SIMPLE INTEREST

INTRODUCTION

Interest is defined as 'Time Value of Money'. It works under the basic principle that value of money is not fixed, and it will keep changing over the period of time. In this chapter, we are going to study two types of interest, namely simple interest (SI) and compound interest (CI).

SIMPLE INTEREST

In case of simple interest, the interest as well as the principal remains fixed for every compounding period.

Expression for Simple Interest

$SI = \frac{Principal \times Rate\ of\ Interest \times Time}{100}$

Remember

1. If the rate of interest = R% per annum for both CI and SI, then the difference between CI and SI for 2 yr will be equal to (R% of R)% of principal = $\frac{R^2}{100}$ % of principal. In the above case, R = 10%, so the difference between CI and SI for 2 yr is 1%.
2. If a sum doubles itself in n years at SI, then rate of interest = $\frac{100}{n}$.
3. At SI, if a sum of money amount to n times in t years, then rate of interest = $\frac{(n-1)}{T}$ 100%.

TYPE

A sum of Rs. 2000 is given on at the rate of 10% at simple interest for 3 years. Find the simple Interest?

Solution:

$10\% \rightarrow \frac{1}{10} \rightarrow \frac{3 \times 1}{10} \rightarrow \frac{3(SI)}{10}$

$10 \rightarrow 2000$

$1 \rightarrow 200$

$3 \rightarrow 600$

TYPE

A sum of Rs. 2000 is given on at the rate of 10% at simple interest for 3 years. Find the amount after 3 years?

Solution:

$10\% \rightarrow \frac{1}{10} \rightarrow \frac{3 \times 1}{10} \rightarrow \frac{3}{10} \rightarrow \frac{13(A)}{10}$

$10 \rightarrow 2000$

$1 \rightarrow 200$

$13 \rightarrow 2600$

TYPE

A sum of Rs. 2000 is amounts to 2600 at a certain rate of simple interest for 3 years. Find the rate?

Solution:

$\frac{2600}{2000} \rightarrow \frac{13}{10} \rightarrow \frac{13-10}{10} \rightarrow \frac{3(3\ yr)}{10} \rightarrow \frac{1(1\ yr)}{10}$

Rate = $1/10 \rightarrow 10\%$

TYPE

A sum of Rs. 2000 is amounts to 2600 at the rate of 10% at simple interest in a certain period. Find the number of years?

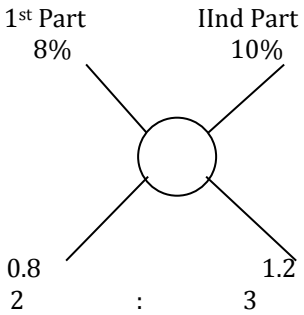
Solution:

$10\% = \frac{\mathbf{1(1\ yr)}}{\mathbf{10}}$ compare to $\frac{2600}{2000} \rightarrow \frac{13}{10} \rightarrow \mathbf{\frac{3}{10}}$

so $\frac{1}{10}$ become $\frac{3}{10}$ in 3 years

TYPE

A sum of Rs. 10000 is lent partly at 8% and remaining at 10% per annum. If the yearly interest on the average is 9.2%, the two parts are:



According to the question,

(2 + 3) units = Rs. 10000

5 units = Rs. 10000

1 unit = Rs. 2000

Hence amount invested at 8% = 2 units

= 2 × 2000 = Rs. 4000

Amount invested at 10% = 3 units

TYPE

A man loses Rs. 55.50 yearly when the annual rate of interest falls from 11.5 % to 10%. His capital (in rupees) is

Solution:

$11.5 \downarrow 10 \rightarrow 1.5$

$1.5\% \rightarrow 55.5$

$1 \rightarrow 55.5/1.5 \rightarrow 3700$

TYPE

A sum of money at simple interest amounts to 1,012 in 5/2 years and to Rs. 1067.20 in 4 years. The rate of interest per annum is

Solution:

$P \rightarrow 1012 \rightarrow 1067.2$

$P \xrightarrow{5/2\ yrs} 1012 \xrightarrow[+55.2]{3/2yrs} 1067.2$

Interest in 1st year

$= \frac{55.20}{3} \times 2 = Rs.\ 36.80$

Interest in 4 years = 36.90 × 44 = Rs. 147.2

Principal = Amount - Interest

= 1067.20 – 147.20 = Rs, 920

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

TYPE

Out of Rs. 50,000, that a man has, he lends Rs. 8000 at 5.5 % per annum simple interest and Rs. 24,000 at 6% per annum simple interest. He lends the remaining money at a certain rate of interest so that he gets total

annual interest of Rs. 3680, The rate of interest per annum, at which the remaining money is lent, is:

Solution:

Remaining amount =
50000 – (8000 + 24000)
= Rs. 18000
Let rate of interest = R %
According to the question,

$$\left(\frac{44000}{100}\right)+\frac{144000}{100}+\frac{18000R}{100}=3880$$

$$\frac{188000}{100}+\frac{18000R}{100}=3880$$

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

180R = 1800
Rs. 10%
Hence, Required Rate = 10%

TYPE

A sum was invested on simple interest at a certain rate for 2 years. Had it been put at 3% higher rate it would have fetched Rs. 72 more. The sum is

Solution:

$$3\%\rightarrow\frac{3}{10}\rightarrow\frac{3\times2}{10}\rightarrow\frac{6}{10}\rightarrow\frac{6\rightarrow72}{10\rightarrow?}\rightarrow1200\ ans$$

TYPE

Rs. 800 becomes Rs. 956 in 3 years at a certain rate of simple interest, If the rate of interest is increased by 4%, what amount will Rs. 800 become in 3 years P

Solution:

$$4\%\rightarrow\frac{1}{25}\rightarrow\frac{3}{25}\rightarrow\frac{3\xrightarrow{\times32}?}{25\xrightarrow{\times32}800}\rightarrow96$$

956 + 96 = 1052

Previous year questions

1. What sum of money must be given at simple interest for six months at 4% per annum in order to earn Rs. 150 interest?
   (a) Rs. 5000 (b) Rs. 7500
   (c) Rs. 10,000 (d) Rs. 15000
2. A sum of money becomes 7/6 of itself in 3 years at a certain rate of simple interest. The rate of interest per annum is:
   (a) 50/9 % (b) 59/9%
   (c) 18% (d) 25%
3. The simple interest on a certain sum at 5% per annum for 3 years and 4 years differ by Rs. 42. The sum is:
   (a) Rs. 210 (b) Rs. 280
   (c) Rs. 750 (d) Rs. 840
4. The difference between the simple interest received from two different sources on Rs. 1500 for 3 years is Rs. 13.50. the difference between their rates of interest is:
   (a) 0.1 % (b) 0.2%
   (c) 0.3% (d) 0.4%
5. A sum of Rs. 10000 is lent partly at 8% and remaining at 10% per annum. If the yearly interest on the average is 9.2%, the two parts are:
   (a) Rs. 4000, Rs. 6000 (b) Rs. 4500, Rs. 5500
   (c) Rs. 5000 ,Rs. 5000 (d) Rs. 5500 , Rs. 4500
6. A sum of Rs. 1600 gives a simple interest of Rs. 252 in 2 years and 3 months. The rate of interest per annum is:
   (a) 11/2% (b) 8%
   (c) 7% (d) 6%
7. The simple interest on a sum of money is 4/9 of the principal and the number of years is equal to the rate percent per annum. The rate per annum is:
   (a) 5% (b) 20/3% (d) 6% (d) 36/5%
8. A sum of Rs. 400 amounts to Rs. 480 in 4 years. What will it amount to if the rate of interest is increased by 2%?
   (a) Rs. 484 (b) Rs. 560
   (c) Rs. 512 (d) None of these
9. At what rate percent per annum will the simple interest on a sum of money be 2/5 of the principal amount in 10 years?
   (a) 4% (b) 6%
   (c) 17/3% (d) 20/3%
10. In what time will the simple interest be 2/5 of the principal at 8% per annum?
    (a) 8 years (b) 7 years
    (c) 5 years (d) 6 years
11. A sum of Rs. 1750 is divided into two parts such that the interests on the first part at 8% simple interest per annum and that on the other part at 6% simple interest per annum are equal. The interest on each part in Rs. Is:
    (a) 60 (b) 65
    (c) 70 (d) 40
12. A sum of Rs. 1500 was lent partly at 5% and partly 8% simple interest. The total interest received after 3 years is Rs. 300. The ratio of money lent at 5% to that at 8% is:
    (a) 5:8 (b) 8:5
    (c) 31:6 (d) 16:15
13. A person lent Rs. 5000 partly at the rate of 4 % and partly at the rate of 5% per annum. At simple interest. The total interest after 2 years is Rs. 440. The sum of money lent at each of the above rates is to be divided in the ratio:
    (a) 4:5 (b) 3:2
    (c) 5:4 (d) 2:3
14. The simple interest on a sum after 4 years is 1/5 of the sum. The rate of interest per annum is:
    (a) 4% (b) 5%
    (c) 6% (d) 8%
15. What sum of money will amount to Rs. 520 in 5 years and to Rs. 568 in 7 years at simple interest?
    (a) Rs. 400 (b) Rs. 120
    (c) Rs. 510 (d) Rs. 220
16. Rs. 500 was invested at 12% per annum simple interest and a certain sum of money invested at 10% per annum simple interest, if the total interest

on both the sum after 4 years is Rs. 480, the latter sum of money is :

(a) Rs. 450 (b) Rs. 750

(c) Rs. 600 (d) Rs. 550

17. A money lender finds that due to fall in the annual rate of interest from 8% to 31/4 %, his yearly income diminishes by Rs. 61.50. His capital is

(a) Rs, 22400 (b) Rs 23800

(c) Rs. 24600 (d) Rs. 26000

18. A lends Rs. 2500 to B and a certain sum to C at the same time at 7% annual simple interest. If after 4 years. A received interest of Rs. 1120 from B and C, the sum lent to C is

(a) Rs, 700 (b) Rs. 6500

(c) Rs.. 40000 (d) Rs... 1500

19. A certain sum of money amounts to Rs. 756 in 2 years and to Rs. 873 . in 7/2 years at a certain rate of simple interest, The rate of interest per annum is

(a) 10% (b) 11%

(c) 12% (d) 18%

20. What sum will amount to Rs. 7000 in 5 years at 10/3 % simple interest

(a) Rs. 6300 (b) Rs. 6500

(c) Rs. 6000 (d) Rs. 5000

21. A sum of money becomes 41/40 of itself in 1/4 years at a certain rate of simple interest. The rate of interest per annum is

(a) 10% (b) 1%

(c) 2.5% (d) 5%

22. The simple interest on a certain sum for 8 months at 4% per annum is Rs. 129 less than the simple interest on the same sum for 15 months at 5% per annum. The sum is

(a) Rs. 2,580 (b) Rs. 2400

(c) Rs. 2529

(c) Rs. 3600

23. A man loses Rs. 55.50 yearly when the annual rate of interest falls from 11.5 % to 10%. His capital (in rupees) is

(a) 3700 (b) 7400

(c) 8325 (d) 1110

24. A sum of Rs. 1000 is lent out partly at 6% and the remaining at 10% per annum. If the yearly income on the average is 9.2% the both parts respectively

(a) Rs. 400, Rs. 600 (b) Rs. 450, Rs. 550

(c) Rs. 200 , Rs. 800 (d) Rs. 550, Rs. 450

25. A man took a loan from a bank at the rate of 12% per annum at simple interest. After 3 years he had to pay Rs. 5400 as interest only for that period. The principal amount borrowed by him was:

(a) Rs. 2000 (b) Rs. 10,000

(c) Rs. 20,000 (d) Rs. 15,000

26. A sum of money at simple interest amounts to 1,012 in 5/2 years and to Rs. 1067.20 in 4 years. The rate of interest per annum is

(a) 2.5% (b) 3%

(c) 4% (d) 5%

27. A sum of money lent out at simple interest amounts to Rs. 720 after 2 years and to Rs. 1020 after 5 years. The sum is

(a) Rs. 520 (b) Rs. 600

(c) Rs. 700 (d) Rs. 710

28. The sum of money, that will give Rs. 1 as interest per day at the rate of 5 % per annum simple interest is

(a) Rs. 3650 (b) Rs. 36500

(c) Rs. 730 (d) Rs. 7300

29. Mohan lent some amount of money at 9% simple interest and an equal amount of money at 10% simple interest each for two years. If his total interest was Rs. 760, what amount was lent in each case

(a) Rs. 1700 (b) Rs. 1800

(c) Rs. 1900 (d) Rs. 2000

30. Simple Interest on a certain sum at a certain annual rate of interest is 16/25 of the sum. If the number representing rate percent and time in years be equal, then the rate of interest is

(a) 8 % (b) 23/2%

(c) 25/2 % (d) 49/2%

31. If the annual rate of simple interest increases from 10% to 25.2 %, a man's yearly income increases by Rs. 1250. His principal (in rupees) is

(a) 50,000 (b) 45,000

(c) 60,000 (d) 65,000

32. If the simple interest on the certain sum of money for 15 months at 15/2% per annum exceeds the simple interest on the same sum for 8 months at 25/2% per annum by Rs. 32.50, then the sum of money (in Rs.) is:

(a) 312 (b) 312.50

(c) 3120 (d) 3120.50

33. In what time will Rs. 72 become Rs. 81 at 25/4% per annum simple interest?

(a) 2 years (b) 3 years

(c) 2 years 6 months (d) none of these

34. The simple interest on Rs. 7300 from 11 May, 1987 to 10 September 1987 (both days included) at 5% per annum is

(a) Rs. 123 (b) Rs. 103

(c) Rs. 208 (d) Rs. 223

35. A person borrows Rs. 5000 for 2 years at 4% per annum simple interest. He immediately lends it to another person at 25/4 % per annum simple interest for 2 years. His gain in this transaction is:

(a) Rs. 112.50 (b) Rs. 450 (C) Rs. 225 (d) Rs. 150

36. A man had Rs. 16,000, A part of which he lent at 4% and the rest at 5% per annual simple interest. If the total interest received was Rs, 700 in one year, the money lent at 4% per annum was

(a) Rs, 12,000 (b) Rs. 8,000

(c) Rs. 10,000 (d) Rs. 6,000

37. A certain sum of money becomes three times of itself in 20 years at simple interest. In how years does it become double of itself at the same rate of simple interest ?

(a) 8 years (b) 10 years

(c) 12 years (d) 14 years

38. A sum of Rs. 1500 is lent out in two parts in such a way that the simple interest on one part at 10% per annum for 5 years is equal to that on another part

at 12.5% per annum for 4 years. The sum lent out at 12.5% is:

(a) Rs. 500 (b) Rs. 1000
(c) Rs. 750 (d) Rs. 1250

39. A person borrows some money for 5 years and ratio of loan amount : total interest amount is 5: 2. Then find the ratio of loan amount : interest rate is equal to

(a) 2:25 (b) 2 : 1
(c) 5: 2 (d) 25:2

40. If Rs. 64 amount to 83.20 in 2 years what will Rs 86 amount to in 4 years at the same rate percent per annum?

(a) Rs. 132.50 (b) Rs. 135.60
(c) Rs. 137.60 (d) None of these

41. The effective annual rate of interest, corresponding to a nominal rate of 6% per annum payable half yearly is :

(a) 6.06 (b) 6.07%
(c) 6.08% (d) 6.09%

42. If the simple interest for 6 year be equal to 30% of the principal, it will be equal to the principal after

(a) 20 years
(c) 10 years (b) 30 years (d) 22 years

43. A person invests money in three different schemes for 6 years, 10 years and 12 years at 10 percent, 12 percent and 15 percent simple interest respectively. At the completion of each scheme, he gets the same interest, The ratio of his investment is

(a) 6: 3: 2 (b) 2: 3: 4
(c) 3 : 4 : 6 (d) 3 : 4 : 2

44. Rs. 1,000 is invested at 5% per annum simple interest, If the interest is added to the principal after every 10 years, the amount will become Rs. 2,000 after

(a) 15 years (b) 18 years
(c) 20 years (d) 50/3 years

45. A sum of money amounts to Rs. 5,200 in 5 years and to Rs. 5,680 in 7 years at simple interest. The rate of interest per annum is

(a) 3% (b) 4%
(c) 5% (d) 6%

46. A person deposited Rs. 400 for 2 years, Rs. 550 for 4 years and Rs. 1,200 for 6 years. He received the total simple interest of Rs. 1,020, The rate of interest per annum is

(a) 10% (b) 5%
(c) 15% (d) 20%

47. Manoj deposited Rs. 29400 for 6 years at simple, interest. He got Rs. 4200 as interest after 6 years. The annual rate of interest was :

(a) 50/21 % (b) 47/20 %
(c) 71/21% (d) 82/21 %

48. Rs. 6,000 becomes Rs. 7,200 in 4 years. If the rate becomes 1.5 times of itself, the amount of the same principal in 5 years will be

(a) Rs. 8,000 (b) Rs, 8,250
(c) Rs, 9,250 (d) Rs. 9,000

49. A sum of money at simple interest trebles itself in 15 years, it will become 5 times of itself in :-

(a) 40 years (b) 36 years
(c) 30 years (d) 25 years

50. Simple interest on Rs, 500 for 4 years at 6.25% per annum is equal to the simple interest on Rs. 400 at 5% per annum for a certain period of time, The period of time is :

(a) 4 years (b) 5 years
(c) 25/4 years (d) 26/3 years

51. The simple interest in a sum of money is 1/16 of the principal and the number of years is equal to the rate per annum

(a) 3/2 % (b) 5/2 %
(c) 7/2 % (d) 49/2 %

52. A borrows Rs. 800 at the rate of 12% per annum simple interest and B borrows Rs. 910 at the rate of 10% per annum, simple interest. In how many years will their amounts of debt be equal?

(a) 18 years (b) 20 years
(c) 22 years (d) 24 years

53. With a given rate of simple interest, the ratio of principal and amount for a certain period of time is 4 : 5. After 3 years, with the same rate of interest, the ratio of the principal and amount becomes 5 : 7. The Tate of interest is :

(a) 4% (b) 6%
(c) 5% (d) 7%

54. A person lends 40% of his sum money at 15% per annum, 50% of rest at 10% per annum and the at 18% per annum rate of interest, What would be the annual rate of interest, if the interest is calculated on the whole sum?

(a) 13.4 % (b) 14.33%
(c) 14.4% (d) 13,33%

55. Rakesh deposited Rs. 15600 in a fixed deposit at the rate of 10% per annum simple interest. After every second year, he adds his interest earnings to the principal, The interest at the end of fourth year is

(a) Rs. 1716 (b) Rs, 1560
(c) Rs. 3744 (d) Rs. 1872

56. A part of Rs. 1500 was lent at 10% per annum and the rest at 7% per annum simple interest. The total interest earned in three year was Rs. 396. The Sum lent at 10% was

(a) Rs. 900 (b) Rs. 800
(c) Rs. 700. (d) Rs. 600

57. What equal installment of annual payment will discharge a debt which is due as Rs. 848 at the end of 4 years at 4% per annum simple interest

(a) Rs. 212 (b) Rs. 200
(c) Rs. 250 (d) Rs. 225

58. A man lent Rs. 60,000, partly at 5% and the rest at 4% simple interest. If the total annual interest is Rs.2560, the money lent at 4% was:

(a) Rs. 40000 (b) Rs. 44000
(c) 30000 (d) Rs.45000

59. A sum of money at some rate of simple interest amounts to Rs. 2900 in 8 years and to Rs. 3,000 in 10 years. rate of interest per annum is

(a) 4% (b) 2 %
(c) 3% (d) 2%

60. If a sum of money at simple interest, doubles in 12 years, the rate of interest per annum is

(a) 50/3 % (b) 7.5%1.

(c) 25/3% (d) 10%

61. At what rate of simple interest per annum will a sum become 7/4. Of itself in 4 years?
(a) 18% (b) 73/4%
(c) 75/4% (d) 37/2%

62. A sum of money at a certain rate per annum of simple interest doubles in the 5 years and at a different rate becomes three times in 12 years. The lower rate of interest per annum is
(a) 15% (b) 20%
(c) 63/4% (d) 50/3 %

63. In how much time, will a sum of money become double of itself at 15% per annum simple interest?
(a) 25/4 years (b) 13/2 years
(c) 19/3 years (d) 20/3 years

64. If Rs. 12,000 is divided into two parts such that the simple interest on the first part for 3 years at 12% per annum is equal to the simple interest on the second part for 9/2 years at 16% per annum, the greater part is :
(a) Rs. 8,000 (b) Rs. 6,000
(c) Rs. 7,000 (d) Rs. 7,500

65. Out of Rs. 50,000, that a man has, he lends Rs. 8000 at 5.5 % per annum simple interest and Rs. 24,000 at 6% per annum simple interest. He lends the remaining money at a certain rate of interest so that he gets total annual interest of Rs. 3680, The rate of interest per annum, at which the remaining money is lent, is:
(a) 5% (b) 7%
(c) 10% (d) 12%

66. In how many years will a sum of Rs. 3000 yield a simple interest of Rs. 1,080 at 12% per annum?
(a) 3 years (b) 25 years 1.
(c) 2 years (d) 35 years

67. The simple interest on a sum of money is 1/4 of the principal and the number of years is equal to rate percent is :
(a) 2.5% (b) 5%
(c) 7.5% (d) 10%

68. Equal sum of money are lent to X and Y at 7.5% per annum for a period of 4 years and 5 years respectively. If the difference in interest, paid by them was Rs. 150, the sum lent to each was
(a) Rs. 500 (b) Rs. 1000
(c) Rs. 2000 (d) Rs. 3000

69. A sum was invested on simple interest at a certain rate for 2 years. Had it been put at 3% higher rate it would have fetched Rs. 72 more. The sum is
(a) Rs. 1,200 (b) Rs. 1,300
(c) Rs. 1,600 (d) Rs. 1,800

70. A sum of money lent at simple interest amounts to Rs. 880 in 2 years and to Rs. 920 in 3 years. The sum of money is :
(a) 700 (b) 760
(c) 784 (d) 800

71. A lent Rs. 5000 to B for 2 years and Rs. 3000 to C for 4 years on simple interest at the same rate of interest and received Rs. 2200 in all from both as interest. The rate of interest per annum is :
(a) 7% (b) 5%
(c) 57/8% (d) 10%

72. What annual installment will discharge a debt of Rs. 6450 due in 4 years at 5% simple interest
(a) Rs. 1500 (b) Rs. 1835
(c) Rs. 1935 (d) Rs. 1950

73. A sum of money amounts Rs. 850 in3 years and Rs. 925 in 4 years at some rate of simple interest. The sum is
(a) Rs. 550 (b) Rs. 600
(c) Rs. 625 (d) Rs. 700

74. In how many years will a sum of money double itself at 25/4 % simple interest per annum?
(a) 24 years (b) 20 years
(c) 16 years (d) 12 years

75. At a certain rate of simple interest a certain sum of money becomes double of itself in 10 years it will become triples of itself in
(a) 15 years (b) 18 years
(c) 20 years (d) 30 years

76. The simple interest on a sum of money is 1/9 of the principal and the number of years is equal to the rate of interest per annum the rate per annum
(a) 3% (b) 1/3 %
(c) 10/3 % (d) 3/10 %

77. In how many years will the simple interest on a sum of money equal to the principal at the rate of 50/3 % per annum
(a) 4 years (b) 5 years
(c) 6 years (d) 8 years

78. The difference between the simple interest received from two different banks on rupees 500 for 2 years is Rs. 2.50 the difference between the rate of interest is: (per annum)
(a) 0.10 % (b) 0.25%
(c) 0.50% (d) 1.00 %

79. A sum of money was lent at simple interest at certain rate for 3 years, Had it been lent at 2.5% per annum higher rate, it would have fetched Rs. 540 more. The money lent was:
(a) Rs. 6400 (b) Rs. 6472
(c) Rs. 6840 (d) Rs. 7200

80. A sum of money was invested at a certain rate of simple interest for 2 years. Had it been invested at 1% higher rate, it would have fetched Rs. 24 more interest. The sum of money is :
(a) Rs. 1200 (b) Rs. 1050
(c) Rs. 1000 (d) Rs. 9600

81. A man invests half of his capital at the rate of 10% per annum, one-third at 9% and the rest at 12% per annum. The average rate of interest per annum, which he gets is:
(a) 9% (b) 10%
(c) 10.5% (d) 12%

82. Rs. 800 becomes Rs. 956 in 3 years at a certain rate of simple interest, If the rate of interest is increased by 4%, what amount will Rs. 800 become in 3 years P
(a) Rs. 1020.80 (b) Rs.1028
(c) Rs. 1052 (d) Rs. 1050

83. Simple interest on a certain sum for 6 years is 9/25 of the Sum. The rate of interest IS
(a) 6% (b) 13/2%
(c) 8% (d) 17/2%

84. The simple interest on a sum for 5 years is one fourth of the sum, The rate of interest per annum is
(a) 5% (b) 6%
(c) 4% (d) 8%

85. On a certain sum, the simple interest at the end of 25/4 years becomes 3/8 of the sum. The rate of interest is
(a) 5% (b) 6%
(c) 7% (d) 8%

86. In a certain time, the ratio of a certain principal and interest obtained from it are in the ratio 10 : 3 at 10% interest per annum This number of years for which the money was invested is
(a) 1 years (b) 3 years
(c) 35 year (d) 4 years

87. John invested a sum of money at an annual simple interest rate of 10%. At the end of four years the amount invested plus interest earned was Rs. 770. The amount invested was:
(a) Rs. 650 (b) Rs. 350
(c) Rs. 550 (d) Rs. 500

88. In what time will Rs. 1860 amount to 2,641.20 at simple interest 12% per annum ?
(a) 3 years (b) 7/2 years
(c) 4 years (d) 9/2 years

89. The population of a village decreases at the rate of 20% per annum. If its population 2 years ago was 10,000, the present population is
(a) 4600 (b) 6400
(c) 7600 (d) 6000

90. In how many years will a sum of money double itself at 12% per annum?
(a) 8 yrs., 6 months (b) 6 yrs. 9 months
(c) 8 yrs. 4 months (d) 7 yrs. 6 months

91. The rate of interest per annum at which the total simple interest of a certain capital for 1 year is equal to the total simple interest of the same capital at the rate of 5% per annum for 2 years (a) 5/2 % (b) 10%

92. (c) 25% (d) 12.5%

93. Ratio of the principal and the amount after 1 year is 10 : 12. Then the rate of interest per annum is:
(a) 12% (b) 16%
(c) 18% (d) 20%

94. Rs. 12000 is divided into two parts such that the simple interest on the first part for 3 years at 12% per annum may be equal to the simple interest on the second part for 9/2 years at 16% per annum. The ratio of the first part to the second part is:
(a) 2 : 1 (b) 1 : 2
(c) 2 : 3 (d) 3 : 2

95. A person who pays income tax at the rate of 4 paise per rupee, find that a fall of interest rate from 4% to 3.75% diminishes his net yearly income by Rs. 48. What is his capital ?
(a) Rs. 24,000 (b) Rs. 25,000
(c) Rs. 20,000 (d) Rs. 18,000

96. Arun lends Rs. 20,000 to two of his friends. He gives Rs. 12,000 to the first at 8% p.a. simple interest, Arun wants to make a profit of 10% on the whole. The simple interest rate at which he should lend the remaining sum of money to the second friend is :
(a) 8% (b) 16%
(c) 12% (d) 13%

97. A person invests Rs. 12,000 as fixed deposit at a bank at the rate of 10% per annum simple interest. But due to some pressing needs he has to withdraw the entire money after 3 years, for which the bank allowed him a lower rate of interest. If he gets Rs. 3320 less than what he would have got at the end of 5 years, the rate of interest allowed by the bank is:
(a) 68/9 % (b) 67/9%
(c) 71/9% (d) 79/9%

98. A certain scheme of investment in simple interest declares that it trebles the investment in 8 years. If you want to quadruple the money through that scheme for how many years you have to invest for :
(a) 11 years 6 month (b) 10 years 8 months
(c) 10 years (d) 12 years

99. If a man receives one fourth of his capital 3% interest on two third 5% and on the remaining 11%, the percentage he receives on the whole is
(a) 4.5% (b) 5%
(c) 5.5% (d) 5.2%

100. The sum lent at 5% per annum (i. e. 365 days) simple interest, that produces interest, of Rs, 2.00 per day, is
(a) Rs. 1,400 (b) Rs. 14,700
(c) Rs. 14,600 (d) Rs. 7,300

101. A certain sum of money lent out at simple interest amounts to Rs. 1380 in 3 years and Rs. 1500 in 5 years, Find the rate percent per annum.
(a) 3%
(c) 4% (b) 3.5% (d) 5%

102. If a Sum of money amounts to Rs. 12,900 and Rs. 14,250 at the end of 4th year and 5th year respectively at a certain rate of simple interest, then the rate interest is :
(a) 10% (b) 12%
(c) 18% (d) 20%

103. A person deposited Rs. 500 for 4 years and Rs. 600 for 3 years at simple interest in bank. Altogether he received The rate of simple interest per annum was

104. (c) 2% (d) 3%

105. The simple interest on Rs. 4,000 in 3 years at the rate of x % per annum equals the simple interest on Rs. 5,000 at the rate of 12% per annum in 2 years. The value of x is:
(a) 10% (b) 6%
(c) 8% (d) 9%

106. If x, y, z, are three sum of money such that y is the simple interest on x and z is the simple interest on y for the same time and at the same rate of interest, then we have:
(a) $x^2 = xy$ (b) $xyz = 1$
(c) $x^2 = yz$ (d) $y^2 = zx$

107. A sum was lent at simple interest at a certain rate for 2 years. Had it been lent at 3% higher rate, it would have fetched Rs. 300 more. The original sum of money was :
(a) Rs. 5000 (b) Rs. 6000
(c) Rs. 7000 (d) Rs. 4000

108. A sum of Rs. 2,400 amounts to Rs. 3,264 in 4 years at a certain rate of simple interest. If the rate of interest is increased by 1% the same sum in the same time would amount to
(a) Rs. 3,288 (b) Rs. 3,312
(c) Rs. 3,340 (d) Rs. 3,360

109. 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 Rs. 8, 1650, the money borrowed by him (in Rs.) was
(a) 12,000 (b) 6,000
(c) 8,000 (d) 10,000

110. Two equal sum were lent out at 7% and 5% S.I. respectively. The interest earned on the two loans add up to Rs. 960 for 4 years. The total sum lent out is
(a) Rs. 3500 (b) Rs. 2500
(c) Rs. 2000 (d) Rs. 3000

111. In what time will Rs. 8000, at 3% per annum, produce the same interest as Rs. 6000 does in 5 years at 4% simple interest is?
(a) 5 years (b) 6 years
(c) 3 years (d) 4 years

112. A sum of Rs. 800 amounts to Rs. 920 in 3 years at the simple interest rate. If the rate is increased by 3% p.a. , what will be the sum amount to in the same period?
(a) Rs. 992 (b) Rs. 962
(c) Rs. 942 (d) Rs. 982

113. The amount Rs. 2,100 became Rs. 2,352 in2 years at simple interest. If the interest rate is decreased by 1 %, what is the new interest
(a) Rs. 210 (b) Rs. 220
(c) Rs. 242 (d) Rs. 252

114. Prakash lends a part of Rs. 20,000 at 8% simple interest and remaining at 4/3 % simple interest. His total income after a year was Rs. 800. Find the sum lent at 8
(a) Rs. 8,000 (b) Rs. 12,00
(c) Rs. 6,000 (d) Rs. 10,000

115. Ram deposited a certain sum of money in a company at 12% per annum simple interest for 4 years and deposited equal amount in fixed deposit in a bank for 5 years at 15% per annum simple interest is the difference in the interest from 2 sources is Rs. 1350 than the sum deposited is
(a) Rs. 3000 (b) Rs. 4000
(c) Rs. 6500 (d) Rs. 5000

1. **b** 2. **a** 3. **d** 4. **c** 5. **a** 6. **c** 7. **b** 8. **c** 9. **a** 10.**c** 11.**a** 12.**d** 13.**b** 14.**b** 15.**a** 16.**c** 17.**c** 18. **d** 19.**d** 20.**c** 21.**a** 22.**d** 23.**a** 24.**c** 25.**d** 26.**c** 27.**a** 28.**d** 29.**d** 30.**a** 31.**a** 32.**c** 33.**a** 34.**a** 35.**c** 36.**c** 37.**b** 38.**c** 39.**d** 40.**c** 41.**d** 42.**a** 43.**a** 44.**d** 45.**d** 46.**a** 47.**a** 48.**b** 49.**c** 50.**c** 51.**b** 52.**c** 53.**c** 54.**c** 55.**c** 56.**a** 57.**b** 58.**b** 59.**d** 60.**c** 61.**c** 62.**d** 63.**d** 64.**a** 65.**c** 66.**a** 67.**b** 68.**c** 69.**a** 70.**d** 71. **d** 72.**a** 73.**c** 74.**c** 75.**c** 76.**c** 77.**c** 78.**b** 79.**d** 80.**a** 81.**b** 82.**c** 83.**a** 84.**a** 85.**b** 86.**b** 87.**c** 88.**b** 89.**b** 90.**c** 91.**b** 92.**d** 93.**a** 94.**c** 95.**d** 96.**b** 97.**d** 98.**b** 99.**c** 100. **d** 101. **c** 102. **b** 103. **a** 104. **d** 105. **a** 106. **d** 107. **c** 108. **c** 109. **a** 110. **a** 111. **a** 112. **a** 113. **d**

Detailed solution

1. (b) Rate % = 4%
Simple Interest = 150
Time = 6 months
$= \frac{6}{12} = \frac{1}{2}$ year
Let the principal = Rs. P
We know
SI $= \frac{P \times R \times T}{100}$
Where,
SI → Simple Interest
P → Principal
R → Rate
T → Time
→ $150 = \frac{P \times 4 \times 1}{2 \times 100}$
→ $P = \frac{150 \times 200}{4}$ = Rs. 7500

2. (a) Let Principal = 6P
Hence, Amount = $6P \times \frac{7}{6}$ = 7P
Thus, SI = 7P – 6P = P
Time = 3 years
SI $= \frac{P \times R \times T}{100}$
→ P $= \frac{6P \times R \times 3}{100}$
→ R $= \frac{10}{18} = \frac{50}{9} = 5\frac{5}{9}\%$
Alternate:
Note: In such type of question to save your valuable time try to think like that.
Amount Principal
+ 1
Required Rate% $= \frac{1}{6} \times \frac{100}{3} = 5\frac{5}{9}\%$

3. (d) Note → SI for every year will be same
Thus: Simple interest for 3 years
= 3 1 5 = 15%
Difference in interest = (20 - 15) = 5%
According to question,
5% of sum = 42
Sum = 42/5 × 100 = Rs. 840

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

$\left(\frac{1500 \times r_1 \times 3}{100} - \frac{1500 \times r_2 \times 3}{100}\right) = 13.50$

$4500\, r_1 - 4500\, r_2 = 1350$

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

Hence, Required difference in rates = 0.3%

Alternate: Let the difference in rates = d%

According to the question,

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)

According to the question,

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

$= 10000 \times \frac{92}{100} \times 1$

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

8x + 100000 – 10x = 92000

= 2x + 100000 = 92000

= 2x + 92000 – 100000

= 2x= - 8000

x = 4000

Hence, Amount lent at 8% = Rs. 4000

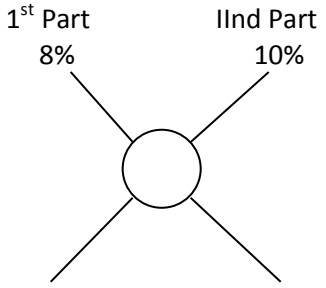
Amount lent at 10% = (10000 - 4000) = 6000

Alternate:

Note in the type question to save your valuable time follow the given below method.

By allegation Method

(i)



Ratio of Amounts → 0.8 : 1.2

2 : 3

According to the question,

(2 + 3) units = Rs. 10000

5 units = Rs. 10000

1 unit = Rs. 2000

Hence amount invested at 8% = 2 units

= 2 × 2000 = Rs. 4000

Amount invested at 10% = 3 units

= 3 × 2000 = 6000 Rs.

6. (c) Time = 2 year, 3 months

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

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

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

Put values in the above formula

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

→ 252 = 36 R

→ R = $\frac{252}{36} = 7\%$

7. (b) Let the principal = 9

Hence simple interest = $\frac{4}{9} \times 9 = 4$ *units*

Let, Rate of invested = R%

R = T (Given)

By using formula,

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

4 = $\frac{9 \times R \times R}{100}$ R

→ $R^2 = \frac{400}{9}$

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

8. (c) Principal = Rs. 400

Amount = Rs. 480

Simple Interest = Rs. (480 - 400) = Rs. 80

Time = 4 years

Rate % = $\frac{80 \times 100}{400 \times 4} = \frac{8000}{1600} = 5\%$

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

Interest = $\frac{400 \times 7 \times 4}{100}$ = 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.

Increased in rates = (4 × 2 = 8%)

Hence, Increased in amount = 400 $\frac{8}{100} = 32$

Hence, New amount = Rs. (480 + 32) = 512

9. (a) Let Principal = 5 Units

Hence, Interest = 5 × $\frac{2}{5} = 2$ *units*

Time = 10 years

By using formula,

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

Alternate:

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

Principal Interest

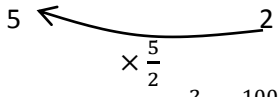
5 → 2

$\times \frac{5}{2}$

Required Rate %

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

10. (c) Principal Interest



Required Time = $\frac{2}{5} \times \frac{100}{8} = 5\ years$

11. (a) Principal = Rs. 1750

Let the first part = X

Hence second part = (1750 - x)

According to the question,

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

4x = 5250 – 3x

7x = 5250

x = 750

First part = Rs. 750

thus, Second part

= Rs. (1750 – 750)

= Rs. 1000

Required interest =

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

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

Let, Principal = 100

units in both cases

	1st part	2nd part	Total
Principal →	100 ×3	: 100 ×4	700 units
Interest →	8 ×3	: 6 ×4	

Note: Interest is same in both cases

According to the question,

700 units = Rs. 1750

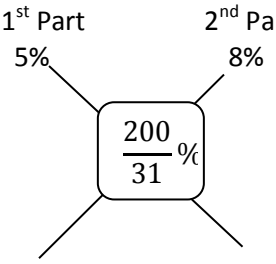
1 unit = Rs. $\frac{1750}{700}$

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

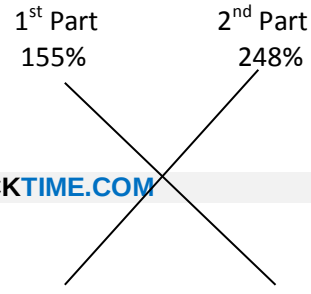
Hence, required interest = Rs.60

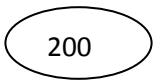
12. (d) Avg. rate of interest = $\frac{300}{1550} \times \frac{100}{3} \times \frac{200}{31}\%$

By using mixture and allegation Rule =



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





48 45

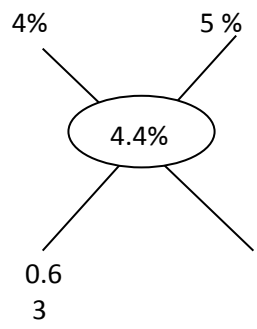
16 15 → Ratio of Amounts

Required Ratio = 16 : 15

13. (b) Avg. rate of interest

$= \frac{400}{5000} \times \frac{100}{2} = 4.4\%$

By using mixture and allegation rule



Hence, Required ratio

= 3 : 2

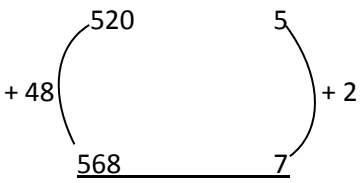
14. (b) Time = 4 years

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

Thus, Interest in 1 year = $\frac{48}{2}$ = Rs. 24

Thus, Interest in 5 years = 24 × 5

= Rs. 120

Thus, We know,

I = Amount - Principal

Principal = Rs. (520 - 120) = Rs. 400

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

Account to the question,

$= \frac{500 \times 12 \times 4}{100} + \frac{x \times 10 \times 4}{100} = 480$

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

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

x = 600

Hence, latter amount =Rs. 600

Alternate:

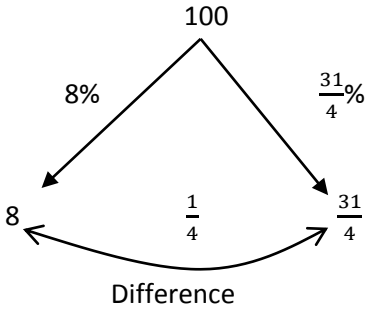
Note: In such type of questions to save your valuable time follow the given below method.

Interest on first part

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

Hence required amount = $\frac{240}{4\times10}\times 100 = Rs.600$

17. (c) Let initial Capital = 100 units



According to the question,

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

$1\ unit = Rs.\ 61.50\times4 = Rs.\ 246$

100 units = Rs. 24600

Hence, Required capital

= Rs. 24600

Alternate:

Difference in percentage (%)

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

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

100% = 24600

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

According to the question,

Total interest of 4 years

= 4 × 7% = 28%

S.I. received from B

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

Remaining S.I. that is received from C

= Rs. 1120 – 700 = 420

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

19. (d)

Amount (Rs.)		Time (years)
756		2
+ 117		1.5 years
873		$3\frac{1}{2}$

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

Interest in 1 year = $\frac{117}{3}\times 2 = Rs.\ 78$

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

Thus, Principal = Rs. (756 – 156) = Rs. 600

Required rate% = $\frac{78}{600}\times 100 = 13\%$

20. (c) Amount = Rs. 7000

Total interest in 5 years

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

Principal	Amount
6	(6 + 1)
↓ ×1000	↓ ×1000
6000	2000

Hence, Required Principal = Rs. 6000

21. (a) Time = 4 years

Sum	Amount
	41
	+ 1

Required Rate% = $\frac{1}{40}\times\frac{100}{1}\times 4$ = 10%

22. (d) Let the sum = Rs. P_1, T_1, = $\frac{8}{12}$ years

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

According to the question,

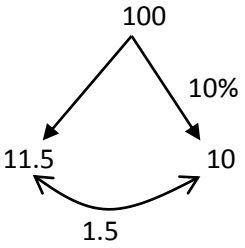
$\frac{P\times5\times15}{100\times12} - \frac{P\times4\times8}{100\times12}$ = 129

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

$\rightarrow P = Rs.\ 3600$

$Hence,\quad requried\ sum = Rs.\ 3600$

23. (a) Let the Sum = 100 units



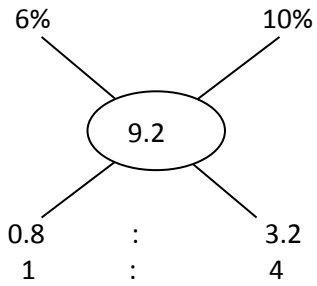
According to the question,

1.5 units = 55.50

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

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

24. (c) Same as question no. 5 we will use the allegation method



→ Part are $\frac{1000}{4+1} \times 4, \frac{1000}{4+1} \times 1$

→ 800, 200

25. (d) Total interest paid in 3 years = 12 × 3 3= 36%

Interest = Rs. 5400

According to the question,

36% of sum = Rs. 5400

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

Sum = $\frac{5400}{36} \times 100 = Rs.15000$

Hence, required sum = Rs. 15000

26. (c)

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

Interest in 1st year

$= \frac{55.20}{3} \times 2 = Rs.\ 36.80$

Interest in 4 years = 36.90 × 44 = Rs. 147.2

Principal = Amount - Interest

= 1067.20 – 147.20 = Rs, 920

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

27. (a)

Amount (Rs)		Time (Years)
720		2
	+ 300	+ 3
1020		5

Interest in 3 years = Rs. 300

Interest in 1 year = Rs. 100

Interest in 2 years = 100 × 2 = Rs. 200

Required Sum = 720 – 200 = 520

28. (d) Number of days in a years = 365

Total money = 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 = Rs. P

According to the question,

$\frac{P \times 9 \times 2}{100} + \frac{P \times 10 \times 2}{5 \times 1}$ = Rs. 760

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

38P = 76000, P = 2000

Alternate :

total interest percent = $(9 \times 2)\% + (10 \times 2)\%$

→ 38% = 760

→ 100% = 200

Hence, Required Principal = Rs. 2000

Alternate:

Total interest pre cent = (9 × 2)% + (10 × 2)%

→ 38% = 760

→ 100% = 2000

Hence required principal = Rs. 2000

30. (a) Let Sum = 25 units

Sum		Interest
25		16
	$\times \frac{25}{16}$	

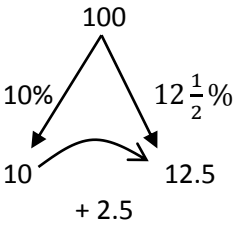
Time (t) = Rate (R%)

Given

16 = $\frac{25 \times R \times R}{100}$ → R_2 = 64

R = 8%

31. (a) Let the Principal = 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. 50000

Hence, Total Principal = 50000

Alternate :

12.5% + 10% = 2.5%

2.5% = 1250 (given)

100% = 50000

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

R_1 = 7.5% = $\frac{15}{2}$/%

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

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

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

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

Hence, required Principal = Rs. 3120

33. (a)

Sum		Amount
72		81

+ 9

↓

Interest

By using formula,

Time = $\frac{9}{72} \times \frac{100\times4}{25} = 2\ years$

34. (a) Total days=

May June July Aug. Sept.

21 + 30 + 31 + 31 + 10

= 123 days

By using formula,

SI = $\frac{7300\times5\times123}{100\times365} = Rs.\ 123$

35. (c) Gain% = $\left(6\frac{1}{4}\% \times 2\right) - (4\times2)\%$

= 12.5% - 8% = 4.5%

Principal = Rs. 5000

Required gain = 5000 × $\frac{4.5}{100} = Rs.\ 225$

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

Avg. rate of interest = $\frac{700}{16000} \times 100 = \frac{35}{8}\%$

Now, by allegation Rule =

Part I Part II

4% × 4 5% × 8

32% 40%

35/8 × 8

5 : 3 → Ratio of amount

Note: To make your calculation easier multiplying each part by 8

Part I Part II

32% 40%

5

5 : 3 Ratio of Amount

Required part = $\frac{16000}{5+3} \times 5$

= 10000 Rs.

37. (b) Let Principal = P

Thus, Amount = 3 P

Interest = 3P – P = 2P

According to the question,

2P = $\frac{P\times R\times20}{100} \rightarrow R = 105$

Let after t year it will become double

Hence, Interest = 2P - P = P

→ P = $\frac{P\times10\times t}{100} \rightarrow t = 10\ years$

Alternate:

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

Principal Amount Interest Time (Years)

1 → 3 2 → 20

1 → 2 1 → **[10]**

Hence, required time = 10 years

38. (c) Let the first part = x

Thus, Second part = (1500 – x)

According to the question,

$\frac{x\times10\times5}{100} = \frac{[(1500-x)\times12.5\times4]}{100}$

50x = (1500 - x)50

x = 1500 – x

2x = 1500

x = 750

= 12.5%

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

Loan amount : Interest Amount

= 5 : 2

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

Let, Principal = 100

Principal : Interest Rate

100 → × $\frac{1}{4}$ 8 → × $\frac{1}{4}$

25 : 2

Hence, Required ratio = 25 : 2

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

→ According to question,

→ Interest in 2 yrs. = 83.20 – 64

→ R% = $\frac{19.20\times100}{64\times2}$

→ R% = $\frac{30}{2}$ = 15%

Therefore amount of Rs. 86 will be in four years by 15% rate of interest

→ S.I. $\frac{86\times15\times4}{100}$ = Rs. 51.6

→ Amount = Principal + S.I.

= 86 + 51.6 = Rs. 137.60

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

Effective Rate% = 3 + 3 + $\frac{3\times3}{100}$ = 6.09%

42. (a) Let principal = 10P

Interest = = 10P × $\frac{3}{10} = 3P$

According to the question,

Case (i):

3P = $\frac{10P\times R\times6}{100}$ → 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 = = 100 units

According to the question,

	1st Part	2nd Part	3rd Part
Principal	$100_{\times 6}$	$100_{\times 3}$	$100_{\times 2}$
Rate %	10	12	15
Time	6	10	12
Interest→	$60_{\times 6}$	$120_{\times 8}$	$180_{\times 2}$

Interest → Interest is same in each, so equal the interest.

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

Alternate:

When internet is equal then sum of amount will be distributed in following ratio.

= Required ratio of sum

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

$= \frac{1}{(6\times10)} : \frac{1}{10\times12} : \frac{1}{12\times15}$

$= \frac{1}{60} : \frac{1}{120} : \frac{1}{180}$

= 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 $= (1000 + 500) = 1500$

Remaining interest = (2000 - 1500) = Rs. 500

Required Rate%

$= \frac{500}{1500} \times \frac{100}{5} \rightarrow \frac{100}{15} = \frac{20}{3}\ yrs$

Total time = $\left(10 + \frac{20}{3}\right)\ years$

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

45. (d) Amount (Rs.) : Time (Years)

5200 : 5

× 480 : × 2 years

5680 : 7

Interest in 2 years = Rs. 480

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

= Rs. 240

Interest in 5 years = Rs. 240 × 5 = Rs. 1200

Principal = Rs. (5200 - 1200) = Rs. 4000

Required Rate% $= \frac{240}{4000} \times 100 = 6\%$

46. (a) Let the Rate of interest = R%

According to the question,

$$\frac{400 \times R \times 2}{2} + \frac{550 \times R \times 4}{100} + \frac{1200 \times R \times 6}{100}$$

= 1020

8R + 22R + 72R = 100

8 R + 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 = $5 \times \frac{3}{2} = 7.5\%$

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

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

49. (c) Note: For detailed method of this question check solution of earlier question,

Principal Amount Interest Time (years)

1 → 3 (× 3); 1 → 5 (× 5) → 4 (2 ×2, 15 × 2)

[30]

Hence, Required time

= 30 year

50. (c) Let the required time = t years

According to the question,

$$\frac{500 \times 4\ 6.25}{100} = \frac{400 \times 5 \times t}{100}$$

5 × 4 × 625 = 400 × 5 × t

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

51. (b) Principal Interest

16 $\times \frac{1}{16}$ 1

Let Rate of interest = R%

Time = R

By using formula

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

$\rightarrow R = \frac{100}{16}$

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

52. (c) Let after t year amount will be equal

According to the question,

$800 + \frac{800\times12\times t}{100} = 910 + \frac{910\times10\times t}{100}$

$800 + 96t = 910 + 91t$

$5t = 110$

$t = 22$ years

Hence, after 22 years the amount will be equal.

53. (c) Principal Amount Interest

$4_{\times5}$: $5_{\times5}$ $1_{\times5}$

Diff.

$5_{\times4}$: $7_{\times4}$ $2_{\times4}$

Diff.

Note: Principal will be same so equate the principal

Principal Amount Interest

20 : 25 → 5

diff + 3

20 : 28 → 8

Interest in 3 years = 3 units

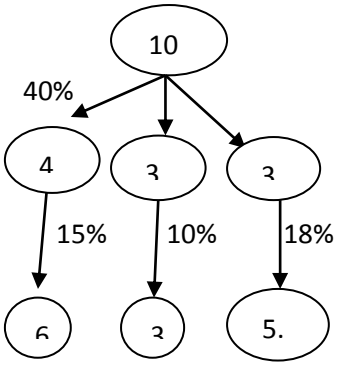
Interest in 1 years = $\frac{3}{3}$ = 1 unit

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

54. (c) 40% = $\frac{2}{5}$, 50% = ½

Let the total amount = 100

According to the question,



Required rate of interest

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

55. (c) Principal = Rs. 15600

Rate% = 10%

SI = $\frac{15600\times10\times2}{100} = Rs.\ 3120$

Now, New principal for next two years

= 15600 + 3120 = Rs. 18720

New SI = $\frac{15600\times10\times2}{100}$

= Rs. 3120

Now, New principal for next two years

= 15600 + 3120 = Rs. 18720

New SI = $\frac{18720\times10\times2}{100}$

Hence, Required SI = 3744

56. (a) Avg. rate of interest=

k$\frac{396}{1500} \times \frac{100}{3} = \frac{132}{5\times3} = \frac{44}{5}\%$

1st part IInd part

10% × 5 7% × 5

44/5% × 5

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

1st Part IInd Part

50% 35%

44%

9 6 Ratio of amounts

According to the question,

(3 + 2) units = Rs. 1500

5 units = Rs. 1500

1 unit = Rs. 300

3 units = Rs. 300 × 3 = 900

Hence, amount lent at 10% = Rs. 900

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

Value of Installment=

$$\frac{Principal \times 100}{[(time \times 100 + (t_{n-1} + t_{n-2} + \ldots\ldots 1) \times Rate}$$

Principal = Rs. 800, Rate = 4%

Time = 4 years

Installment = $\frac{(848\times100)}{4\times100+(3+2+1)\times4}$

=

= $\frac{848\times100}{400+24} = \frac{848\times100}{424} = Rs.200$

58. (b) Avg. rate of interest

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

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

Now by using allegation method

1st Part IInd Part

5 × 15 = 75% 4 × 15 = 60%

$\frac{64\%}{15} \times 15$

4 : 11 → Ratio of amount

According to the question,

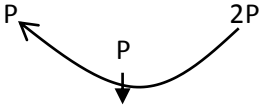
(4 + 1) units = Rs. 60000
15 units = Rs. 60000
1 unit = Rs. 4000
11 units = Rs. 4000 × 11 = Rs. 44000
Hence, amount spend on 4% = Rs. 44000

59. Amount : Time

2900 8
↓ + 100 ↓ + 2
3000 : 10

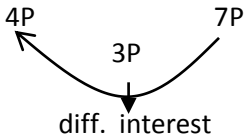
Interest in 2 years = Rs. 100
Interest in 1 year
= Rs. 100/2 = Rs. 50
Interest in 8 years
= 50 × 8 = Rs. 50
Interest in 8 years
= 50 × 8 = 400
Thus, Hence Principal = 2900 – 400
= Rs. 2500
Required Rate% = 50/2500 × 100 = 2%

60. (c) According to the question,
Principal Amount



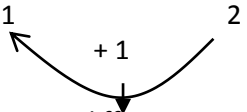
diff. interest
Rate% $= \frac{P}{P} \times \frac{100}{12} = \frac{25}{2} = 8\frac{1}{3}\%$

61. (c) Principal Amount

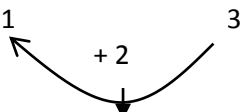


diff. interest
Required%
$= \frac{3P}{4P} \times \frac{100}{4} = \frac{75}{4} = 18\frac{3}{4}\%$

62. (d) According to the question,
Case (i): Time = 5 years
Principal Amount



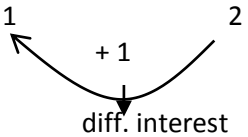
diff. interest
Required Rate % $= \frac{1}{1} \times \frac{100}{5}$
$= \frac{100}{5} = 20\%$
Case (ii):
Principal Amount



diff. interest
Required Rate% =
$\frac{2}{1} \times \frac{100}{12} = \frac{50}{3} = 16\frac{2}{3}\%$

hence, lower rate % = $16\frac{2}{3}\%$

63. (d) According to the question,
Principal Amount



diff. interest
Rate % = 15%
Required time = $\frac{1}{1} \times \frac{100}{15} = \frac{20}{3}$
$= 6\frac{2}{3} years$

64. (a) Let the first part = Rs. x
Thus, Hence second part = 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
1st. part = Rs. 8000
2nd. part = Rs. (12000 - 8000) = Rs. 4000
Hence, maximum part = Rs. 8000

65. (c) Remaining amount =
50000 – (8000 + 24000)
= Rs. 18000
Let rate of interest = R %
According to the question,
$\left(\frac{44000}{100}\right) + \frac{144000}{100} + \frac{18000R}{100} = 3880$
$\frac{188000}{100} + \frac{18000R}{100} = 3880$
$\frac{18000R}{100} = 3680 - 1880$
180R = 1800
Rs. 10%
Hence, Required Rate = 10%

66. (a) Let time = t years
According to the question,
t = $\frac{1080}{3000} \times \frac{100}{12} = 3\ years$

67. (b) Principal Interest

time = Rate%
Now by using formula,
P = $\frac{4P \times R \times R}{100} \rightarrow$ R = 5%

68. (c) Total interest rate for x = 7.5 × 4 = 30%
Total interest rate for y = 7.5 × 5 = 37.5%

Diff. in rates= (37.5 - 30)% = 7.5%
According to the question,
7.5% of sum = 150
1 % of sum = $\frac{150}{7.5}$
Individual sum = $\frac{150}{7.5} \times 100 = Rs.2000$
Hence, Required sum = Rs. 2000

69. (a) In two years extra rate% = 3 × 2 = 6%
Extra amount = Rs. 72
1 % of sum = Rs. $\frac{72}{6}$
Sum = $\frac{72}{6} \times 100 = Rs.\ 1200$
Hence required sum = Rs. 1200

70. (d) Amount : Time
880 : 2
+40 + 1 year
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 % = 10%
According to the question,
$\frac{5000\times2\times R}{100} + \frac{3000\times4\times R}{100} = 2200$
100 R + 120R = 2200
100R + 120R = 2200
R = 10%
Hence required rate% = 10%

72. (a) By using formula,
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. 150000
Note: We have explained formula in previous questions.

73. (c) Amount : Time
850 : 3
+75 + 1 year
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
Diff. interest
Required time = $\frac{P}{P} \times \frac{100}{25} \times 4 = 16\ yrs$

75. (c)
Principal Amount Interest Time(years)
1 2 → 1 10
× 2
× 2
1 3 → 2 20
years
Hence required time = 20 years
Note: We have explained such type of questions in detail in previous questions

76. (c) According to the question,
Principal Interest
9P P
× 1/9
Rate% = time = R
By using formula,
P = $\frac{9P\times R\times R}{100}$ → $R^2 = \frac{100}{9}$
R = $\frac{10}{3}$ → R = $3\frac{3}{1}\%$

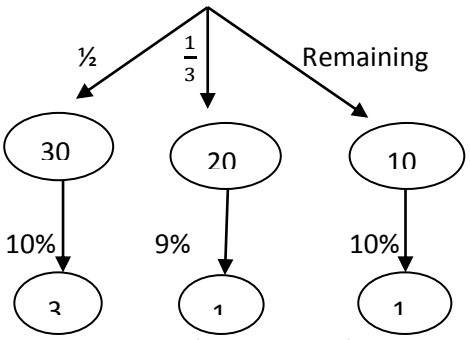
77. (c) $16\frac{2}{3}\%$ = (1 → Interest, 6 → Principal)
Let principal = 6
Interest = 6
Let time = t years
By using formula
6 = $\frac{6\times50\times t}{3\times100}$ → 6 years

78. (b) Let the difference between Rates = d%
According to the question,
d = $\frac{2.50}{500} \times \frac{100}{2} = 0.25\%$

79. (d) More interest paid in 3 years
= 2.5× 3 = 7.5%
According to the question,
7.5% of sum = Rs. 540
1% of sum = $\frac{540}{7.5}$
Sum = $\frac{540}{7.5} \times 100 = Rs.7200$

80. (a) More interest paid in 2 years
= 2 × 1 = 25
According to the question,
2% of sum = Rs. 24
1 % of sum= $\frac{24}{2}$
Total sum =
Rs. $\frac{24}{2} \times 100 = Rs.\ 1200$

81. (b) Let the total capital
= 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

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

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

82. (c) Principal Amount

800 956

+ 156

Interest

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

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

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.

Increased in Rates = 4 × 3 = 12%

Hence, Increased in amount = 800 × $\frac{12}{100} = Rs.\ 1052$

Hence, Required amount = 1052

83. (a) Principal Interest

25 9

$\times \frac{9}{25}$

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 Interest

4 1

$\times \frac{1}{4}$

By using formula,

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

85. (b) Principal Interest

8 3

$\times \frac{3}{8}$

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 = Rs. P

P + $\frac{(P\times10\times4)}{100}$ = 770

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

$\frac{14P}{10} = 770 \rightarrow P = \frac{770\times10}{14} = Rs.\ 550$

hence, Required invested amount

Alternate:

10% = (1 → Interest, 10→ 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 received = Rs. 550

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

Amount = Rs. 2641.20

Interest = Rs. (2641.20 – 1860)

= 781.20

By using formula

Required time = $\frac{781.20\times100}{1860\times12} = 3\frac{1}{2}yrs$

89. (b) 20% = 1/5 = (1→ Decrease, 5 → Initial)

Initial Final

5 4

× ×

5 4

25 16

× 400 × 400

10000 6400

Hence, population after two years

90. (c) Principal Amount

P 2 P

P

(Interest)

Rate% = 12%

Required time = $\frac{P}{P} \times \frac{100}{12} = 8\frac{1}{2}\ years =$ $8\ years\ 4\ months$

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

Required rate of interest

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

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

According to the question,

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

$36\ P_1 = 72\ P_2$

$\frac{P_1}{P_2} = \frac{73}{36} = \frac{2}{1}$

P1 : P2 = 2 : 1

Hence, required ratio

2 : 1

94. (c) Capital after paying income tax

→ 4% - 3.75%

25% = 48

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

→ Capital without paying income tax of rate of Rs. and paise

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 - 960)

= Rs. 960

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

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

→ We know that

Total average rate of interest

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

→ 24% + 2R = 50%

→ 2R = 26%

→ R = 13%

96. (b) Principal = Rs. 12000

Rate% = 10%

Interest paid by the person in 5

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

Interest received by the person after 3 years

= Rs. (6000 - 3320) = Rs. 2680

by using formula,

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):

Principal Amount

P → 3P

+ 2P

diff. (Interest)

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

Case (ii):

Principal Amount

P → 4P

+ 3P

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.

Principal Amount Interest Your (Time)

P 3P → 2P 8

P 4P → 3P 12

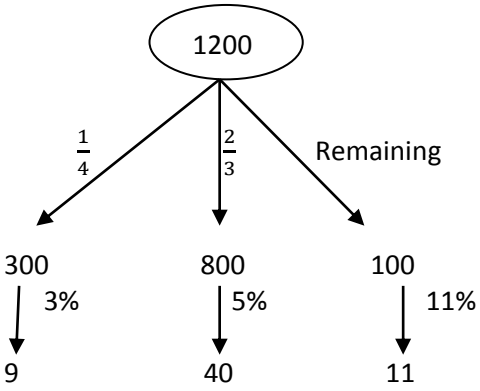
Hence, Required time

= 12 years

98. (b) Let total capital

= 1200 units

According to the question,



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

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

$\frac{[(3\times 3)\% + (8\times 5)\% + (1\times 11)]}{12}\% = 5\%$

99. (c) Total interest in 365 days
= 365 × 2 = Rs. 730
By using formula,
Sum = $\frac{730}{5\times 1} \times 100$ = Rs. 14600
Hence required sum = Rs. 14600

100. (d) Amount : Time
1380 : 3
× 120 : + 2
1500 : 5
Interest paid in 2 years = Rs. 120
Interest paid in 1 year = Rs. 60
Interest paid in 3 year = 60 × 3 = Rs. 180
Principal = Rs. =(1380 - 180)
= Rs. 1200
Required Rate% = $\frac{60}{1200} \times 100 = 5\%$

101. (c) Amount : Time
12900 : 4
+ 1350 : + 1
14250 : 5
Interest paid by the person in 1 year = 1350
Interest paid by the person in 4 years = 1350 × 4 = Rs. 5400
Principal = Rs. (12900 - 5400) = Rs. 7500
Rate% = $\frac{1350}{7500} \times 100 = 18\%$

102. (c) Let Rate of interest = R%
According to the question,
$\frac{500\times 4\times R}{100} + \frac{600\times 3\times R}{100} = 100$
20R + 18R = 190
38R = 190
R = 5%
Hence, Required Rate = 5%
Alternate:
Note: In such type of questions to save your valuable time follow the given below method.
Let Rate of interest = 1%
Case (i): Interest (I_1) = $\frac{500\times 4\times 1}{100}$ = 20
Case (ii): Interest (I_2) = $\frac{500\times 4\times 1}{100}$ = 18
According to the question,
Interest : Rate%
38 : 1
× 5 : × 5
190 : 5%
Hence, Required Rate% = 5%

103. (a) According to the question
$\frac{4000\times 3\times x}{100} = \frac{5000\times 12\times 2}{100}$
12000x = 120000
x = 10%

104. (d) let the time is 't' years and the rate of interest is R%
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)
$\frac{y}{z} = \frac{(x\times R\times t)}{y\times R\times t}$ → y^2 = zx

105. (a) Extra interest Rate% = 2 × 3 = 6%
According to the question,
6% of sum = Rs. 300
1% so sum = Rs. $\frac{300}{6} = Rs.\ 50$
Total sum = 50 × 10 = 5000

106. (d) Note: For detailed explanation of such type of questions follow the solution of previous questions
Increased interests in 4 years
= 1 × 4 = 4%
Hence, Interest = $\frac{2400\times 4}{100} = Rs.\ 96$
Total amount after 4 years = Rs. (3264 + 96) = 3360

107. (c) Let the money borrowed by Nitin =Rs. P
According to the question,
$\frac{P\times 6\times 3}{100} + \frac{P\times 9\times 5}{100} + \frac{P\times 13\times 3}{100} = Rs.\ 8160$
$\frac{18P}{100} + \frac{45P}{100} + \frac{39P}{100} = Rs.\ 8160$
$\frac{102P}{100} = Rs.\ 8160$
→ P = Rs. $\frac{8160\times 100}{102}$ = Rs. 8000
Alternate:

Note: In such type of questions to save your valuable time follow the given below method.
Let principal = Rs. 100
Total interest
$= \frac{100\times 6\times 3}{100} + \frac{100\times 9\times 5}{100} + \frac{100\times 13\times 3}{100}$
= 18 + 95 + 39 = 102 units
According to the question,
102 unit = Rs. $\frac{8160}{102}$ = Rs. 80
1 unit = Rs. 8000
100 units = Rs. 8000
Hence, Sum= Rs. 8000
Alternate:
Total rate of interest in 11 years = $(6 \times 3)\% + (5 \times 9)\% + (3 + 18)\%$
112% = 8160
10% = 8000
Thus, Sum = Rs. 8000

108. (c) Let sum= 100 units
Total interest = $\frac{100\times 7\times 4}{100} + \frac{100\times 5\times 4}{100}$
= 28 + 20 = 48 units
According to the question
48 units = Rs. 960
1 units = Rs. $\frac{960}{48} = Rs.20$
100 units = Rs. 20 × 100 = Rs. 2000
Total Sum = Rs. 2000
Alternate:
Total rate of interest he gained
→ (7 + 5) × 4% =
→ 48% = 960 (given)
→ 100% = 2000
Thus, Total sum = 2000

109. (a) Let time = t years
According to the question,
$\frac{8000 \times 3 \times t}{100} = \frac{6000 \times 5 \times 4}{100}$
240 t = 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,
Increased interest in3 years = 3 × 3 = 9%
Hence, Increased amount = $\frac{800\times 9}{100}$
= Rs. 72
total amount = (920 + 72) = 992

111. (a) According to the question,

Principal Amount

2100 2350
252
diff. (Interest)Type equation here.
Time = 2 years
Let Rate = R%
R = $\frac{252}{2100} \times \frac{100}{2} = 6\%$
New rate of interest = (6 - 1) = 5%

New interest = $\frac{2100\times 5\times 2}{100} = Rs.\ 210$
Hence, Required interest = 210

112. (a) Avg. rate of interest
= $\frac{800}{20000} \times 100 = 4\%$
By allegation Rule
1st Part 2nd Part
8% $\frac{4}{3}\%$
4%
$(4 - \frac{4}{3})$: (8 - 4)
$\frac{8}{3}$: 4
2 : 3
Required sum = $\frac{20000}{2+3} \times 2$
= Rs. 8000

113. (d) Difference between their rates he gained from both boys
→ 15 × 5% - 12 × 4%
→ 75% - 48%
→ 27% = 1350
→ 100% = Rs. 5000