

CDS-AFCAT 1 2025

SSBCrack
EXAMS

LIVE

MATHS

SIMPLE &
COMPOUND INTEREST

CLASS 1



NAVJYOTI SIR



01 Oct 2024 Live Classes Schedule

8:00AM	01 OCTOBER 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM
9:00AM	01 OCTOBER 2024 DAILY DEFENCE UPDATES	DIVYANSHU SIR

NDA 1 2025 LIVE CLASSES

11:30AM	GK - BIOGEOGRAPHY	RUBY MA'AM
1:00PM	BIOLOGY - BASIS OF LIFE	SHIVANGI MA'AM
4:00PM	MATHS - LOGARITHMS - CLASS 2	NAVJYOTI SIR

CDS 1 2025 LIVE CLASSES

11:30AM	GK - BIOGEOGRAPHY	RUBY MA'AM
1:00PM	BIOLOGY - BASIS OF LIFE	SHIVANGI MA'AM
2:30PM	MATHS - SI & CI - CLASS 1	NAVJYOTI SIR

AFCAT 1 2025 LIVE CLASSES

10:00AM	REASONING - BLOOD RELATIONS	RUBY MA'AM
2:30PM	MATHS - SI & CI - CLASS 1	NAVJYOTI SIR
4:00PM	STATIC GK - SPORTS PERSONALITIES	DIVYANSHU SIR

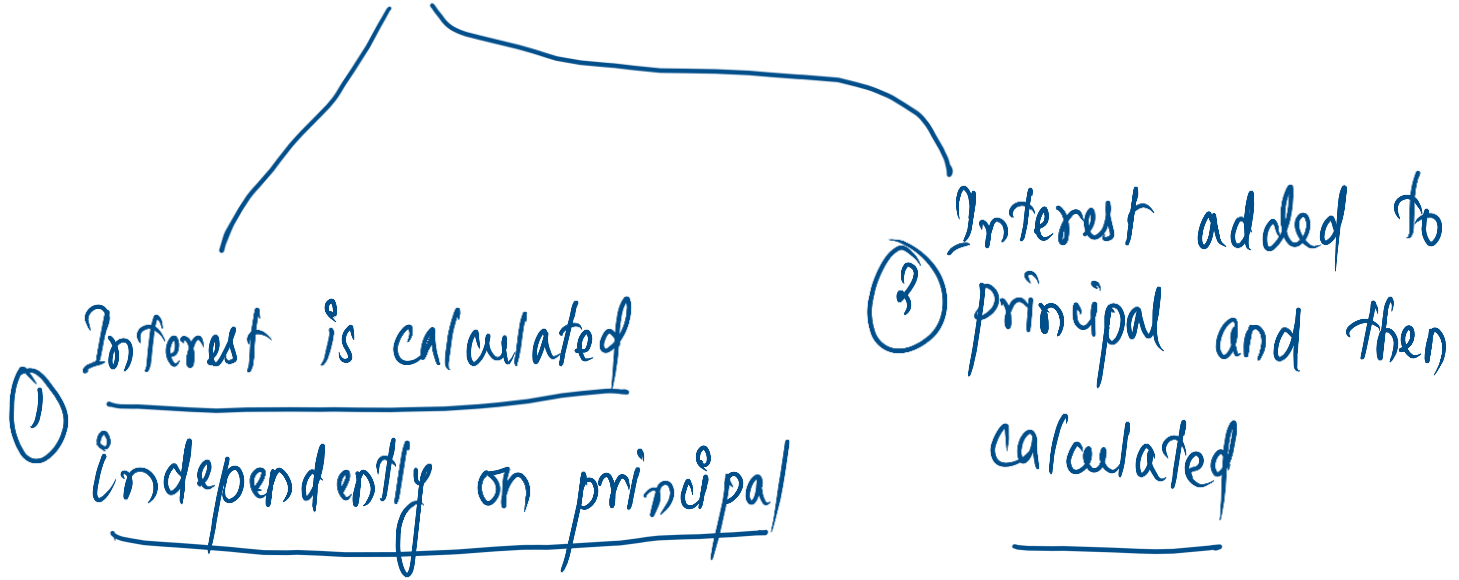


INTRODUCTION

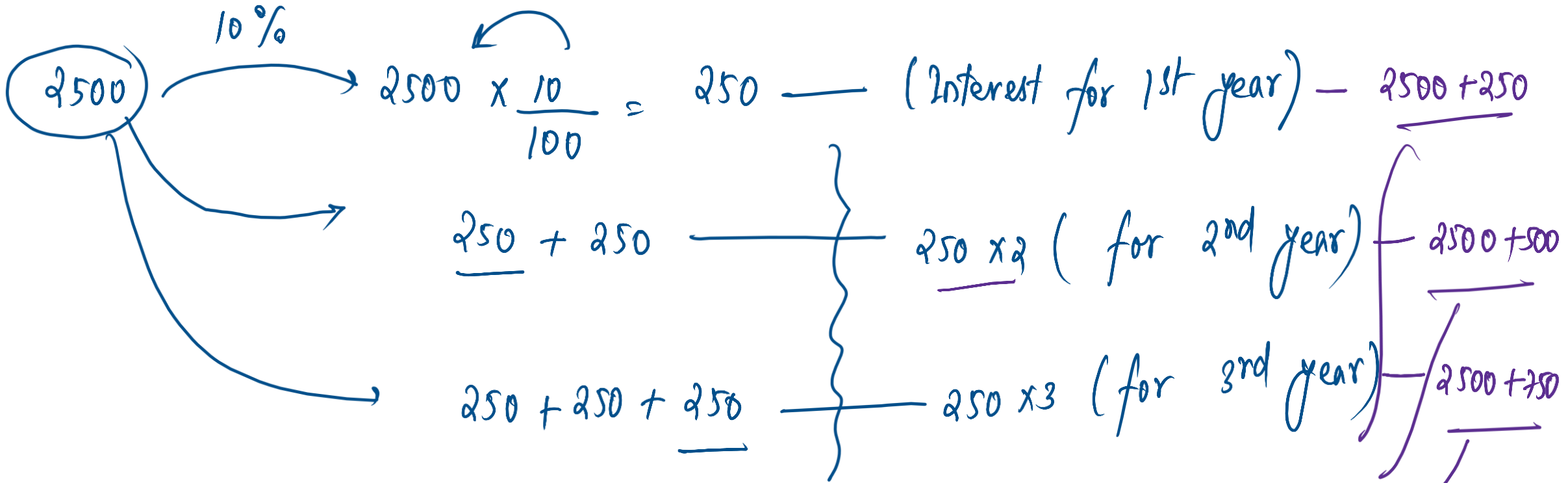
- **Principal** – The sum lent is called principal. / *sum* — *amount*
- **Interest** – Interest is the fixed amount paid on borrowed money.
- **Amount** – The sum of the principal and interest is called the amount.

rate of interest — *r%*

INTEREST



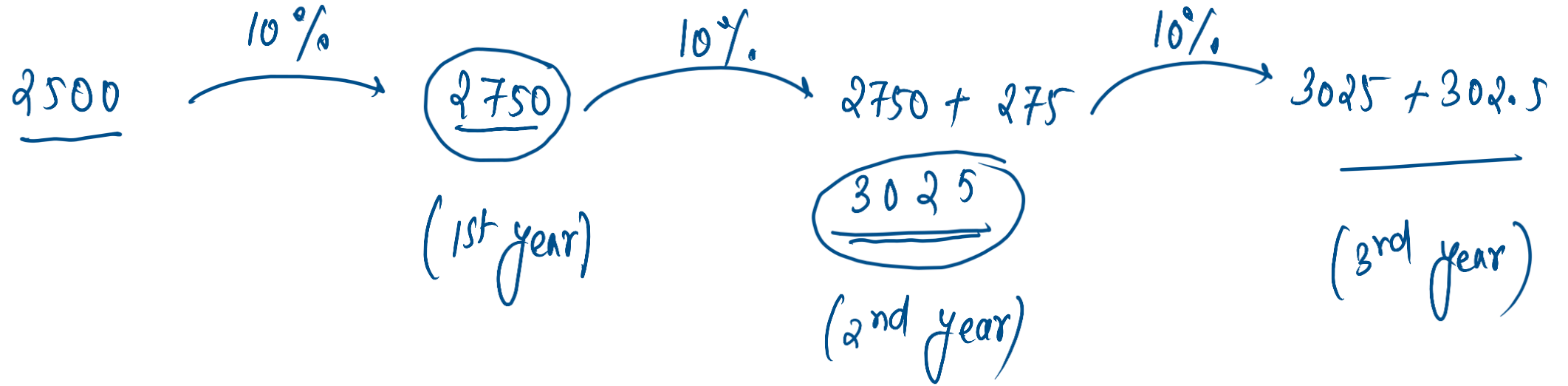
①



[SIMPLE INTEREST]

(Amounts)

②

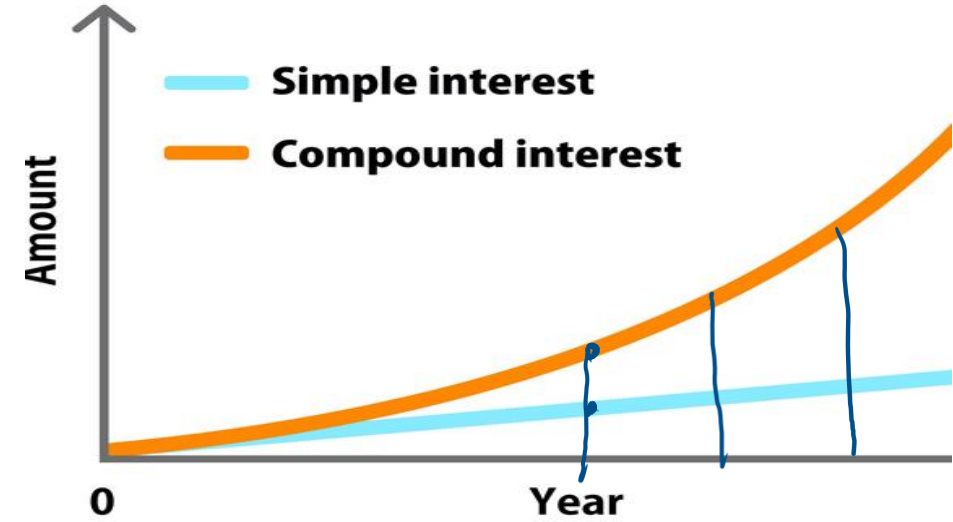


(COMPOUND INTEREST)

INTEREST

① Simple Interest

② Compound Interest



SIMPLE INTEREST

- When interest is calculated on the original principal for any length of time, it is called simple interest.

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

i.e.
$$\text{S.I.} = \frac{P \times R \times T}{100}$$

- Amount = Principal + Simple interest

$$A = P + I = P + \frac{PRT}{100} = P \left(1 + \frac{RT}{100} \right)$$

1st year $\rightarrow \frac{P \times R}{100}$

2nd year $\rightarrow \left(\frac{P \times R}{100} \right) \times 2$

3rd year $\rightarrow \left(\frac{P \times R}{100} \right) \times 3$

SIMPLE INTEREST

- If rate of simple interest differ from year to year, then –

$$\text{1st year} \text{ --- } R_1\% \longrightarrow SI = \frac{P \times R_1 \times L}{100} = \frac{PR_1}{100}$$

$$\text{2nd year} \text{ --- } R_2\% \longrightarrow SI = \frac{P \times R_2 \times L}{100} = \frac{PR_2}{100}$$

$$\text{3rd year} \text{ --- } R_3\% \longrightarrow SI = \frac{P \times R_3 \times L}{100} = \frac{PR_3}{100}$$

$$\text{Total SI after 3 years} = \frac{PR_1}{100} + \frac{PR_2}{100} + \frac{PR_3}{100}$$

$R_1\%$ for t_1 years ;

$R_2\%$ for t_2 years

$R_3\%$ for t_3 years

$R_4\%$ for t_4 years

$$\text{Total simple Interest} = \frac{PR_1 t_1}{100} + \frac{PR_2 t_2}{100} + \frac{PR_3 t_3}{100} + \frac{PR_4 t_4}{100} + \dots$$

$$= P \left(\frac{R_1 t_1}{100} + \frac{R_2 t_2}{100} + \frac{R_3 t_3}{100} + \frac{R_4 t_4}{100} \right)$$

QUESTION

Find the amount to be paid back on a loan of Rs 18,000 at 5.5% per annum for 3 years.

5.5%
(per year)

$$A = P \left(1 + \frac{RT}{100} \right)$$

$$= 18000 \left(1 + \frac{(5.5)(3)}{100} \right)$$

$$= \cancel{18000} \times \frac{1650}{\cancel{100}} = 18 \times 1650$$

$$= \underline{29700}$$

QUESTION

The simple interest on a sum of money is $\frac{1}{9}$ of the principal and the number of years is equal to rate % p.a. Find the rate % p.a.

$$SI = \frac{1}{9} P$$

$$t = r$$

$$SI = \frac{P \times r \times t}{100}$$

$$\frac{1}{9} P = \frac{P \times r \times r}{100}$$

$$\frac{100}{9} = r^2$$

$$r = \frac{10}{3} \% = \underline{\underline{3\frac{1}{3} \%}}$$

QUESTION

What rate percent per annum will produce Rs250 as simple interest on Rs6000 in 2.5 years?

$$250 = \frac{6000 \times r \times 2.5}{100}$$

$$r = \frac{250 \times 100}{6000 \times 2.5} = \frac{10}{6} = \frac{5}{3} = 1\frac{2}{3}\% \text{ or } \underline{1.66\%}$$

QUESTION

In what time will Rs72 become Rs81 at $6\frac{1}{4}\%$ per annum simple interest?

$$\begin{array}{ccc}
 P & & A \\
 \swarrow & & \swarrow \\
 & & r \rightarrow \left(\frac{25}{4}\right)\%
 \end{array}$$

$$A = P \left(1 + \frac{rt}{100} \right)$$

$$\frac{81}{72} = \frac{400 + 25t}{400}$$

$$81 = 72 \left(1 + \frac{25t}{4 \times 100} \right)$$

$$\frac{9 \times 400}{8} - 400 = 25t$$

$$250 = 25t \Rightarrow t = 2 \text{ years}$$

(OR)

$$A = 81$$

$$P = 72$$

$$SI + P = A$$

$$SI = A - P = 81 - 72 = \underline{9}$$

$$SI = \frac{P \times r \times t}{100} \Rightarrow 9 = \frac{\overset{8}{\cancel{72}} \times \frac{\cancel{25}}{4} \times t}{\frac{\cancel{100}}{4}} \Rightarrow 16 = 8 \times t$$

$t = 2$ years

QUESTION

The interest on sum of money at the end 2.5 years is $\frac{4}{5}$ of the sum. What is the rate percent per year.

$$SI = \frac{4}{5}P, \quad t = 2.5 \text{ years}, \quad r\% = ?$$

$$\frac{4}{5}P = \frac{P \times r \times 2.5}{100}$$

$$r = 32\%$$



QUESTION

In how much time sum of money becomes five times of at 16% simple interest?

P

$$A = 5P$$

$$SI = 5P - P = 4P$$

$$4P = \frac{P \times 16 \times t}{100}$$

$$1 = \frac{t}{25}$$

$$t = 25 \text{ years}$$

QUESTION

A sum of money doubles itself in 10 years at simple interest. In how many years would it triple itself?

$$P \longrightarrow 2P$$

$$SI = 2P - P = P$$

$$P = \frac{P \times r \times 10}{100}$$

$$r = 10\%$$

$$SI = 3P - P = 2P$$

$$2P = \frac{P \times 10 \times t}{100}$$

$$t = 20 \text{ years}$$

QUESTION

A sum of money becomes $\frac{79}{16}$ times of itself in 35 years. Find the rate of interest.

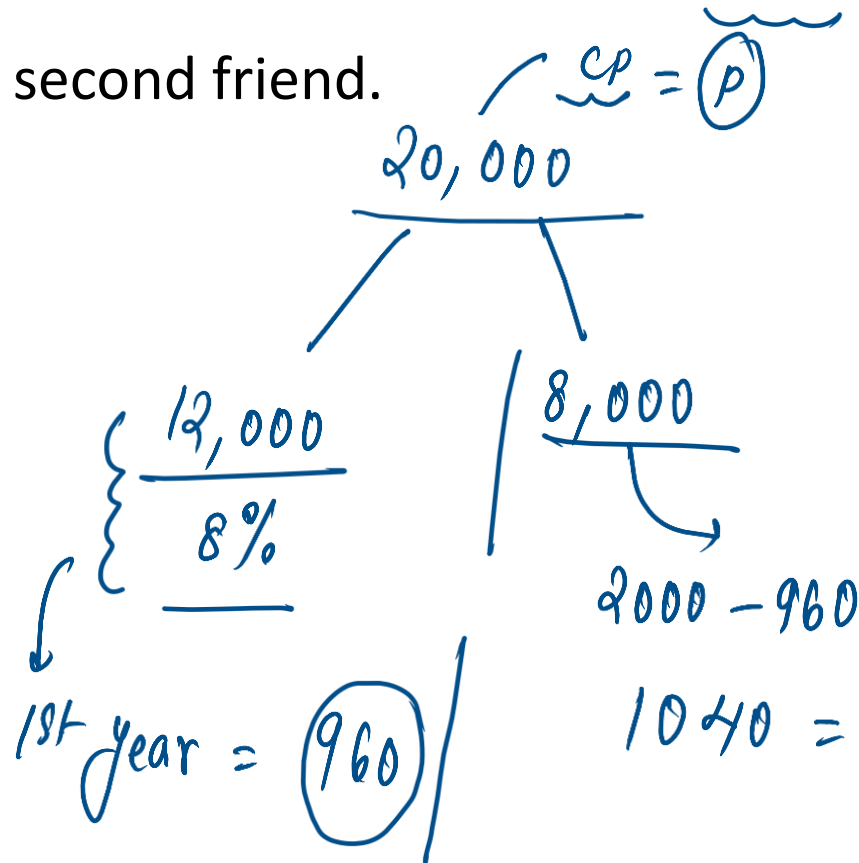
$$SI = \frac{79p}{16} - p = \frac{63p}{16}$$

$$\frac{\frac{63p}{16}}{p} = \frac{r \times 35}{100}$$

$$r = \frac{45}{4} = \underline{11.25\%}$$

QUESTION

Ram lends Rs20,000 to two of his friends. He gives Rs12,000 to the first at 8% p.a. He wants to make a profit of 10% on the whole. Find the rate at which he should lend to second friend.



$$SP = \text{Amount} = 20,000 \left(\frac{110}{100} \right) = \underline{22,000}$$

$$\text{Interest (profit)} = 22,000 - 20,000 = \underline{2,000}$$

$$1040 = \frac{8000 \times r \times 1}{100}$$

$$r = \frac{1040}{8000} = \frac{104}{800} = \underline{13\%}$$

QUESTION

The sum P is invested for T years. It amounts to $Rs700$ at 6% per annum. But when invested at 5% per annum, it amounts to $Rs300$. Find product of P and T .

$$700 = P \left(1 + \frac{6T}{100} \right) \text{ --- (1)} \Rightarrow 700 = P + \frac{6PT}{100}$$

$$300 = P \left(1 + \frac{5T}{100} \right) \text{ --- (2)} \rightarrow 300 = P + \frac{5PT}{100}$$

$$\text{(1)} - \text{(2)},$$

$$400 = \frac{PT}{100} \Rightarrow \underline{PT = 40000}$$

QUESTION

$Rs1000$ becomes $Rs1840$ at a certain rate of simple interest in 8 years. If the rate of interest would be 4% less, then find the amount at the end of 10 years.

QUESTION

The sum of $Rs36000$ is divided into two parts, A and B such that simple interest at the rate of 15% p.a. on A and B after two years and four years, respectively, is equal. Find the total interest received from A .

QUESTION

A certain sum of money is given at a certain rate of interest for 8 years, if the rate of interest would be 10.5% more, then get *Rs2100* more interest. Find the Principal.

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