate of interest 10% p.a., 12% p.a. and 15% p.a. respectively. If the total interest accrued in one year was ₹3200 and the amount invested in Scheme C was 150% of the amount invested in Scheme A and 240% of the amount invested in Scheme B, what was the amount invested in scheme B?
(a) ₹5000 (b) ₹6500
(c) ₹8000 (d) cannot be determined
26. A person invested in all Rs.2600 at 4%, 6% and 8% per annum simple interest. At the end of the year, he got the same interest in all the three cases. The money invested at 4% is:
(a) ₹200 (b) ₹600
(c) ₹800 (d) ₹1200
27. Divide ₹2379 into 3 parts so that their amounts after 2, 3 and 4 years respectively may be equal, the rate of interest being 5% per annum at simple interest. The first part is:
(a) 759 (b) 792

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- (c) 818 (d) 828
28. A man invests `3000 at a rate of 5% per annum. How much more should he invest at a rate of 8%, so that he can earn a total of 6% per annum?
- (a) `1200 (b) `1300
- (c) `1500 (d) `2000
29. Two equal sums of money are lent at the same time at 8% and 7% per annum simple interest. The former is recovered 6 months earlier than and the amount in each case is ₹2560. The sum and the time for which the sum of money were lent out, are:
- (a) `2500, 3.5 years and 4 years
- (b) `2000, 3.5 years and 4 years
- (c) `2000, 4 years and 5.5 years
- (d) `3000, 4 years and 4.5 years
30. Peter invested an amount of `12,000 at the rate of 10% p.a. simple interest and another amount at the rate of 20% p.a. simple interest. The total interest earned at the end of one year on the total amount invested became 14% p.a. Find the total amount invested?
- (a) `20,000 (b) `22,000
- (c) `24,000 (d) `25,000
31. Submit lent some money to Mohit at 5% per annum simple interest. Mohit lent the entire amount to Birji on the same day at $8\frac{1}{2}\%$ per annum. In this transaction, after a year, Mohit earned a profit of Rs.350. Find the sum of money lent by Submit to Mohit.
- (a) `10,000 (b) `9,000
- (c) `10,200 (d) None of these
32. Rajesh gave `1200 on loan. Some amount he gave at 4% per annum simple interest and remaining at 5% per annum simple interest. After two years, he got Rs.110 as interest. Then the amounts given at 4% and 5% per annum simple interest are, respectively:
- (a) `500, `700 (b) `400, `800
- (c) `900, `300 (d) `1100, `1100
33. If the difference between S.I. and C.I. for 2 years on a sum of money lent at 5% is Rs.6, then the sum B.
- (a) `2200 (b) `2400
- (c) `2600 (d) `2000
34. Zovo got a loan of `8,000 against his fixed deposits to purchase a scooter. If the rate of interest is 10% p.a. compounded half yearly, find the amount that he pays after one and half year.
- (a) `9000 (b) `9200
- (c) `9350 (d) `9500
35. A sum of money placed at compound interest doubles itself in 5 years. Find in how many years it will become 8 times.
- (a) 15 years (b) 20 years
- (c) 25 years (d) 30 years
36. The C.I. on a certain sum of money for the 4th year at 8% p.a. is `486. What was the compound interest for the third year on the same sum at the same rate?
- (a) `450 (b) `475
- (c) `456 (d) None of these

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37. A sum amounts double in 8 years by simple interest. Then the rate of simple interest p.a. is
 (a) 10% (b) 12.5%
 (c) 15% (d) 20%
38. A man borrowed some money from a private organisation at 5% simple interest per annum. He lent 50% of this money to another person at 10% compound interest per annum and thereby the man made a profit of ₹13,205 in 4 years. The man borrowed
 (a) ₹80,000 (b) ₹1,00,000
 (c) ₹1,20,000 (d) ₹1,50,000
39. Two equal sums were borrowed at 8% simple interest per annum for 2 years and 3 years respectively. The difference in the interest was ₹56. The sums borrowed were
 (a) ₹800 (b) ₹700
 (c) ₹560 (d) ₹350
40. The difference between C.I.(Compound Interest) and S.I.(Simple Interest) on a sum of ₹4,000 for 2 years at 5% p.a. payable yearly is
 (a) ₹20 (b) ₹10
 (c) ₹50 (d) ₹60

ANSWER KEY				
1. (b)	2. (a)	3. (b)	4. (c)	5. (a)
6. (c)	7. (b)	8. (b)	9. (b)	10. (c)
11. (b)	12. (a)	13. (d)	14. (c)	15. (d)
16. (a)	17. (b)	18. (d)	19. (d)	20. (c)
21. (b)	22. (d)	23. (a)	24. (b)	25. (a)

26. (d)	27. (d)	28. (c)	29. (b)	30. (a)
31. (a)	32. (a)	33. (b)	34. (b)	35. (a)
36. (a)	37. (b)	38. (b)	39. (b)	40. (b)

EXERCISE

1. (b) Rest part = $1 - \frac{1}{3} + \frac{1}{6} = \frac{1}{2}$
 Rate % per annum on total sum
 $= \left(\frac{1}{3} \times 3 \right) + \left(\frac{1}{6} \times 6 \right) + \left(\frac{1}{2} \times 8 \right) = 6\%$
 $\therefore P = \frac{600 \times 100}{6 \times 2} = ₹5,000$
2. (a) S.I. for $1\frac{1}{2}$ years = ₹(1164-1008)
 = ₹156 S.I. for 2 years = ₹ $\left(\frac{156 \times 2 \times 2}{3} \right) = ₹208$
 \therefore Principal = ₹(1008-208) = ₹800
 Now, P=800, T=2, S.I.=208
 \therefore Rate = $\left(\frac{100 \times 208}{800 \times 2} \right) \% = 13\%$
3. (b) S.I. for 5 years = ₹(1020-720) = ₹300
 S.I. for 2 years = $\frac{₹300}{5} \times 2 \times 2 = ₹120$
 \therefore Principal = ₹(720-120) = ₹600
 Now, P=600, T=2, S.I.=120
 $\therefore R = \frac{120 \times 100}{600 \times 2} = 10\%$
4. (c) Difference in S.I. = $\frac{P \times T}{100} (R_1 - R_2)$
 $\Rightarrow 56 = \frac{P \times 4 \times 2}{100} \quad (\because R_1 - R_2 = 2)$
 $\Rightarrow P = \frac{56 \times 100}{4 \times 2} = ₹700$
5. (a) $\frac{16}{25} P = \frac{P \times R \times R}{100}$

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$$\Rightarrow R^2 = \frac{1600}{25} \Rightarrow R = \frac{40}{5} = 8\%$$

Also, time = 8 years

6. (c) Let one gets = `x

Then, second gets = `(68,000-x)

Given: $A_1 = A_2$

$$X + \frac{x \times 10 \times 8}{100} = (68000 - x) + \frac{(68000 - x) \times 10 \times 6}{100}$$

$$\Rightarrow X[100 + 80] = (68,000 - x)[100 + 60]$$

$$\Rightarrow \frac{180x}{160} = 68,000 - x$$

$$\Rightarrow 34x = 68000 \times 16$$

$$\Rightarrow x = \text{'32,000}$$

\therefore second gets = `36,000

$$\frac{s_1}{s_2} = \frac{\frac{1}{100 + r_1 t_1}}{\frac{1}{100 + r_2 t_2}} = \frac{\frac{1}{180}}{\frac{1}{160}} = \frac{8}{9}$$

$$S1 = 8/17 \times 68000 = 32000$$

$$S2 = 68000 - 32000 = 36000$$

7. (b) $P = \frac{Q \times r \times t}{100}$ and $Q = \frac{R \times r \times t}{100}$

$$\Rightarrow \frac{P}{Q} = \frac{R}{R} = \frac{r \times t}{100}$$

$$\therefore Q^2 = PR.$$

8. (b) Interest for one year = `212.50 $\times \frac{3}{100} \times 1$

$$= \frac{51}{8}$$

Thus in 8 years the interest is

$$\text{'51}$$

9. (b) Let he borrowed at 5% = `x

\therefore He borrowed at 7% = `(2500-x)

Now $I_1 + I_2 = 275$

$$\frac{x \times 5 \times 2}{100} + \frac{(2500 - x) \times 7 \times 2}{100} = 275$$

$$\Rightarrow 10x + 14(2500 - x) = 27500$$

$$\Rightarrow 4x = 35000 - 27500 = 7500$$

$$\Rightarrow X = \text{'1875}$$

Sum borrowed at 7% rate = 2500 - 1875 = `625

10. (c) Shortcut method:

If borrowed amount be `M and it is paid in equal instalments, then

$$M = na + \frac{ra}{100 \times Y} \times \frac{n(n-1)}{2}$$

Where Y = no. of instalments per annum
a = annual instalment

Here, M = 4200, y = 1, r = 10, n = 5, a = ?

$$4200 = 5a + \frac{10a}{100} \times \frac{5(5-1)}{2}$$

$$\Rightarrow 4200 = a[5 + 1] \Rightarrow 6a = 4200$$

$$\Rightarrow a = \text{'700}$$

11. (b) Let the sum borrowed be x. Then,

$$\frac{x \times 6 \times 2}{100} + \frac{x \times 9 \times 3}{100} + \frac{x \times 14 \times 4}{100} = 11400$$

$$\Rightarrow \frac{3x}{25} + \frac{27x}{100} + \frac{14x}{25} = 11400$$

$$\Rightarrow \frac{95x}{100} = 11400$$

$$\Rightarrow x = \frac{11400 \times 100}{95} = 12000.$$

Hence, sum borrowed = `12,000.

12. (a) Gain in 2 years

$$= \left[\left(5000 \times \frac{25}{4} \times \frac{2}{100} - \frac{5000 \times 4 \times 2}{100} \right) \right]$$

$$= \text{'(625-400)} = \text{'225.}$$

$$\therefore \text{Gain in 1 year} = \left(\frac{225}{2} \right) = \text{'112.50}$$

13. (d) We need to know the S.I., Principal and time to find the rate. Since the principal is not given, so data is inadequate.

14. (c) Let the principal be P and rate of interest be R%.

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$$\therefore \text{Required ratio} = \left[\frac{\frac{P \times R \times 6}{100}}{\frac{P \times R \times 9}{100}} \right] = \frac{6PR}{9PR} = \frac{6}{9} = 2:3.$$

15. (d) Difference of S.I. = $\sqrt{31.50}$

Let each sum be Rs.x. Then

$$\frac{x \times 4\frac{1}{2} \times 7}{100} - \frac{x \times 4 \times 7}{100} = 31.50$$

$$\text{Or } \frac{7x}{100} \times \frac{1}{2} = \frac{63}{2}$$

$$\text{Or } x = \text{'900}$$

16. (a) Let the sum be 'x. Then,

$$\frac{x \times 6 \times 3}{100} + \frac{x \times 9 \times 5}{100} + \frac{x \times 13 \times 3}{100} = 8160$$

$$\Rightarrow 18x + 45x + 39x = (8160 \times 100)$$

$$\Rightarrow 102x = 816000$$

$$\Rightarrow X = 8000$$

17. (b) Let the sum be '100. Then,

$$\text{S.I. for first 6 months} = \left(\frac{100 \times 10 \times 1}{100 \times 2} \right) = \text{Rs. '}$$

$$\text{S.I. for last 6 months} = \left(\frac{105 \times 10 \times 1}{100 \times 2} \right) = \text{'5.25.}$$

So, amount at the end of 1 year =

$$\text{' (100 + 5 + 5.25) = '110.25.}$$

$$\therefore \text{Effective rate} = \text{' (110.25 - 100) = 10.25\%}$$

18. (d) Let the rate be R% p.a. Then,

$$\frac{5000 \times R \times 2}{100} + \frac{3000 \times R \times 4}{100} = 2200$$

$$\Rightarrow 100R + 120R = 2200$$

$$\Rightarrow R = \frac{2200}{220} = 10.$$

19. (d) Let the original rate be R%. Then, new rate = (2R)%

$$\therefore \frac{725 \times R \times 1}{100} + \frac{362.50 \times 2R \times 1}{100 \times 3} = 33.50$$

$$\Rightarrow (2175 + 725)R = 33.50 \times 100 \times 3 = 10050$$

$$\Rightarrow R = \frac{10050}{2900} = 3.46\%$$

$$20. (c) \frac{1500 \times R_1 \times 3}{100} + \frac{1500 \times R_2 \times 3}{100} = 13.50$$

$$\Rightarrow 4500(R_1 - R_2) = 1350$$

$$\Rightarrow R_1 - R_2 = \frac{1350}{4500} = 0.3\%$$

21. (b) Let the savings be X and Y and the rates of simple interest be 5x and 4x respectively.

$$\text{Then, } X \times 5x \times \frac{1}{2} \times \frac{1}{100} = Y \times 4x \times \frac{1}{2} \times \frac{1}{100}$$

$$\frac{1}{100} \text{ or } \frac{X}{Y} = \frac{4}{5},$$

$$\text{i.e., } X:Y = 4:5$$

22. (d) Money paid in cash = '1000.

$$\text{Balance payment} = \text{' (20000 - 1000)}$$

$$= \text{'19000}$$

23. (a) Let the sum invested in scheme A be Rs. x and that in scheme B be (13900 - x)

$$\text{Then, } \left(\frac{x \times 14 \times 2}{100} \right) + \frac{(13900 - x) \times 11 \times 2}{100}$$

$$= 3508$$

$$\Rightarrow 28x - 22x = 350800 - (13900 \times 22)$$

$$\Rightarrow 6x = 45000$$

$$\Rightarrow x = 7500.$$

So, sum invested in scheme B

$$= \text{' (13900 - 7500)}$$

$$= \text{'6400.}$$

24. (b) Let the sum invested at 9% be 'X and that invested at 11% be Rs. (100000 - x).

Then,

$$\frac{x \times 9 \times 1}{100} + \frac{(100000 - x) \times 11 \times 2}{100}$$

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$$\Rightarrow 100000 \times \frac{39}{4} \times \frac{1}{100}$$

$$\Rightarrow \frac{9x + 1100000 - 11x}{100} = \frac{39000}{4} = 9750$$

$$\Rightarrow 2x = (1100000 - 975000) = 125000$$

$$\Rightarrow X = 62500.$$

\therefore sum invested at 9% = `62500.

Sum invested at 11% = ` (100000-62500)
= `37500.

Alternatively:

$$P_1 = P \frac{(r-r_2)}{(r_1-r_2)} \& P_2 = P \frac{(r-r_1)}{(r_2-r_1)}$$

$$P_1 = 1,00,000 \left[\frac{9\frac{3}{4}-11}{9-11} \right], P_2 = \frac{9\frac{3}{4}-9}{11-9}$$

$$P_1 = 62500, P_2 = 37500$$

25. (a) Let x, y and z be the amounts invested in schemes A, B and C respectively. Then,

$$\frac{x \times 10 \times 1}{100} + \left(\frac{y \times 12 \times 1}{100} + \left(\frac{z \times 15 \times 1}{100} = 3200 \right. \right.$$

$$\Rightarrow 10x + 12y + 15z = 320000 \dots\dots(i)$$

$$\text{Now, } z = 240\% \text{ of } y = \frac{12}{5}y \dots\dots(ii)$$

$$\text{And, } z = 150\% \text{ of } x = \frac{3}{2}x$$

$$\Rightarrow x = \frac{2}{3}z = \frac{2}{3} \times \frac{12}{5}y = \frac{8}{5}y$$

$\dots\dots(iii)$

From (i), (ii) and (iii), we have:

$$16y + 12y + 36y = 320000$$

$$\Rightarrow 64y = 320000$$

$$y = 5000$$

$$\Rightarrow \text{Sum invested in scheme B} = `5000.$$

26. (d) Let the parts be x, y and [2600-(x+y)]. Then,

$$\frac{x \times 4 \times 1}{100} = \frac{y \times 6 \times 1}{100} = \frac{[2600 - (x+y)] \times 8 \times 1}{100}$$

$$\frac{y}{x} = \frac{4}{6} = \frac{2}{3} \text{ or } y = \frac{2}{3}x.$$

$$\text{So, } \frac{x \times 4 \times 1}{100} = \frac{2600 - \frac{5}{3}x}{100} \times 8$$

$$\Rightarrow 4x = \frac{(7800 - 5x) \times 8}{3}$$

$$\Rightarrow 52x = (7800 \times 8)$$

$$\Rightarrow x = \frac{7800 \times 8}{52} = 1200.$$

\therefore Money invested at 4% = `1200.

27. (d) Let the parts be x, y and [2379-(x+y)].

$$X + \left(x \times 2 \times \frac{5}{100} \right) = Y + \left(y \times 3 \times \frac{5}{100} \right)$$

$$= Z + \left(z \times 4 \times \frac{5}{100} \right)$$

$$\Rightarrow \frac{11x}{10} = \frac{23y}{20} = \frac{6z}{5} = k$$

$$\Rightarrow x = \frac{10k}{11}, y = \frac{20k}{23}, z = \frac{5k}{6}$$

But $x+y+z = 2379$.

$$\Rightarrow \frac{10k}{11} + \frac{20k}{23} + \frac{5k}{6} = 2379$$

$$\Rightarrow 1380k + 1320k + 1256k = 2376 \times 11 \times 23 \times 6$$

$$\Rightarrow k = \frac{2379 \times 11 \times 23 \times 6}{3965} = \frac{3 \times 11 \times 23 \times 6}{5}$$

$$\therefore x = \frac{10}{11} \times \frac{3 \times 11 \times 23 \times 6}{5} = 828.$$

Hence, the first part is `828.

28. (c)
 $3000(1+0.05) + x(1+0.08) = (3000+x)(1+0.06)$

$$\text{Or } 3150 + 1.08x = 3180 + 1.06x$$

$$\text{Or } 0.02x = 30 \text{ or } x = \frac{30}{0.02} = 1500$$

29. (c) Let the sum be `x.

\therefore `X is lent at 8% for t years and `x is also lent at 7% for $\left(t + \frac{1}{2}\right)$ years

$$\Rightarrow \frac{x \times t \times 8}{100} + = 2560$$

$\dots\dots(1)$

$$\text{and } \frac{x \times (2t+1) \times 7}{100} + x = 2500 \dots\dots(2)$$

Solving (1) and (2),

$$\Rightarrow X = `2,000, t = 3.5 \text{ years}$$

30. (a) Let the second amount be Rs. x. Then,

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$$\frac{12,000 \times 10 \times 1}{100} + \frac{x \times 20 \times 1}{100} = \frac{(12000 + x) \times 14 \times 1}{100}$$

$$\Rightarrow 120000 + 20x = (12000 + x)14$$

$$\Rightarrow 6x = 168000 - 120000$$

$$\Rightarrow X = ₹ 8000$$

$$\therefore \text{Total investment} = 12,000 + 8000 \\ = ₹ 20,000$$

31. (a) We have,

$$\left(8\frac{1}{2} - 5\right)\% \text{ of } x = ₹ 350$$

$$\Rightarrow 100\% \text{ of } x = \frac{350}{3.5} \times 100 = ₹ 10,000$$

32. (a) Let the amount of the loss at 4% per annum be ₹

$$\text{Amount given at 5% per annum} = ₹ (1200 - x)$$

$$\text{Now, } \frac{x \times 4 \times 2}{100} + \frac{(1200 - x) \times 5 \times 2}{100} = 110$$

$$\Rightarrow X = ₹ 500$$

$$\text{And, } (1200 - x) = 1200 - 500 = ₹ 700$$

33. (b) Difference = $\frac{PR^2}{10000}$

$$\Rightarrow 6 = \frac{P \times 5 \times 5}{10000}$$

$$\Rightarrow 6 \times 400 = ₹ 2400.$$

34. (b) Here, $n = 3$ for interest is reckoned half-yearly.

$$A = 8,000 \left(1 + \frac{10}{2 \times 100}\right)^3$$

$$A = 8,000 \left(\frac{21}{20}\right)^3 = ₹ 9261 = ₹ 9200$$

35. (a) $P \left(1 + \frac{R}{100}\right)^5 = 2P$

$$\Rightarrow 1 + \frac{R}{100} = 2 \quad \dots\dots\dots (i)$$

$$\text{Let } P \left(1 + \frac{R}{100}\right)^n = 8P$$

$$\Rightarrow 1 + \frac{R}{100} = \left(1 + \frac{R}{100}\right)^{15}$$

$$\Rightarrow 2^3 = \left\{ \left(1 + \frac{R}{100}\right)^5 \right\}^3 \quad [\text{By (i)}]$$

$$\Rightarrow n = 15 \text{ years}$$

36. (a) If 'x' be the interest of third year, then 108% of x = 486

$$\therefore x = 486 \times \frac{100}{108} = 450$$

37. (b) Let p be the principal amount and R be rate of interest.

$$2P = P + \frac{P \times R \times 8}{100}$$

$$R = \frac{100}{8} = 12.5\%$$

38. (b) Let principal be represented by P.

Ist Case:

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{P \times 8 \times 3}{100}$$

IInd Case:

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{P \times 8 \times 3}{100}$$

According to question

$$\frac{P \times 8 \times 3}{100} - \frac{P \times 8 \times 2}{100} = 56$$

$$\frac{P \times 8}{100} = 56$$

$$\Rightarrow P = \frac{56 \times 100}{8} = 700$$

39. (b) Required difference = $\frac{PR^2}{(100)^2}$

$$\Rightarrow \frac{4000 \times 5 \times 5}{100 \times 100} = ₹ 10$$