

EXERCISE 13.1

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1. Find the simple interest, when:

- (i) Principal = Rs 2000, Rate of Interest = 5% per annum and Time = 5 years.
- (ii) Principal = Rs 500, Rate of Interest = 12.5% per annum and Time = 4 years.
- (iii) Principal = Rs 4500, Rate of Interest = 4% per annum and Time = 6 months.
- (iv) Principal = Rs 12000, Rate of Interest = 18% per annum and Time = 4 months.
- (v) Principal = Rs 1000, Rate of Interest = 10% per annum and Time = 73 days.

Solution:

(i) Given Principal = Rs 2000, Rate of Interest = 5% per annum and Time = 5 years.

We know that simple interest = $(P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (2000 \times 5 \times 5)/100$$

$$= \text{Rs } 500$$

(ii) Given Principal = Rs 500, Rate of Interest = 12.5% per annum and Time = 4 years.

We know that simple interest = $(P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (500 \times 4 \times 12.5)/100$$

$$= \text{Rs } 250$$

(iii) Given Principal = Rs 4500, Rate of Interest = 4% per annum and Time = 6 months = $\frac{1}{2}$ years

We know that simple interest = $(P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (4500 \times \frac{1}{2} \times 4)/100$$

$$SI = (4500 \times 1 \times 4)/100 \times 2$$

$$= \text{Rs } 90$$

(iv) Given Principal = Rs 12000, Rate of Interest = 18% per annum and Time = 4 months = $(4/12) = (1/3)$ years

We know that simple interest = $(P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (12000 \times (1/3) \times 18)/100$$

$$SI = (12000 \times 1 \times 18)/100 \times 3$$

= Rs 720

(v) Given Principal = Rs 1000, Rate of Interest = 10% per annum and
Time = 73 days = $(73/365)$ days

We know that simple interest = $(P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (1000 \times (73/365) \times 10)/100$$

$$SI = (1000 \times 73 \times 10)/100 \times 365$$

= Rs 20

2. Find the interest on Rs 500 for a period of 4 years at the rate of 8% per annum. Also, find the amount to be paid at the end of the period.

Solution:

Given Principal amount P = Rs 500

Time period T = 4 years

Rate of interest R = 8% p.a.

We know that simple interest = $(P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (500 \times 4 \times 8)/100$$

= Rs 160

Amount = Principal amount + Interest

$$= Rs 500 + 160$$

= Rs 660

3. A sum of Rs 400 is lent at the rate of 5% per annum. Find the interest at the end of 2 years.

Solution:

Given Principal amount P = Rs 400

Time period T = 2 years

Rate of interest R = 5% p.a.

We know that simple interest = $(P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (400 \times 2 \times 5)/100$$

= Rs 40

4. A sum of Rs 400 is lent for 3 years at the rate of 6% per annum. Find the interest.

Solution:

Principal amount $P = \text{Rs } 400$

Time period $T = 3$ years

Rate of interest $R = 6\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (400 \times 3 \times 6)/100$$

$$= \text{Rs } 72$$

5. A person deposits Rs 25000 in a firm who pays an interest at the rate of 20% per annum. Calculate the income he gets from it annually.

Solution:

Given Principal amount $P = \text{Rs } 25000$

Time period $T = 1$ year

Rate of interest $R = 20\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (25000 \times 1 \times 20)/100$$

$$= \text{Rs } 5000$$

6. A man borrowed Rs 8000 from a bank at 8% per annum. Find the amount he has to pay after $4\frac{1}{2}$ years.

Solution:

Given Principal amount $P = \text{Rs } 8000$

Time period $T = 4\frac{1}{2}$ years $= \frac{9}{2}$ years

Rate of interest $R = 8\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (8000 \times (\frac{9}{2}) \times 8)/100$$

$$= \text{Rs } 2880$$

Amount = Principal amount + Interest

$$= \text{Rs } 8000 + 2880$$

$$= \text{Rs } 10880$$

7. Rakesh lent out Rs 8000 for 5 years at 15% per annum and borrowed Rs 6000 for 3 years at 12% per annum. How much did he gain or lose?

Solution:

Given Principal amount $P = \text{Rs } 8000$

Time period $T = 5$ years

Rate of interest $R = 15\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (8000 \times 5 \times 15)/100$$

$$= \text{Rs } 6000$$

Principal amount $P = \text{Rs } 6000$

Time period $T = 3$ years

Rate of interest $R = 12\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (6000 \times 3 \times 12)/100$$

$$= \text{Rs } 2160$$

Amount gained by Rakesh $= \text{Rs } 6000 - \text{Rs } 2160$

$$= \text{Rs } 3840$$

8. Anita deposits Rs 1000 in a savings bank account. The bank pays interest at the rate of 5% per annum. What amount can Anita get after one year?

Solution:

Given Principal amount $P = \text{Rs } 1000$

Time period $T = 1$ year

Rate of interest $R = 5\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (1000 \times 1 \times 5)/100$$

$$= \text{Rs } 50$$

Total amount paid after 1 year $= \text{Principal amount} + \text{Interest}$

$$= \text{Rs } 1000 + \text{Rs } 50$$

$$= \text{Rs } 1050$$

9. Nalini borrowed Rs 550 from her friend at 8% per annum. She returned the amount

after 6 months. How much did she pay?

Solution:

Given Principal amount $P = \text{Rs } 550$

Time period $T = \frac{1}{2}$ year

Rate of interest $R = 8\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (550 \times \frac{1}{2} \times 8)/100$$

$$= \text{Rs } 22$$

Total amount paid after $\frac{1}{2}$ year = Principal amount + Interest

$$= \text{Rs } 550 + \text{Rs } 22$$

$$= \text{Rs } 572$$

10. Rohit borrowed Rs 60000 from a bank at 9% per annum for 2 years. He lent this sum of money to Rohan at 10% per annum for 2 years. How much did Rohit earn from this transaction?

Solution:

Given Principal amount $P = \text{Rs } 60000$

Time period $T = 2$ years

Rate of interest $R = 10\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (60000 \times 2 \times 10)/100$$

$$= \text{Rs } 12000$$

Principal amount $P = \text{Rs } 60000$

Time period $T = 2$ years

Rate of interest $R = 9\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (60000 \times 2 \times 9)/100$$

$$= \text{Rs } 10800$$

Amount gained by Rohit = $\text{Rs } 12000 - \text{Rs } 10800$

$$= \text{Rs } 1200$$

11. Romesh borrowed Rs 2000 at 2% per annum and Rs 1000 at 5% per annum. He

cleared his debt after 2 years by giving Rs 2800 and a watch. What is the cost of the watch?

Solution:

Given Principal amount $P = \text{Rs } 2000$

Time period $T = 2$ years

Rate of interest $R = 2\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (2000 \times 2 \times 2)/100$$

$$= \text{Rs } 80$$

Principal amount $P = \text{Rs } 1000$

Time period $T = 2$ years

Rate of interest $R = 5\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (1000 \times 2 \times 5)/100$$

$$= \text{Rs } 100$$

Total amount that he will have to return $= \text{Rs. } 2000 + 1000 + 80 + 100 = \text{Rs. } 3180$

Amount repaid $= \text{Rs. } 2800$

Value of the watch $= \text{Rs. } 3180 - 2800 = \text{Rs. } 380$

12. Mr Garg lent Rs 15000 to his friend. He charged 15% per annum on Rs 12500 and 18% on the rest. How much interest does he earn in 3 years?

Solution:

Given Principal amount $P = \text{Rs } 15000$

Time period $T = 3$ years

Rate of interest $R = 15\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (15000 \times 3 \times 15)/100$$

$$= \text{Rs } 5625$$

Rest of the amount lent $= \text{Rs } 15000 - \text{Rs } 12500 = \text{Rs } 2500$

Rate of interest $= 18\%$ p.a.

Time period $= 3$ years

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (2500 \times 3 \times 18)/100$$

$$= \text{Rs } 1350$$

$$\text{Total interest earned} = \text{Rs } 5625 + \text{Rs } 1350 = \text{Rs } 6975$$

13. Shikha deposited Rs 2000 in a bank which pays 6% simple interest. She withdrew Rs 700 at the end of first year. What will be her balance after 3 years?

Solution:

Given Principal amount $P = \text{Rs } 2000$

Time period $T = 1$ year

Rate of interest $R = 6\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (2000 \times 1 \times 6)/100$$

$$= \text{Rs } 120$$

So amount after 1 year = Principal amount + Interest = $2000 + 120 = \text{Rs } 2120$

after 1 year, amount withdrawn = Rs 700

Principal amount left = $\text{Rs } 2120 - \text{Rs } 700 = \text{Rs } 1420$

Time period = 2 years

Rate of interest = 6% p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (1420 \times 2 \times 6)/100$$

Interest after two years = Rs 170.40

Total amount after 3 years = $\text{Rs } 1420 + \text{Rs } 170.40 = \text{Rs } 1590.40$

14. Reema took a loan of Rs 8000 from a money lender, who charged interest at the rate of 18% per annum. After 2 years, Reema paid him Rs 10400 and wrist watch to clear the debt. What is the price of the watch?

Solution:

Given Principal amount $P = \text{Rs } 8000$

Time period $T = 2$ years

Rate of interest $R = 18\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (8000 \times 2 \times 18)/100$$

$$= \text{Rs } 2880$$

$$\text{Total amount payable by Reema after 2 years} = \text{Rs } 8,000 + \text{Rs } 2,880$$

$$= \text{Rs } 10,880$$

$$\text{Amount paid} = \text{Rs } 10,400$$

$$\text{Value of the watch} = \text{Rs } 10,880 - \text{Rs } 10,400 = \text{Rs } 480$$

15. Mr Sharma deposited Rs 20000 as a fixed deposit in a bank at 10% per annual. If 30% is deducted as income tax on the interest earned, find his annual income.

Solution:

Given Principal amount $P = \text{Rs } 20000$

Time period $T = 1$ year

Rate of interest $R = 10\%$ p.a.

We know that simple interest $= (P \times T \times R)/100$

On substituting these values in above equation we get

$$SI = (20000 \times 1 \times 10)/100$$

$$= \text{Rs } 2000$$

$$\text{Amount deducted as income tax} = 30\% \text{ of } 2000 = (30 \times 2000)/100$$

$$= \text{Rs } 600$$

$$\text{Annual interest after tax deduction} = \text{Rs } 2,000 - \text{Rs } 600 = \text{Rs } 1,400$$

