10. Banks and Simple Interest

Practice Set 40

1. If Rihanna deposits 1500 rupees in the school fund at 9 p.c.p.a for 2 years, what is the total amount she will get?

Solution : Here Principal (P) = 1500 rupees ,

Rate (R) = 9 p.c.p.a. ,Time (T) = 2 years , Interest (I) = ? ,

Amount (A) = ?

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

$$\frac{1500 \times 9 \times 2}{100} = 270$$

$$A = P + I$$

$$A = 1500 + 270 = 1770$$

∴ Rihanna will get 1,770 rupees.

2. Jethalal took a housing loan of 2,50,000 rupees from a bank at 10 p.c.p.a. for 5 years. What is the yearly interest he must pay and the total amount he returns to the bank?

Solution :Here, P = 2,50,000 rupees ; R = 10 p.c.p.a.; T = 5 years; I (per year) = ? ; A = ?

$$\text{I (per year)} = \frac{P \times R \times T}{100}$$

$$= \frac{250000 \times 10 \times 1}{100} = 25{,}000$$

∴ I for 5 years = $25000 \times 5 = 125000$

A = P + I

A = 250000 + 125000 = 375000.

∴ The yearly interest is 25,000 rupees. Jethalal returns the total amount 3,75,000 rupees to the bank.

3. Shrikant deposited 85,000 rupees for $2\frac{1}{2}$ years at 7 p.c.p.a. in a savings bank account. What is the total interest he received at the end of the period?

Solution : Here P = 85,000 rupees, R = 7 p.c.p.a. ,

T = $2\frac{1}{2}$ years = $\frac{5}{2}$ $years$, I = ?

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

$$= \frac{85000 \times 7 \times \frac{5}{2}}{100}$$

$$= 850 \times 7 \times \frac{5}{2}$$

$$= 425 \times 7 \times 5$$

$$= 14875$$

∴ Shrikant will receive 14,875 rupees at the end of the period.

4. At a certain rate of interest, the interest after 4 years on 5000 rupees principal is 1200 rupees. What would be the interest on 15000 rupees at the same rate of interest for the same period?

Solution : Here P= 5000 rupees , I = 1,200 rupees ,

T = 4 years , R = ?

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

$$\therefore \ 1200 = \frac{5000 \times R \times 4}{100}$$

$$\therefore 1200 = 50 \times R \times 4 = 200 \times R$$

$$\therefore R = \frac{1200}{200}$$

$$\therefore R = 6$$

The interest is directly proportional to the principal, the time and the rate remains constant.

Suppose the interest on 15,000 rupees be x.

Then $\frac{x}{15000} = \frac{1200}{5000}$

$$\therefore x = \frac{12}{50} \times 15000$$

$$\therefore x = 3600$$

∴ The interest is 3,600 rupees.

5. If Pankaj deposits 1,50,000 rupees in a bank at 10 p.c.p.a. for two years, what is the total amount he will get from the bank?

Solution : Here P= 1,50,000 rupees, R = 10 p.c.p.a. ,

T = 2years , A = ?

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

$$= \frac{150000 \times 10 \times 2}{100} = 30000$$

$$A = P + I$$

$\therefore A = (150000 + 30000) = 180000$

$\therefore$ Pankaj will get 1,80,000 rupees.

Practice Set 41

1. If the interest on 1700 rupees is 340 rupees for 2 years the rate of interest must be _____

(i) 12% (ii)15% (iii) 4% (iv) 10%

Solution :

Given : P = 1700 rupees, I = 340 rupees, T = 2 year.

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

$$340 = \frac{1700 \times R \times 2}{100}$$

$$340 = 17 \times R \times 2$$

$$340 = 34 \times R$$

$$\therefore R = \frac{340}{34}$$

$$\therefore R = 10$$

i.e. R = 10%

$\therefore$ The correct option is (iv) 10%

2. If the interest on 3000 rupees is 600 rupees at a certain rate for a certain number of years, what would the interest be on 1500 rupees under the same conditions ?

(i) 300 rupees. (ii)1000 rupees

(iii)700 rupees (iv) 500 rupees

Solution :

Here, I_1 = 600 rupees When P= 3,000 ; I_2 = ? when P = 15000 rupees ; R and T remain the same.

$$\therefore \frac{I_1}{I_2} = \frac{P_1}{P_2}$$

$$\therefore \frac{600}{I_2} = \frac{3000}{1500}$$

$$\therefore 600 \times 1500 = 3000 \times I_2$$

$$\therefore I_2 = \frac{600 \times 1500}{3000}$$

$$\therefore I_2 = 300$$

$\therefore$ Interest is 300 rupees.

$\therefore$ The correct option is (i) 300 rupees.

3. Javed deposited 12000 rupees at 9 p.c.p.a. in a bank for some years, and withdrew his interest every year. At the end of the period, he had received altogether 17,400 rupees. For how many years had he deposited his money ?

Solution :

P =12000 rupees, R = 9 p.c.p. a , A = 17400 rupees, T = ?

Total interest (I) = A – P = 17400 – 12000 = 5400 rupees.

Total Interest = $I = \frac{12000 \times 9 \times T}{100}$

$\therefore \quad 5400 = 120 \times 9 \times T$

$\therefore \quad T = \frac{5400}{1080} = 5$

$\therefore$ Javed deposited the amount for 5 year.

4 .Lataben borrowed some money from a bank at a rate of 10 p.c.p.a. interest for $2\frac{1}{2}$ years to start a cottage industry. If she paid 10250 rupees as total interest, how much money had she borrowed ?

Solution : Given : I = 10250 rupees, R = 10 p.c.p.a,

$T = 2\frac{1}{2} = \frac{5}{2}$, P = ?

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

$$\therefore 10250 = \frac{P \times 10 \times \frac{5}{2}}{100}$$

$$\therefore 10250 \times 10 = P \times \frac{5}{2}$$

$$\therefore P = 102500 \times \frac{2}{5}$$

$$= 20500 \times 2$$

$$= 41000$$

∴ Lataben had borrowed 41,000 rupees.

5. Fill in the blanks in the table.

Sr. No.	Principal	Rate of interest (p.c.p.a.)	Time	Interest	Amount
(i)	4200	7%	3 years	-------	-------
(ii)	-------	6%	4 years	1200	-------
(iii)	8000	5%	------	800	-------
(iv)	-------	5%	------	6000	18000
(v)	-------	$2\frac{1}{2}\%$	5 years	2400	-------

Solution :

P = 4200, R = 7 p.c.p.a, T = 3 year, I = ? A = ?

(i) $I = \frac{P \times R \times T}{100}$

$I = \frac{4200 \times 7 \times 3}{100}$

$\therefore I = 42 \times 21 = 882$

$A = P + I$

$\therefore A = 4200 + 882 = 5082$

(ii) R = 6 p.c.p.a. , T = 4 year, I = 1200 , A = ? , P = ?

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

$$\therefore 1200 = \frac{P \times 6 \times 4}{100}$$

$$\therefore P = \frac{1200 \times 100}{24} = 50 \times 100 = 5000$$

$$A = P + I$$

$$= 5000 + 1200 = 6200$$

(iii) P = 8000 , R = 5 p.c.p.a. , T = ? , I = 800 , A = ?

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

$$800 = \frac{8000 \times 5 \times T}{100}$$

$$\therefore T = \frac{800 \times 100}{8000 \times 5}$$

$$= \frac{80}{8 \times 5}$$

$$= \frac{10}{5}$$

$$= 2 \text{ years}$$

$A = P + I$

$\therefore A = 8000 + 800 = 8800$

(iv) P = ? , R = 5 p.c.p.a. , T = ? , I = 6000 , A = 18,000

First we find the principal.

$A = P + I$

$\therefore 18000 = P + 6000$

$\therefore P = 18000 - 6000 = 12000$

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

$$\therefore 6000 = \frac{12000 \times 5 \times T}{100}$$

$$\therefore T = \frac{6000 \times 100}{12000 \times 5}$$

$$= \frac{600}{12 \times 5}$$

$$= \frac{50}{5}$$

$\therefore T = 10$ years.

(v) P = ? , $2\frac{1}{2} = \frac{5}{2}$ years , T = 5 , I = 2400 rupees, A = ?

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

$$\therefore 2400 = \frac{P \times \frac{5}{2} \times 5}{100}$$

$$\therefore P = \frac{2400 \times 100}{\frac{5}{2} \times 5}$$

$$= \frac{2400 \times 100 \times 2}{5 \times 5}$$

$$= 480 \times 40$$

$$\therefore P = 19200$$

$$A = P + I$$

$$\therefore A = 19200 + 2400 = 21600$$

Ans. :

Sr. No.	Principal	Rate of interest (p.c.p.a.)	Time	Interest	Amount
(i)	4200	7%	3 years	882	5082
(ii)	5000	6%	4 years	1200	6200
(iii)	8000	5%	2 years	800	8800
(iv)	12000	5%	10 years	6000	18000
(v)	19200	$2\frac{1}{2}\%$	5 years	2400	21600

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