

Chapter - 10Simple InterestFormulae :-

$$\begin{aligned}\Rightarrow SI &= \text{Simple Interest} \\ P &= \text{Princip} \\ R &= \text{Rate} \\ T &= \text{Time} \\ A &= \text{Amount}\end{aligned}$$

$$1) \Rightarrow SI = \frac{P \times R \times T}{100}$$

$$A = SI + P$$

$$P = A - SI$$

$$SI = A - P$$

$$2) \Rightarrow P = \frac{SI \times 100}{R \times T}$$

$$3) \Rightarrow R = \frac{SI \times 100}{P \times T}$$

$$4) \Rightarrow T = \frac{SI \times 100}{P \times R}$$

Exercise 10.1

Ques. $\Rightarrow$ Find the simple interest on :

(a) ₹ 3500 at 4% p.a. for 5 years.

$P = ₹ 3500$, $R = 4\%$ p.a., $T = 5$ years

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

$$SI = \frac{₹ 3500 \times 4 \times 5}{100}$$

$$SI = ₹ (35 \times 20)$$

$$SI = ₹ 700$$

$$\begin{aligned} \text{Amount} &= P + SI \\ &= ₹ (3500 + 700) \\ &= ₹ 4200 \end{aligned}$$

(b) ₹ 4300 at 6% p.a. for 3 years

$$\Rightarrow P = ₹ 4300$$

$$R = 6\% \text{ p.a.}$$

$$T = 3 \text{ years}$$

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

$$100$$

$$SI = \frac{₹ 4300 \times 6 \times 3}{100}$$

$$100$$

$$SI = ₹ (43 \times 18)$$

$$\text{Ans} \Rightarrow SI = ₹ 774$$

Ques 2 $\Rightarrow$ Find the principal if:

(a) the interest is ₹ 2880 at 8% p.a. for 3 years.

$$\Rightarrow SI = ₹ 2880$$

$$R = 8\% \text{ p.a.}$$

$$T = 3 \text{ years}$$

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

$$R \times T$$

$$960 \times 480 \times 25$$

$$P = \frac{₹ 2880 \times 100}{240 \times 24}$$

$$240 \times 24$$

$$P = ₹ 12000$$

(b) the interest is ₹ 360 at 5% p.a. for 4 years.

$$SI = ₹ 360$$

$$R = 5\% \text{ p.a.}$$

$$T = 4 \text{ years}$$

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

$$R \times T$$

$$90 \times 20$$

$$P = \frac{₹ 360 \times 100}{5 \times 4}$$

$$5 \times 4$$

$$P = ₹ 1800$$

Ques 3 Find the rate of interest if

(a) the interest on ₹ 1000 for 4 years is ₹ 432

$$P = ₹ 1000$$

$$SI = ₹ 432$$

$$T = 4 \text{ years}$$

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

$$R = \frac{432 \times 100}{1000 \times 4}$$

$$R = 10.8\%$$

(b) the interest on ₹ 2200 for 3 years is ₹ 330

$$P = ₹ 2200$$

$$SI = ₹ 330$$

$$T = 3 \text{ years}$$

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

$$R = \frac{330 \times 100}{2200 \times 3}$$

$$R = 5\%$$

Ques 4 Find the time in which:

(a) ₹ 2100 will yield an interest of ₹ 34.34 at 4% p.a.

$$P = ₹ 2100$$

$$SI = ₹ 34.34$$

$$R = 4\% \text{ p.a.}$$

$$T = ?$$

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

$$T = \frac{34.34 \times 100}{2100 \times 4}$$

$$T = 0.41 \text{ years}$$

(b) ₹ 4200 will yield an interest of ₹ 1512 at 6% p.a.

$$P = ₹ 4200$$

$$SI = ₹ 1512$$

$$R = 6\% \text{ p.a.}$$

$$T = ?$$

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

$$T = \frac{1512 \times 100}{4200 \times 6}$$

$$T = 6 \text{ years}$$

Ans: In 1000

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

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

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

$$= \frac{150 \times 100}{15 \times 2000}$$

Time = 5 years

Ans: Time = 5 years

Ans: $A = ₹ 2400$, $P = ₹ 2000$, $R = 5\%$, $T = ?$

⇒

$$A = ₹ 2400$$

$$P = ₹ 2000$$

$$R = 5\%$$

$$T = ?$$

Solution: $SI = A - P$

$$= ₹ 2400 - 2000$$

$$= ₹ 400$$

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

$$= \frac{400 \times 100}{2000 \times 5}$$

$$= \frac{40000}{10000}$$

= 4 years

Ans: Time = 4 years

Ans: What sum of money will earn an interest of ₹ 160 at the rate of 4% per year for 2 years.

⇒

$$SI = ₹ 160$$

$$R = 4\%$$

$$T = 2 \text{ years}$$

$$P = ?$$

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

$$P = \frac{160 \times 100}{4 \times 2}$$

$$P = ₹ 2000$$

Ans: $P = ₹ 2000$

Ans: Find the time in which ₹ 600 will earn an interest of ₹ 120 at 5% per annum.

⇒

$$SI = ₹ 120$$

$$R = 5\%$$

$$P = ₹ 600$$

$$T = ?$$

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

$$T = \frac{24 \times 100 \times 100}{800 \times 5}$$

$$T = 3 \text{ years}$$

Ans: $T = 3 \text{ years}$

Ques: Find the rate of interest per annum at which ₹ 900 will yield an interest of ₹ 180 in 5 years.

$$P = ₹ 900$$

$$SI = ₹ 180$$

$$R = ?$$

$$T = 5 \text{ years}$$

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

$$R = \frac{180 \times 100}{900 \times 5}$$

$$R = 4\% \text{ p.a.}$$

Ans: $R = 4\% \text{ p.a.}$

Ques: ₹ 25000 are invested at 15% p.a. for 1 year. Find the interest at the end of 1 year and also the amount.

$$P = ₹ 25000$$

$$R = 15\% \text{ p.a.}$$

$$T = 1 \text{ year}$$

$$SI = ?$$

$$A = ?$$

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

$$SI = \frac{25000 \times 15 \times 1}{100}$$

$$SI = ₹ 3750$$

$$A = \frac{P(SI + P)}{100}$$

$$A = \frac{25000 + 3750}{100}$$

$$\text{Ans: Interest} = ₹ 3750$$

$$\text{Amount} = ₹ 28750$$

Ques: Neha borrowed some money at 5% per annum. If she had to pay ₹ 50 as interest after 2 years, what sum of did she borrow?

$$SI = ₹ 50, T = 2 \text{ years}$$

$$R = 5\% \text{ p.a.}, P = ?$$

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

$$P = \frac{50 \times 100}{5 \times 21}$$

$$P = \text{₹ } 500$$

Ans: Principal = ₹ 500

Ques: 12) Amount of borrowed ₹ 6000 from the SBI for 3 years & monthly at 12 R% p.a. what amount will be repaid after 3 years?

Ans: 13) the what time will ₹ 6500 amount to ₹ 6720 at 8% p.a. annum.

Ans: 14) At what rate percent p.a. will ₹ 3600 amount to ₹ 4734 in 8 1/2 years?

Ans: 15) Mohan borrowed ₹ 12600 from a money lender at 15% p.a. annum & simple interest. After 3 years he paid ₹ 7070 and again gave what to clear the debt. What is the cost of debt?

Ques: 16) A sum of money invested at 8% p.a. amount to ₹ 12122 in 2

years. What will it amount to in 2 years & 6 months at 9% p.a.?

Ques: 17) A sum of money put at 11% p.a. amount's to ₹ 4491 in the 2 years & 3 months. What will it amount to in 3 years at the same rate?

Ans: 18) A sum of money becomes 8% of itself in 5 years at a certain rate of simple interest. Find the rate of simple interest.

Ques: 19) If ₹ 640 amount's to ₹ 768 in 2 years & 6 months, what will ₹ 850 amount to in 3 years at the same rate? p.a.?

12)

$$P = \text{₹ } 6000$$

$$R = 12\% \text{ p.a.}$$

$$T = 3 \text{ years \& 6 months}$$

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

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

$$= 11 \text{ years}$$

13)

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

$$= \frac{6000 \times 12 \times 11}{100 \times 3}$$

$$= ₹ 60 \times 4 \times 11$$

$$SI = ₹ 2640$$

$$\begin{aligned} \Rightarrow \text{Amount} &= P + SI \\ &= ₹ (6000 + 2640) \\ &= ₹ 8640 \end{aligned}$$

(13) $\Rightarrow$

$$\begin{aligned} P &= ₹ 5600 \\ A &= ₹ 6720 \\ R &= 8\% \text{ p.a.} \end{aligned}$$

$$\begin{aligned} \Rightarrow SI &= A - P \\ &= ₹ (6720 - 5600) \\ &= ₹ 1120 \end{aligned}$$

$\Rightarrow$

$$\begin{aligned} T &= \frac{SI \times 100}{RP \times R} \\ &= \frac{1120 \times 100}{₹ 5600 \times 8\%} \\ &= 2 \frac{1}{2} \text{ years} \end{aligned}$$

$$= 2 \frac{1}{2} \text{ years}$$

$$= 2 \frac{1}{2} \text{ years}$$

$$= 2 \text{ years 6 months}$$

(14) $\Rightarrow$

$$\begin{aligned} A &\Rightarrow ₹ 4734 \\ P &\Rightarrow ₹ 3600 \\ T &\Rightarrow 3 \frac{1}{2} \text{ years} \end{aligned}$$

$$\begin{aligned} \Rightarrow SI &= A - P \\ &= ₹ (4734 - 3600) \\ &= ₹ 1134 \end{aligned}$$

$$\begin{aligned} \Rightarrow R &= \frac{SI \times 100}{P \times T} \\ &= \frac{1134 \times 100}{3600 \times 3 \frac{1}{2}} \\ &= 9\% \text{ p.a.} \end{aligned}$$

$$= 9\% \text{ p.a.}$$

(15)

$$\begin{aligned} \text{Mohan borrowed money (P)} &= ₹ 12600 \\ \text{Rate of interest (R)} &= 15\% \text{ p.a.} \\ T &= 3 \text{ years} \end{aligned}$$

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

$$\begin{aligned} SI &= \frac{₹ 12600 \times 15\% \times 3}{100} \\ &= ₹ 5670 \end{aligned}$$

$$\begin{aligned} \text{Mohan has the return money (A)} &= ₹ (P + SI) \\ &= ₹ (12600 + 5670) \\ &= ₹ 18270 \end{aligned}$$

When you ₹ 1070 and a great
Cost of great = ₹ 1070
= ₹ 11200

10

$$P = ₹ 12122$$

$$T = 2 \text{ years}$$

$$R = 8\% \text{ p.a.}$$

$$SI = ?$$

$$SI = A - P$$

$$SI = ₹ (12122 - 10000)$$

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

$$(12122 - 10000) = \frac{10000 \times 8 \times 2}{100}$$

$$2122 = 1600$$

$$(12122 - x) = \frac{16x}{25}$$

$$25(12122 - x) = 16x$$

$$303050 - 25x = 16x$$

$$303050 = 41x + 25x$$

$$303050 = 66x$$

$$303050 = 66x$$

$$10450 = x$$

$$P = ₹ 10450$$

$$SI = A - P$$

$$SI = ₹ (12122 - 10450)$$

$$= ₹ 1672$$

So the amount of 9% p.a. in 2 years
a month is ₹ 1672

$$P = ₹ 10450$$

$$R = 9\% \text{ p.a.}$$

$$T = 2 \text{ years a month}$$

$$= \frac{2}{12} \times 24$$

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

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

$$= \frac{10450 \times 9 \times \frac{2}{3}}{100}$$

$$= ₹ 500$$

$$= ₹ (209 \times 12)$$

$$= ₹ 2508$$

$$SI = ₹ 2508$$

When, amount = Principal + Simple Interest
= ₹ (10450 + 2508)
= ₹ 12958

- Short method -

Let, sum of money (P) = ₹ x

$$SI = A - P = ₹(4491 - x)$$

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

$$₹(4491 - x) = \frac{x \times 11 \times 3}{100 \times 4}$$

$$4491 - x = \frac{99x}{400}$$

$$4491 = \frac{99x}{400} + x$$

$$4491 = \frac{99x + 400x}{400}$$

$$4491 \times 400 = 99x + 400x$$

$$\frac{4491 \times 400}{499} = x$$

$$[3600 = x]$$

$$\text{So, } P = 3600$$

$$\text{Then, } SI = A - P$$

$$= ₹(4491 - 3600)$$

$$= ₹ 891$$

∴ The amount of 11% p.a. in 3 years is

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

$$= \frac{₹3600 \times 11 \times 3}{100}$$

$$= ₹ 1188$$

$$\Rightarrow \text{Amount} = (\text{Principal} + \text{Simple Interest})$$

$$= ₹(3600 + 1188)$$

$$= ₹ 4788$$

Let sum of money = P

Rate = 11% p.a.

Amount = ₹ 4491

- Second Method -
Time = 3 years 3 months

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

$$SI = \frac{P \times 11 \times 3}{100 \times 4}$$

$$A = SI + P$$

$$₹ 4491 = \frac{99P}{400} + P$$

$$1796400 = 99P + 400P$$

$$1796400 = 499P$$

$$\text{So, } P = ₹ 3600$$

∴ amount in 3 years

$$SI = ₹ \frac{3600 \times 11 \times 3}{100}$$

$$1188$$

$$SI = ₹ 1188$$

Write on White
Date _____
Page _____

$$A = P + SI$$

$$A = ₹(3600 + 1188)$$

$$A = ₹4788$$

(18) Let sum of money (P) = ₹x

$$A = \frac{8x}{5}$$

$$SI = A - P$$

$$= ₹\left(\frac{8x}{5} - x\right)$$

$$= ₹\frac{3x}{5}$$

-R-

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

$$= \frac{\frac{3x}{5} \times 100}{x \times 5}$$

$$= \frac{\frac{300x}{5}}{5x}$$

$$= 12\% \text{ p.a.}$$

Write on White
Date _____
Page _____

(19) P = ₹ 640
A = ₹ 768
T = 2 years 6 months

$$= \frac{5}{2} \text{ years}$$

$$SI = \frac{A - P}{2}$$

$$= ₹\left(\frac{768 - 640}{2}\right)$$

$$= ₹128$$

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

$$\frac{100 \times 128 \times 2.5}{640 \times 5} = R$$

$$R = \frac{2}{2} \times \frac{128 \times 128 \times 2}{448 \times 5}$$

$$R = 8\%$$

Ans, R = 8%

$$P = ₹850$$

$$T = 2 \text{ years}$$

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

$$= \frac{850 \times 8 \times 2}{100}$$

$$= ₹136$$

$$= ₹204$$

$$A = SI + P$$

$$= ₹(204 + 850)$$

$$= ₹1054 \text{ Ans.}$$

6/11/19
Post