CHAPTER

14

SIMPLE INTEREST

Interest

A borrower borrow money from a bank or some other person. Then the borrower pays a certain amount for the use of this money. This certain money or amount paid is known as interest.

Simple Interest

If the interest on a certain sum borrowed for a certain period is calculated uniformly, then it is called simple interest and it is denoted by SI. The interest is always calculated only on the principal borrowed money.

Principal

The amount of loan or borrowing involved in the transaction is called the principal and it is denoted by P.

Amount

The sum of principal and interest is called amount and it is denoted by A.

$\therefore$ Amount (A) = Principal + Simple interest

Rate of Interest

It is the rate at which the interest is charged on principal. It is always specified in percentage term.

Time Period

The time or interval for which principal is borrowed is known as time period and it is denoted by T.

Important Formulae

$$\text{Simple interest (SI)} = \frac{P \times R \times T}{100}$$

$$\text{Principal } (P) = \frac{\text{SI} \times 100}{R \times T}$$

$$\text{Rate } (R) = \frac{\text{SI} \times 100}{P \times T}$$

$$\text{Time } (T) = \frac{\text{SI} \times 100}{P \times R}$$

Example **1.** What would be the simple interest obtained on an amount of ₹ 6535 at the rate of 10% per annum after 6yr?

(1) ₹ 3912 (2) ₹ 3921 (3) ₹ 4040 (4) ₹ 3900

Sol. (2) Simple interest $= \frac{\text{Principal} \times \text{Rate} \times \text{Time}}{100}$

$= \frac{6535 \times 10 \times 6}{100} =$ ₹ 3921

Example **2.** Veena obtained an amount of ₹ 8376 as simple interest on a certain amount at 8% per annum after 6 yr. What is the amount invested by Veena?

(1) ₹ 17450 (2) ₹ 17540 (3) ₹ 17550 (4) ₹ 17000

Sol. (1) Let the amount invested by Veena be ₹ x.

$\therefore$ Principal $= \frac{\text{SI} \times 100}{\text{Times} \times \text{Rate}} = \frac{8376 \times 100}{6 \times 8} =$ ₹ 17450

Example **3.** The interest earned on ₹ 15000 in 3 yr at simple interest is ₹ 5400. Find the rate per cent per annum.

(1) 10% (2) 15% (3) 12% (4) 13%

Sol. (3) Required rate $= \frac{5400 \times 100}{15000 \times 3} = 12\%$

Entrance Corner

1. What sum will amount to ₹ 6600 in 4 yrs at 8% per annum simple interest? **[JNV 2019]**
(1) ₹ 6000 (2) ₹ 5000 (3) ₹ 4000 (4) ₹ 6200

2. In what time ₹ 3500 will become ₹ 4130 when annual rate of interest is 6%. **[JNV 2018]**
(1) 4 yr (2) 3 yr (3) 6 yr (4) 5 yr

3. A person borrowed a sum of ₹ 20000 for 2 yr on simple interest. He had to repay ₹ 24800 including interest after 2 yr. The rate of interest per annum was? **[JNV 2017, 2009]**
(1) 48% (2) 24% (3) 12% (4) 6%

4. What will be the rate of simple interest, at which ₹ 17500 will become ₹ 19250 in 2 yr? **[JNV 2016]**
(1) $12\frac{1}{2}\%$ (2) 10% (3) $7\frac{1}{2}\%$ (4) 5%

5. At 25% per annum interest in how many years the simple interest on a sum of money triple itself? **[JNV 2015]**
(1) 4 (2) 6 (3) 8 (4) 10

6. In what time ₹ 4250 amounts to ₹ 5610 at the rate 8 % per annum? **[JNV 2014]**
(1) 8 yr (2) 5 yr (3) 6 yr (4) 4 yr

7. What is the rate of interest for ₹ 2500 at simple interest to become ₹ 3300 in 4 yr? **[JNV 2013]**
(1) 5% (2) 6% (3) 8% (4) 10%

8. What is the simple interest on ₹ 500 at 2% per annum for 4 yr? **[JNV 2012]**
(1) ₹ 60 (2) ₹ 40 (3) ₹ 75 (4) ₹ 80

9. What is simple interest on ₹ 1800 for 10 yr at the rate of 10% per annum? **[JNV 2011]**
(1) ₹ 3600 (2) ₹ 1000
(3) ₹ 360 (4) ₹ 1800

10. A man borrow ₹ 20000 for the house maintenance which is given by him in 2 yr at 10% per annum. What is the total amount paid by him after 2 yr? **[JNV 2010]**
(1) ₹ 21000 (2) ₹ 22000
(3) ₹ 24000 (4) ₹ 4000

11. Find the simple interest of ₹ 700 at 4% per year for 3 yr. **[JNV 2008]**
(1) ₹ 15 (2) ₹ 36
(3) ₹ 54 (4) ₹ 84

12. A sum amounted to ₹ 2486 with the interest of 13% per annum, then what is the sum? **[JNV 2007]**
(1) ₹ 2300 (2) ₹ 2150
(3) ₹ 2000 (4) ₹ 2200

13. A man borrows ₹ 600 from his friend. He agrees to pay it back after 8 months together with simple interest at 8% per annum. What amount will he pay back? **[JNV 2005]**
(1) ₹ 32 (2) ₹ 384
(3) ₹ 984 (4) ₹ 632

14. The simple interest on ₹ 300 at the rate of 6% fer annum in $2\frac{1}{2}$ yr will be **[JNV 2004]**
(1) ₹ 18 (2) ₹ 36 (3) ₹ 40 (4) ₹ 45

15. In how many years will ₹ 500 amount to ₹ 600 at the rate of 5% per annum at simple interest? **[JNV 2003]**
(1) 3 yr (2) 4 yr
(3) 5 yr (4) 6 yr

16. A person lends ₹ 1500 from a bank. If the bank fixes the rate of interest at 11% per annum, then the amount he has to pay back after 2 yr will be? **[JNV 2001]**
(1) ₹ 330 (2) ₹ 1830 (3) ₹ 1860 (4) ₹ 1900

17. In how many years will interest on ₹ 3000 at 5% per annum be ₹ 600? **[JNV 2000]**
(1) 1.5 yr (2) 4 yr (3) 6 yr (4) $4\frac{1}{2}$ yr

18. What sum of money will amount ₹ 1800 in 4 yr at 10%? **[JNV 2000]**
(1) ₹ 1285.71 (2) ₹ 1300 (3) ₹ 1500 (4) ₹ 1600

19. What sum of money lent for 3 yr at 4% per year will amount to ₹ 392 ? **[JNV 1999]**
(1) ₹ 400 (2) ₹ 300 (3) ₹ 325 (4) ₹ 350

20. Find the simple interest on ₹ 600 for 6 yr at 10% per annum. **[JNV 1999]**
(1) ₹ 300 (2) ₹ 350 (3) ₹ 360 (4) ₹ 380

21. Find the amount on ₹ 500 for 4 yr at 4% per year **[JNV 1999]**
(1) ₹ 600 (2) ₹ 580 (3) ₹ 700 (4) ₹ 800

22. The sum which produce ₹ 143 interest in $3\frac{1}{4}$ yr at $2\frac{1}{2}$ is **[JNV 1998]**
(1) ₹ 1760 (2) ₹ 1360
(3) ₹ 1860 (4) ₹ 1960

23. SI on ₹ 5000 for 5 yr at 10% per annum is equal to **[JNV 1998]**
(1) ₹ 250 (2) ₹ 2000 (3) ₹ 2500 (4) ₹ 2800

24. What is the simple interest on ₹ 8000 for 7 yr at the rate of 8% per annum? **[JNV 1998]**
(1) ₹ 5000 (2) ₹ 5200 (3) ₹ 5600 (4) ₹ 4480

25. What principal will yeild ₹ 120 as SI at 6% per annum in 10 yr? **[JNV 1997]**
(1) ₹ 100 (2) ₹ 125 (3) ₹ 150 (4) ₹ 200

26. SI on ₹ 10000 for 5 yr at 20% per annum is equal to **[JNV 1997]**
(1) ₹ 10000 (2) ₹ 8000
(3) ₹ 7000 (4) ₹ 6000

27. If SI on ₹ 5000 in 2 yr is ₹ 500, the amount is **[JNV 1997]**
(1) ₹ 4500 (2) ₹ 5500 (3) ₹ 5575 (4) ₹ 6000

28. In what time will the interest on ₹ 5000 amount to ₹ 800 at 5% per annum ? **[JNV 1997]**
(1) 4 yr (2) $3\frac{1}{2}$ yr (3) $3\frac{1}{5}$ yr (4) 5 yr

29. Gita deposited ₹ 400 in a bank and at the end of 5 yr received ₹ 80 an interest. What is the rate? **[JNV 1996]**
(1) 2% (2) 3% (3) 4% (4) 5%

30. If in 10 yr, ₹ 200 amounts ₹ 300, find the rate of interest. **[JNV 1996]**
(1) 10% (2) 11% (3) 15% (4) 18%

Answers

1. (2)	**2.** (2)	**3.** (3)	**4.** (4)	**5.** (3)	**6.** (4)	**7.** (3)	**8.** (2)	**9.** (4)	**10.** (3)
11. (4)	**12.** (4)	**13.** (4)	**14.** (4)	**15.** (2)	**16.** (2)	**17.** (2)	**18.** (1)	**19.** (4)	**20.** (3)
21. (2)	**22.** (1)	**23.** (3)	**24.** (4)	**25.** (4)	**26.** (1)	**27.** (2)	**28.** (3)	**29.** (3)	**30.** (1)

Hints and Solutions

1. Given,
Amount (A) = ₹ 6600
Time (T) = 4yr
Rate (R) = 8%
By using, Simple Interest

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

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

$$\Rightarrow \quad \text{SI} = \frac{P \times 4 \times 8}{100} \qquad \ldots(i)$$

But, Amount (A) = P + SI
From Eq. (i),

$$A = P + \frac{P \times 4 \times 8}{100}$$

$$\Rightarrow \quad 6600 = P + \frac{8P}{25}$$

$$\Rightarrow \quad 6600 = \frac{33P}{25}$$

$$\Rightarrow \quad P = 200 \times 25$$

$$\therefore \quad P = ₹\,5000$$

2. Simple interest = 4130 − 3500 = 630
We know that, $\text{SI} = \frac{P \times R \times T}{100}$
where, P = Principal, R = Rate, T = Time

$$630 = \frac{3500 \times 6 \times T}{100}$$

$$T = \frac{630}{35 \times 6} = \frac{630}{210} = 3 \text{ Yr}$$

3. $\because$ Amount = ₹ 24800
Principal = ₹ 20000

$$\therefore \quad \text{SI} = \text{Amount} - \text{Principal}$$
$$= 24800 - 20000 = ₹\,4800$$

$$\text{Rate of interest} = \frac{\text{SI} \times 100}{P \times T} = \frac{4800 \times 100}{20000 \times 2} = 12\%$$

4. Let the rate of simple interest = R%

$$\because \quad \text{SI} = \frac{P\,T\,R}{100}$$

$$19250 - 17500 = \frac{17500 \times r \times 2}{100}$$

(Here, SI = Compound amount − Principal amount)

$$\Rightarrow 1750 = \frac{17500 \times R \times 2}{100}$$

$$\Rightarrow \quad R = \frac{1750 \times 100}{17500 \times 2}$$

$$R = 5\%$$

5. Suppose principal amount = ₹ P, then amount
= ₹ 3 P

$\therefore$ Simple interest $= 3P - P = ₹\,2P$

$\because$ Simple interest $= \dfrac{P \times R \times T}{100}$

$\Rightarrow 2P = \dfrac{P \times 25 \times T}{100} \Rightarrow T = \dfrac{100 \times 2}{25} = 8$ yr

6. Time $= T$ yr, Principal $= ₹\,4250$

$R = 8\%$; Amount $= ₹\,5610$

Amount = Principal + Interest

$5610 = 4250 +$ Interest

Interest $= 5610 - 4250 = ₹\,1360$

Simple Interest

$$= \frac{\text{Time} \times \text{Principal} \times \text{Rate of interest}}{100}$$

$\Rightarrow 1360 = \dfrac{T \times 4250 \times 8}{100} \Rightarrow T = \dfrac{1360 \times 100}{4250 \times 8}$

$\therefore$ Time $= 4$ yr

7. Given, principal amount $(P) = ₹\,2500$

Time $(T) = 4$ yr

Amount $(A) = ₹\,3300$

We know that, simple interest $= \dfrac{P \times R \times T}{100}$

$\Rightarrow 3300 - 2500 = \dfrac{2500 \times R \times 4}{100}$ [$\because$ SI = A – P]

$\Rightarrow 800 = \dfrac{2500 \times R \times 4}{100} \Rightarrow R = \dfrac{800 \times 100}{2500 \times 4}$

$\therefore R = 8\%$

8. Simple interest $= \dfrac{P \times R \times T}{100} = \dfrac{500 \times 2 \times 4}{100} = ₹\,40$

9. SI $= \dfrac{P \times R \times T}{100} = \dfrac{1800 \times 10 \times 10}{100} = ₹\,1800$

10. Simple interest $= \dfrac{P \times R \times T}{100}$

$$= \frac{20000 \times 10 \times 2}{100} = ₹\,4000$$

$\therefore$ Amount after 2 yr $= 20000 + 4000 = ₹\,24000$

11. SI $= \dfrac{700 \times 4 \times 3}{100} = ₹\,84$

12. Let the sum is 100%, then sum amounted with 13% per annum interest $= (100 + 13)\% = 113\%$

$\because$ $113\% = 2486$

$\therefore$ $100\% = \dfrac{100 \times 2486}{113} = ₹\,2200$

13. Principal $= ₹\,600$, Time $= \dfrac{8}{12}$ yr, Rate $= 8\%$

Simple interest $= \dfrac{600 \times 8 \times 8}{12 \times 100} = ₹\,32$

Total amount paid $= 600 + 32 = ₹\,632$

14. Interest $= \dfrac{\text{Principal} \times \text{Rate} \times \text{Time}}{100}$

$$= \frac{300 \times 6 \times 5}{100 \times 2} = ₹\,45$$

15. Given, $P = ₹\,500$; $A = ₹\,600$; $R = 5\%$

SI = (Amount – Principal)

$= 600 - 500 = ₹\,100$

Time $(T) = \dfrac{\text{SI} \times 100}{P \times R} = \dfrac{100 \times 100}{500 \times 5} = 4$ yr

16. Given, $P = ₹\,1500$, $R = 11\%$, $T = 2$ yr

$$\text{SI} = \frac{P \times R \times T}{100} = \frac{1500 \times 11 \times 2}{100} = ₹\,330$$

Amount, $A = P + \text{SI} = 1500 + 330 = ₹\,1830$

17. Time $= \dfrac{\text{SI} \times 100}{P \times R} = \dfrac{600 \times 100}{5 \times 3000} = 4$ yr

18. Time $= 4$ yr, Rate $= 10\%$

Let principal be ₹ 100.

Then, $\text{SI} = \dfrac{P \times R \times T}{100}$

$$\text{SI} = \frac{100 \times 4 \times 10}{100} = ₹\,40$$

Amount $= 100 + 40 = ₹\,140$

$\because$ When amount is ₹ 140, principal $= ₹\,100$

$\therefore$ When amount is ₹ 1800,

Principal $= \dfrac{100}{140} \times 1800 = ₹\,1285.71$

19. Time $= 3$ yr, Rate $= 4\%$

Let principal be ₹ 100. Then

$$\text{SI} = \frac{100 \times 4 \times 3}{100} = ₹\,12$$

Amount $= 100 + 12 = ₹\,112$

$\because$ When amount is ₹ 112, principal $= ₹\,100$

$\therefore$ When amount is ₹ 392,

Principal $= \dfrac{100 \times 392}{112} = ₹\,350$

20. SI $= \dfrac{P \times R \times T}{100} = \dfrac{600 \times 10 \times 6}{100} = ₹\,360$

21. SI $= \dfrac{500 \times 4 \times 4}{100} = ₹\,80$

Amount $= 500 + 80 =$ ₹ 580

22. $P = \dfrac{100 \times \text{SI}}{R \times T} = \dfrac{100 \times 143}{\frac{5}{2} \times \frac{13}{4}}$

$$= \frac{100 \times 143 \times 4 \times 2}{13 \times 5} = ₹\,1760$$

23. SI $= \dfrac{\text{Principal} \times \text{Time} \times \text{Rate}}{100}$

$$= \frac{5000 \times 5 \times 10}{100} = ₹\,2500$$

24. SI $= \dfrac{8000 \times 8 \times 7}{100} = ₹\,4480$

25. $\text{Principal} = \dfrac{\text{SI} \times 100}{\text{Time} \times \text{Rate}} = \dfrac{120 \times 100}{10 \times 6} = ₹\,200$

26. $\dfrac{10000 \times 5 \times 20}{100} = ₹\,10000$

27. Amount $= 5000 + 500 = ₹\,5500$

28. $P = ₹\,5000,\ R = 5\%,\ \text{SI} = ₹\,800$

$T = \dfrac{100 \times 800}{5000 \times 5} = \dfrac{16}{5} = 3\dfrac{1}{5}\ \text{yr}$

29. $P = ₹\,400,\ T = 5\ \text{yr},\ \text{SI} = ₹\,80$

$R = \dfrac{100 \times \text{SI}}{P \times T}$

$\Rightarrow \quad R = \dfrac{100 \times 80}{400 \times 5} = 4\%$

30. $\text{Interest} = 300 - 200 = ₹\,100$

$\text{Time} = 10\ \text{yr},\ P = ₹\,200$

$R = \dfrac{\text{SI} \times 100}{T \times P} = \dfrac{100 \times 100}{10 \times 200} = 10\%$

Practice Exercise

1. Find the SI on ₹ 16000 for 3 yr 3 months at $4\dfrac{1}{2}\%$ per annum.
(1) ₹ 5200 (2) ₹ 1800
(3) ₹ 2340 (4) None of these

2. Find the SI on ₹ 12000 for 8 yr 4 months at 3% per annum?
(1) ₹ 2000 (2) ₹ 15000
(3) ₹ 3000 (4) None of these

3. On what sum of money will the SI for 7 yr 6 months at 5% per annum be ₹ 450?
(1) ₹ 11000 (2) ₹ 1200
(3) ₹ 13000 (4) ₹ 12000

4. The SI on the certain sum of money for 2 yr at 8% per annum is ₹ 2560. What is the sum?
(1) ₹ 16000 (2) ₹ 15000
(3) ₹ 13000 (4) None of these

5. In what time will the SI on ₹ 4000 at 7.5% be ₹ 1050?
(1) $2\dfrac{1}{2}$ yr (2) $5\dfrac{1}{2}$ yr
(3) $3\dfrac{1}{2}$ yr (4) None of these

6. If the simple interest on ₹ 500 for 2 yr at a certain rate is ₹ 100, then what is the interest for 5 yr on the same amount at the same rate?
(1) ₹ 110 (2) ₹ 150 (3) ₹ 250 (4) ₹ 300

7. An amount becomes double in 10 yr when it is given on simple interest. The rate of interest per annum is
(1) 10% (2) 20% (3) 50% (4) 100%

8. The monthly simple interest on ₹ 1000 is ₹ 15. What is the rate of interest per annum?
(1) 12% (2) 15% (3) 18% (4) 30%

9. An amount of ₹ 10000 is given on simple interest at rate of 18% per annum. What is its interest per month?
(1) ₹ 100 (2) ₹ 120 (3) ₹ 150 (4) ₹ 180

10. What is simple interest on ₹ 1800 for 10 yr at the rate of 10% per annum is
(1) ₹ 3600 (2) ₹ 1800
(3) ₹ 360 (4) ₹ 180

11. Simple interest on ₹ 500 for 4 yr at the rate of 8% per annum is
(1) ₹ 10 (2) ₹ 32
(3) ₹ 40 (4) ₹ 160

12. A woman borrows a sum of ₹ 3000 from a friend. She promises to return the amount after 1 yr with simple interest of 8% per annum. The total amount required to return will be
(1) ₹ 3008 (2) ₹ 3024
(3) ₹ 3240 (4) ₹ 3420

13. A person borrowed a sum of ₹ 20000 for 2 yr on simple interest. He had to repay ₹ 24800 including interest after 2 yr. The rate of interest per annum was
(1) 48% (2) 24%
(3) 12% (4) 6%

14. Simple interest on ₹ 650.00 for 6 months is ₹ 32.50. The percentage rate of interest per annum is
(1) 5 (2) 10
(3) 15 (4) 20

15. A person took a loan of ₹ 4000 for 2 yr on the simple interest at 16% per annum. What amount he had to pay back at the end of 2 yr?
(1) ₹ 4080 (2) ₹ 4600
(3) ₹ 4640 (4) ₹ 5280

16. At what rate per cent per annum will the SI on ₹ 2500 be ₹ 750 for 3 yr?
(1) 15 (2) 10
(3) 20 (4) None of these

17. What sum will amount to ₹ 3300 in 2 yr 6 months at 15% per annum SI?
(1) ₹ 2000 (2) ₹ 2400
(3) ₹ 2800 (4) ₹ 2500

18. In how many years will a sum of money becomes double at 5% per annum SI?
(1) 18 (2) 20
(3) 15 (4) None of these

19. At what rate per cent per annum sum of money becomes 4 times of itself in 15 yr?
(1) 8% (2) 10%
(3) 15% (4) 20%

20. Mr. Sharma takes loan of ₹ 25000 and repays an amount of ₹ 31000 at the end of 2 yr. What is the rate of simple interest at which he repays the loan?
(1) 8% per annum (2) 6% per annum
(3) 12% per annum (4) 9% per annum

Answers

1. (3)	**2.** (3)	**3.** (2)	**4.** (1)	**5.** (3)	**6.** (3)	**7.** (1)	**8.** (3)	**9.** (3)	**10.** (2)
11. (4)	**12.** (3)	**13.** (3)	**14.** (2)	**15.** (4)	**16.** (2)	**17.** (2)	**18.** (2)	**19.** (4)	**20.** (3)

Hints and Solutions

1. Given, $P = ₹\,16000$,

$T = 3\text{ yr }3\text{ months} = 3\frac{1}{4}\text{ yr} = \frac{13}{4}\text{ yr}, R = 4\frac{1}{2}\% = \frac{9}{2}\%$

$\therefore$ Simple interest $= \frac{PRT}{100} = \frac{16000 \times 9 \times 13}{100 \times 2 \times 4}$

$= ₹\,2340$

2. Here, $P = ₹\,12000$, $R = 3\%$ per annum,

$T = 8\text{ yr }4\text{ months} = 8\frac{1}{3}\text{ yr} = \frac{25}{3}\text{ yr}$

$\therefore \text{SI} = \frac{PRT}{100} = \frac{12000 \times 3 \times 25}{100 \times 3} = ₹\,3000$

3. Given, $\text{SI} = ₹\,450$, $R = 5\%$ per annum,

$T = 7\text{ yr }6\text{ months} = 7\frac{1}{2}\text{ yr} = \frac{15}{2}\text{ yr}$

According to the formula,

$\text{SI} = \frac{PRT}{100}$

$P = \frac{\text{SI} \times 100}{RT} = \frac{450 \times 100 \times 2}{5 \times 15} = ₹\,1200$

4. Given, $T = 2$ yr, $R = 8\%$ per annum,

$\text{SI} = ₹\,2560$, $P = ?$

$\text{SI} = \frac{PRT}{100} \Rightarrow P = \frac{\text{SI} \times 100}{RT}$

$= \frac{2560 \times 100}{8 \times 2} = ₹\,16000$

5. $\text{SI} = ₹\,1050$, $P = ₹\,4000$, $R = 7.5\%$, $T = ?$

$\because \text{SI} = \frac{PRT}{100}$

$\therefore T = \frac{\text{SI} \times 100}{PR} = \frac{1050 \times 100}{4000 \times 7.5} = 3\frac{1}{2}\text{ yr}$

6. $\because$ $\text{SI} = ₹\,100$, $T = 2$ yr, $P = ₹\,500$, $R = ?$

$\text{Rate} = \frac{\text{SI} \times 100}{P \times T} = \frac{100 \times 100}{500 \times 2} = 10\%$

Principal $= ₹\,500$, Time $= 5$ yr,

Rate $= 10\%$

$\text{SI} = \frac{P \times R \times T}{100} = \frac{500 \times 10 \times 5}{100} = ₹\,250$

7. Let principal $= ₹\,100$

Amount $= ₹\,200$

$\text{SI} = 200 - 100 = ₹\,100$

Time $= 10$ yr

$\text{Rate} = \frac{\text{SI} \times 100}{P \times T} = \frac{100 \times 100}{100 \times 10} = 10\%$

8. Principal $= ₹\,1000$

SI per month $= ₹\,15$

SI per year $= (15 \times 12) = ₹\,180$

$\text{Rate per cent} = \frac{\text{SI} \times 100}{T \times P} = \frac{180 \times 100}{1 \times 1000}$

$= 18\%$

9. Principal $= ₹\,10000$

Rate $= 18\%$ per annum

Time $= 1$ yr

$$\text{SI} = \frac{10000 \times 18 \times 1}{100} = ₹\,1800$$

$$\text{SI per month} = \frac{1800}{12} = ₹\,150$$

10. $\text{SI} = \frac{P \times R \times T}{100} = \frac{1800 \times 10 \times 10}{100} = ₹\,1800$

11. $\text{SI} = \frac{P \times R \times T}{100} = \frac{500 \times 4 \times 8}{100} = ₹\,160$

12. Principal = ₹ 3000, Time = 1 yr, Rate = 8%

$$\text{SI} = \frac{P \times R \times T}{100} = \frac{3000 \times 1 \times 8}{100} = ₹\,240$$

$$\text{Amount} = (P + \text{SI}) = 3000 + 240 = ₹\,3240$$

13. $\because$ Amount = ₹ 24800

Principal = ₹ 20000

$\therefore$ SI = Amount – Principal

$= 24800 - 20000 = ₹\,4800$

$$\text{Rate of interest} = \frac{\text{SI} \times 100}{P \times T} = \frac{4800}{20000} \times \frac{100}{2} = 12\%$$

14. Time = 6 months or $\frac{6}{12}$ yr

$$\text{Rate} = \frac{\text{SI} \times 100}{P \times T} = \frac{32.50 \times 100 \times 12}{650 \times 6} = 10\%$$

15. $\text{SI} = \frac{P \times R \times T}{100} = \frac{4000 \times 16 \times 2}{100} = ₹\,1280$

Amount = (P + SI) = 4000 + 1280 = ₹ 5280

16. SI = ₹ 750, P = ₹ 2500, T = 3 yr, R = ?

$\because \text{SI} = \frac{PRT}{100}$

$\therefore R = \frac{\text{SI} \times 100}{PT} = \frac{750 \times 100}{2500 \times 3} = 10\%$

17. Amount = P + SI = ₹ 3300

T = 2 yr 6 months = $2\frac{1}{2}$ yr

R = 15% per annum

Now,

$A = P +$ SI

$3300 = P + \frac{P \times 15 \times 5}{100 \times 2}$

$\Rightarrow 3300 = P + \frac{3}{8}P \Rightarrow 3300 = \frac{11}{8}P$

$\Rightarrow \quad P = \frac{3300 \times 8}{11} = ₹\,2400$

18. Here, $A = 2P$

$\therefore$ $\text{SI} = A - P = 2P - P = P$

$R = 5\%, T = ?$

Now, $\text{SI} = \frac{PRT}{100}$

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

$\Rightarrow \quad T = \frac{100}{5} = 20$ yr

19. $\because$ $A = 4P$

$\therefore$ $\text{SI} = A - P = 4P - P = 3P$

$T = 15$ yr, $R = ?$

Now, $\text{SI} = \frac{PRT}{100}$

$3P = \frac{P \times R \times 15}{100}$

$\Rightarrow \quad R = \frac{3 \times 100}{15} = 20\%$

20. Interest = 31000 – 25000 = ₹ 6000

$$\text{Rate} = \frac{\text{Interest} \times 100}{\text{Principal} \times \text{Time}} = \frac{6000 \times 100}{25000 \times 2} = 12\%$$

Self Practice

1. 1800 amounts to ₹ 2250 in $2\frac{1}{2}$ yr. The rate per cent is

(1) 10 (2) 5 (3) 20 (4) 15

2. The difference of 13% per annum and 12% of a sum in 1 yr is ₹ 110. Then, the sum is

(1) ₹ 12000 (2) ₹ 13000 (3) ₹ 11000 (4) ₹ 16000

3. What sum of money lent for 3 yr at 4% per year will amount to ₹ 392?

(1) ₹ 250 (2) ₹ 350 (3) ₹ 300 (4) ₹ 340

4. On what sum of money, the interest amounts to ₹ 75 for 3 yr at the rate of 5% per annum?

(1) ₹ 450 (2) ₹ 500 (3) ₹ 375 (4) ₹ 400

5. The simple interest on ₹ 450 for 3 yr at the rate of 5% per annum is

(1) ₹ 50 (2) ₹ 67.50 (3) ₹ 62.50 (4) ₹ 45

6. At what rate per cent per annum simple interest will 400 amount to ₹ 460 in 3 yr?

(1) 4 (2) 5 (3) $6\frac{1}{2}$ (4) 10

7. Akhtar borrowed ₹ 1200 from his friend at 8% per annum of interest. He returned the money after 8 months. What interest did he pay to his friend?

(1) ₹ 64 (2) ₹ 32 (3) ₹ 128 (4) None of these

8. At what rate per cent per annum will a sum of money double in 8 yr?

(1) $12\frac{1}{2}$ (2) 25 (3) 20 (4) 10

9. In what time will the simple interest on ₹ 400 at 10% per annum be the same as the simple interest on ₹ 10000 for 4 yr at 4% per annum?

(1) 3 yr (2) 4 yr (3) 5 yr (4) 6 yr

10. The simple interest on ₹ 1500 for 2 yr at 8% per annum is

(1) ₹ 120 (2) ₹ 360 (3) ₹ 240 (4) ₹ 480

11. The rate per cent per annum if ₹ 100 interest is paid on ₹ 500 for 2 yr, is

(1) 5 (2) 10 (3) 15 (4) 20

12. A man borrows ₹ 2000 and pays back after 3 yr at 10% simple interest. The amount paid by the man will be

(1) ₹ 2400 (2) ₹ 2500 (3) ₹ 2700 (4) ₹ 2600

13. In how many years will ₹ 7500 double at 8% simple interest?

(1) 12.5 (2) 10 (3) 12 (4) 11

14. In how many years will ₹ 1450 amount to ₹ 2146 at 8% per annum simple interest?

(1) 5 (2) 6 (3) 4 (4) 8

15. The simple interest on a sum of money at 5% is ₹ 48 for 4 yr Then, the simple interest on same sum for 5 yr at 4% is

(1) ₹ 72 (2) ₹ 24 (3) ₹ 48 (4) ₹ 40

Answers

1. (1)	**2.** (3)	**3.** (2)	**4.** (2)	**5.** (2)	**6.** (2)	**7.** (1)	**8.** (1)	**9.** (2)	**10.** (3)
11. (2)	**12.** (4)	**13.** (1)	**14.** (2)	**15.** (3)					