SIMPLE INTEREST

Read it carefully and find out what Raju is doing in these pictures.

Raju has deposited ₹ 100 in a bank.

CASH

After one year, Raju goes to the bank to find out about his deposited money.
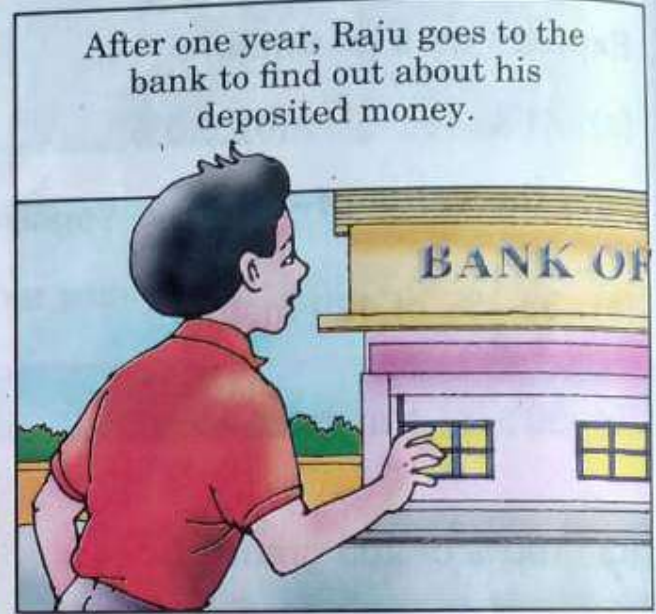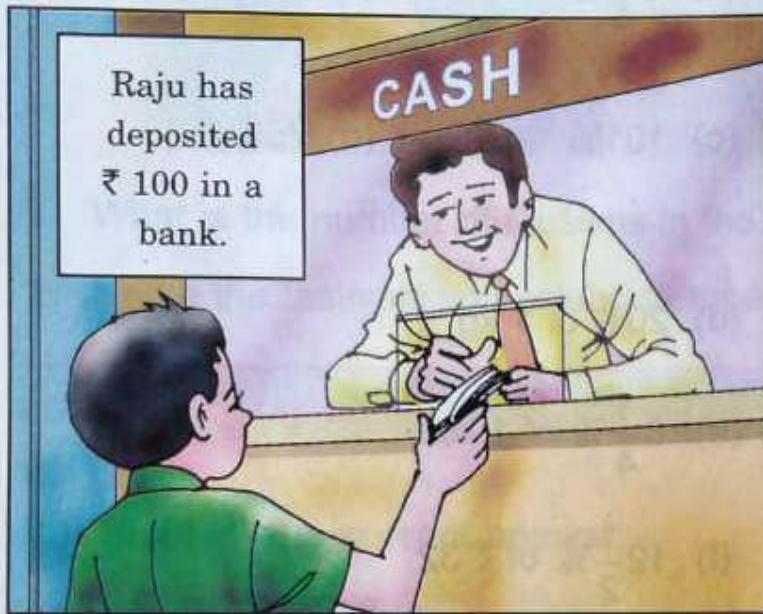
BANK OF

The manager of the bank informs Raju that ₹ 100 deposited in the bank one year before has now become ₹ 110.

'Thank you'. But how did my ₹ 100 become ₹ 110 after one year?

When someone deposits money in a bank, the bank pays some extra money on the deposited amount.
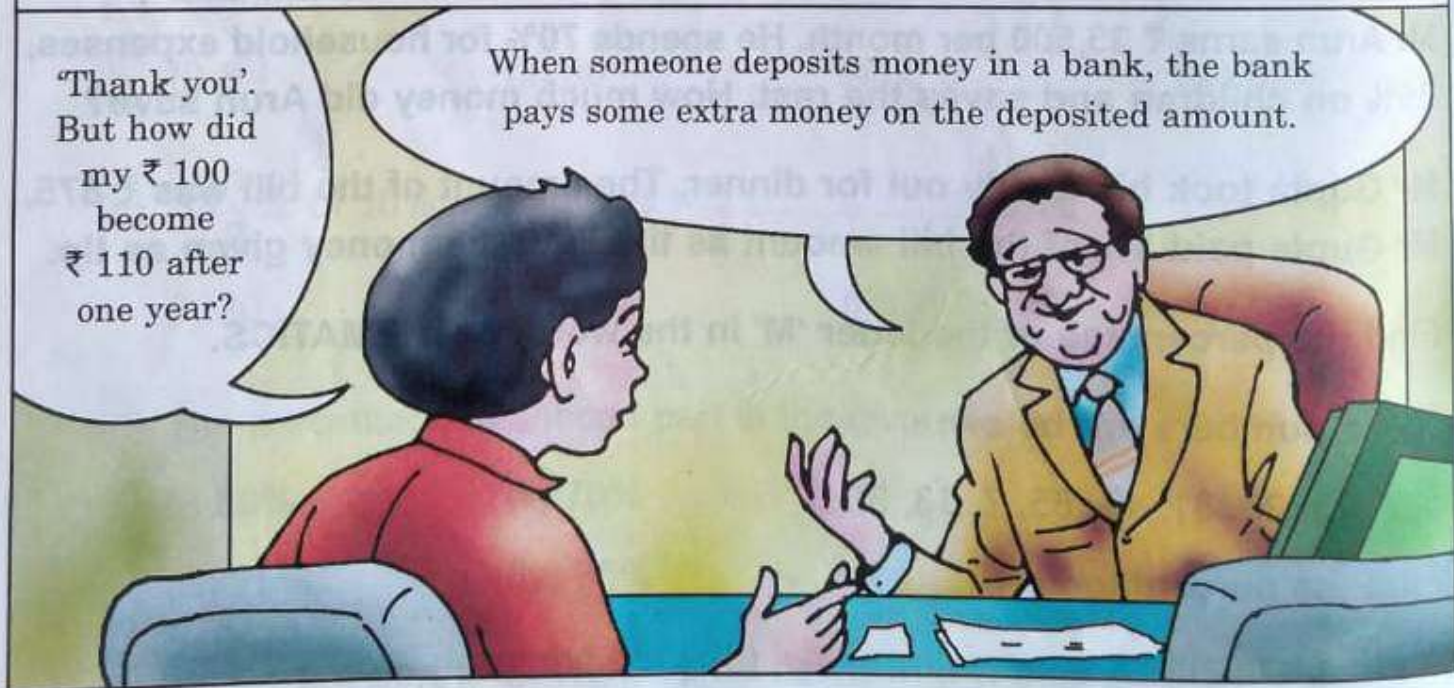
Money deposited (put) in a bank is called **Principal**.

The extra money paid by the bank is called **Interest**.

The period of time after which money is withdrawn is called **Time**.

The extra money paid by the bank for every ₹ 100 after one year is called **Rate of Interest**.

Do you know?
The bank also gives loans.

The bank has given Ramu a loan of ₹ 6,000 to purchase a tractor.

After three years, Ramu returns back the loan alongwith 10% interest charged by the bank.

Here, the money borrowed (loan) is the Principal and the extra money to be paid is called the Interest.

The bank utilises the money deposited in the form of loans to customers or invests in some projects. The bank earns interest on the same.

1. **Fill in the blanks.**

   (a) The money deposited in a bank is called _____

   (b) The extra money paid by the bank is called _____

   (c) The period of time for which money is kept in a bank is called _____

   (d) The money borrowed from a bank is called _____

   (e) Extra money charged by the bank for every hundred rupees deposit is called _____

SIMPLE INTEREST

Factors determining simple interest

The simple interest we calculate depends on three factors—

(a) Principal

(b) Rate of Interest

(c) Time

Calculating simple interest

Let us study these examples.

Example 1: Calculate the simple interest on ₹ 500 at 15% interest per year.

Solution: Simple interest on ₹ 100 for one year = ₹ 15

$15\% = \dfrac{15}{100}$ means ₹ 15 interest for every ₹ 100 deposited.

Simple interest on ₹ 1 for one year = ₹ $\dfrac{15}{100}$

Simple interest on ₹ 500 for one year = $\dfrac{15}{100} \times 500$

= ₹ 75

So, the interest at the end of one year will be ₹ 75.

Example 2: Calculate the simple interest on ₹ 500 for two years at 15% interest per year.

Solution: For one year, the simple interest is $= ₹ \dfrac{15}{100} \times 500 = ₹ 75$

So, for two years, the simple interest will be

$$₹ \dfrac{15}{100} \times 500 \times 2 = ₹ 150$$

Rate of Interest   Principal   Time

> **Simple Interest = Principal × Rate of Interest × Time**
> **S.I. = P × R × T**

Example 3: Mr Sunil deposited ₹ 800 in a bank at $4\dfrac{1}{2}$% rate of interest per annum. Calculate the simple interest he will get after $2\dfrac{1}{2}$ years.

Solution:
$$\text{Principal} = ₹ 800$$

$$\text{Rate of Interest} = 4\dfrac{1}{2}\% \text{ per annum}$$

$$= \dfrac{9}{2}\% \text{ per annum}$$

$$= \dfrac{9}{2 \times 100} \text{ per annum}$$

$$\text{Time} = 2\dfrac{1}{2} \text{ years}$$

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

$$\text{Simple Interest} = P \times R \times T = 800 \times \dfrac{9}{200} \times \dfrac{5}{2} = \dfrac{800 \times 9 \times 5}{200 \times 2}$$

$$= ₹ 90$$

1. Find the simple interest at the end of one year for the following:

   (a) ₹ 400 at 5% interest per annum.

   (b) ₹ 1,800 at 12% interest per annum.

   (c) ₹ 2,500 at $4\frac{1}{2}$% interest per annum

   (d) ₹ 3,200 at $6\frac{1}{2}$% interest per annum.

2. Complete the table by calculating the simple interest.

	Principal	Rate of Interest	Time	Simple Interest
(a)	₹ 600	7%	2 years	
(b)	₹ 500	$8\frac{1}{2}$%	2 years	
(c)	₹ 3,000	12%	$3\frac{1}{2}$ years	
(d)	₹ 2,500	$7\frac{1}{2}$%	$2\frac{1}{2}$ years	

3. Solve the following questions.

   (a) A man deposited ₹ 4,500 in a bank which paid him an interest of 11% per annum. How much simple interest will he get at the end of five years?

   (b) Rahul borrowed ₹ 650 from Sohan at 8% interest per annum. Find the simple interest Rahul has to pay Sohan after $4\frac{1}{2}$ years.

   (c) Ramlal borrowed ₹ 3,000 from Arun to purchase a tractor. Arun charged him an interest of $4\frac{1}{2}$% per annum. How much simple interest will Ramlal pay to Arun after three years?

CONCEPT OF AMOUNT

Let us study some examples.

Example 4: Rahul had deposited ₹ 100 in a bank for two years at 10% simple interest per annum. How much money will he get after two years from the bank?

Solution: Here, Principal = ₹ 100

Rate of Interest = 10% or $\dfrac{10}{100}$ per annum

Time = 2 years

First, we will find the Simple Interest.

Simple Interest = $100 \times \dfrac{10}{100} \times 2$

= ₹ 20

Amount Rahul will get after two years

= ₹ 100 + ₹ 20

= **₹ 120**

We observe that the amount we get back after a certain period of time is the sum of the **Principal** and **Interest**.

> Amount = Principal + Interest

We also have,

> Principal = Amount – Interest
> Interest = Amount – Principal

Example 5: Sarita deposited ₹ 3,000 in a bank at 8% interest per annum. What amount will she get back after $3\dfrac{1}{2}$ years?

Solution: Here, Principal = ₹ 3,000

$$\text{Rate of Interest} = 8\% = \frac{8}{100}$$

$$\text{Time} = 3\frac{1}{2} \text{ years} = \frac{7}{2} \text{ years}$$

$$\text{Simple Interest} = 3{,}000 \times \frac{8}{100} \times \frac{7}{2}$$

$$= ₹\,840$$

Amount received at the end of $3\frac{1}{2}$ years

$$= \text{Principal} + \text{Interest}$$

$$= ₹\,3{,}000 + ₹\,840$$

$$= ₹\,3{,}840$$

Worksheet 3

1. **Find the amount for the following:**

Principal	Interest	Amount
(a) ₹ 1,500	₹ 150	
(b) ₹ 750	₹ 35	
(c) ₹ 15,000	₹ 980	
(d) ₹ 4,500	₹ 215	

2. **Fill in the blanks:**

Principal	Simple Interest	Amount
(a) ₹ 800		₹ 905
(b)	₹ 75.50	₹ 450
(c) ₹ 25,000		₹ 31,000
(d)	₹ 515	₹ 1,680

3. Calculate the amount for the following:

   (a) ₹ 4,000 at 9% per annum for 3 years.

   (b) ₹ 750 at $3\frac{1}{2}$% per annum for 2 years.

   (c) ₹ 3,200 at $7\frac{1}{2}$% per annum for $3\frac{1}{2}$ years.

   (d) ₹ 900 at 5% per annum for $5\frac{1}{2}$ years.

4. Solve the following questions.

   (a) Arun took a loan of ₹ 600 for $1\frac{1}{2}$ years with interest at the rate of 4% per annum. Find the interest he pays after $1\frac{1}{2}$ years. Also calculate the amount he pays back after $1\frac{1}{2}$ years.

   (b) Amit deposited ₹ 4,800 in his account. The bank pays an interest of 6% per annum. What amount will Amit get back after three years?

   (c) A man borrowed ₹ 700 from his friend. He promised to return back the amount after six months at an interest of 8% per annum. How much money will he pay back after six months?

   (d) Surender deposited ₹ 2,500 in a bank at 12% interest per annum. He withdraws his money after $2\frac{1}{2}$ years. Out of this amount, he buys an almirah for ₹ 3,000. How much money is left with him?

Value Based Question

Nakul's father Mr Gupta got transferred from Delhi to Mumbai. Mr Gupta had deposited ₹ 55,000 in the Punjab National Bank two years before at 8% per annum. He closed the account and with the interest money he purchased gifts for his friends and family members. Nakul also got two jeans, two shirts and a video game as gift.

Nakul with the permission of his parents gifted one jean and one shirt to Rahul, the son of milkman. Rahul was very happy and thanked Nakul for the gift.

1. How much money did Mr Gupta get from the bank?

2. How much money was spent by Mr Gupta on gifts?

3. How do you feel when you gift/donate anything to the needy?

Brain Teasers

1. **Tick (✔) the correct answer.**

   (a) The extra money paid by a bank for every ₹ 100 after one year is called—

   (i) Interest

   (ii) Rate of interest

   (iii) Amount

   (iv) Principal

   (b) Mr Gupta borrowed ₹ 1,75,000 from a bank to buy a car. This amount is called—

   (i) Interest

   (ii) Rate of interest

   (iii) Loan

   (iv) Time

(c) Simple interest for ₹ 1,000 at 10% for 9 months is—

(i) ₹ 75   (ii) ₹ 900   (iii) ₹ 90   (iv) ₹ 1,075

(d) If Amount = 1,645.50, Simple interest = ₹ 95, Principal is—

(i) ₹ 1,740.50   (ii) ₹ 1,550   (iii) ₹ 1,740   (iv) ₹ 1,550.50

(e) If loan = ₹ 1,75,000, Rate of interest = 4%, Time = 2 years, then amount to be repaid is equal to—

(i) ₹ 1,89,000   (ii) ₹ 1,76,400   (iii) ₹ 1,98,000   (iv) ₹ 1,80,000

2. **Name the three factors that determine simple interest.**

3. **Find the amount if principal is ₹ 625 and interest is ₹ 55.**

4. **Calculate the simple interest on ₹ 1,200 at $3\frac{1}{2}$% interest per annum for six months.**

5. **Sohan deposited ₹ 6,000 in a bank at $7\frac{1}{2}$% per annum for three years. Mohan deposited ₹ 6,000 in another bank at 11% per annum for $2\frac{1}{2}$ years. Who will get more simple interest?**

6. **A farmer borrowed ₹ 2,400 at 12% interest per annum. At the end of three years, he repaid ₹ 1,200 and a cow for the balance amount. Find the cost of the cow.**

7. **Mr Kannan had deposited ₹ 2,500 in a bank at 12% per annum. After $3\frac{1}{2}$ years, he withdraws this amount. Out of this money, he wants to buy a dressing table costing ₹ 4,000. How much more money does he need?**