

CDS-AFCAT 1 2025

SSBCrack
EXAMS

LIVE

MATHS

SIMPLE &
COMPOUND INTEREST

CLASS 2



NAVJYOTI SIR



02 Oct 2024 Live Classes Schedule

8:00AM --- 02 OCTOBER 2024 DAILY CURRENT AFFAIRS --- RUBY MA'AM

9:00AM --- 02 OCTOBER 2024 DAILY DEFENCE UPDATES --- DIVYANSHU SIR

SSB INTERVIEW LIVE CLASSES

9:00AM --- OCT ONLINE COURSE INTRODUCTION --- ANURADHA MA'AM

NDA 1 2025 LIVE CLASSES

11:30AM --- GK - BIOSPHERE RESERVES & NATIONAL PARKS --- RUBY MA'AM

1:00PM --- BIOLOGY - PLANT GROWTH --- SHIVANGI MA'AM

4:00PM --- MATHS - SETS, RELATION & FUNCTION - CLASS 1 --- NAVJYOTI SIR

5:30PM --- ENGLISH - WORD CLASSES - CLASS 2 --- ANURADHA MA'AM

CDS 1 2025 LIVE CLASSES

11:30AM --- GK - BIOSPHERE RESERVES & NATIONAL PARKS --- RUBY MA'AM

1:00PM --- BIOLOGY - PLANT GROWTH --- SHIVANGI MA'AM

2:30PM --- MATHS - SI & CI - CLASS 2 --- NAVJYOTI SIR

5:30PM --- ENGLISH - WORD CLASSES - CLASS 2 --- ANURADHA MA'AM

AFCAT 1 2025 LIVE CLASSES

10:00AM --- REASONING - CODING DECODING --- RUBY MA'AM

2:30PM --- MATHS - SI & CI - CLASS 2 --- NAVJYOTI SIR

4:00PM --- STATIC GK - WORLD CUPS & TROPHIES --- DIVYANSHU SIR

5:30PM --- ENGLISH - WORD CLASSES - CLASS 2 --- ANURADHA MA'AM



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.

$$\frac{P \times r \times 8}{100} = S_1,$$

$$\frac{P \times (r + 10.5) \times 8}{100} = S_2$$

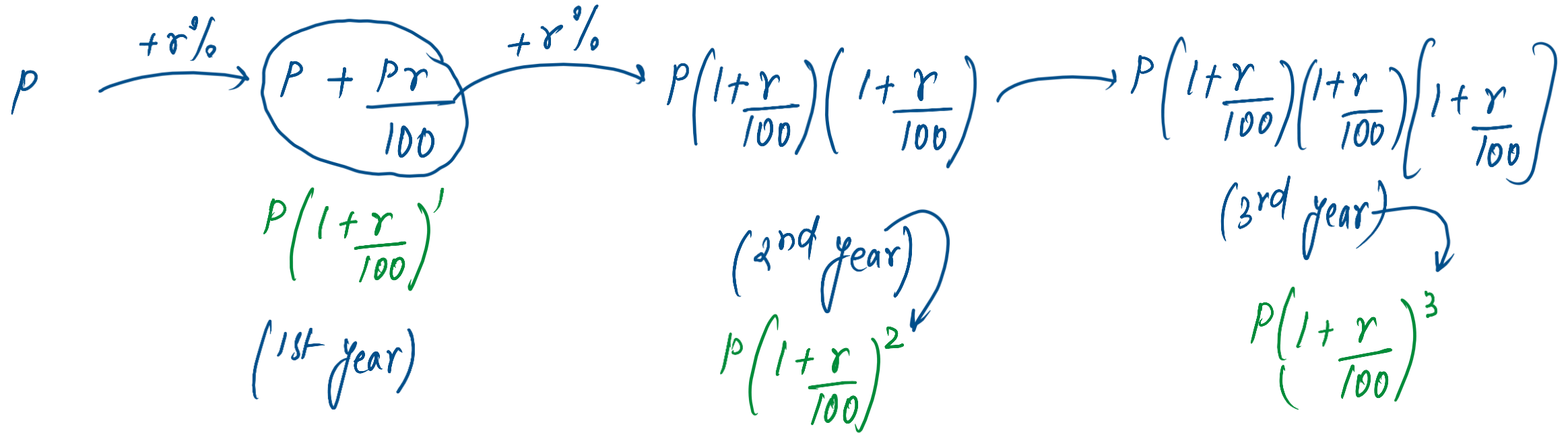
$$S_2 - S_1 = 2100$$

$$\frac{P \times r \times 8}{100} + \frac{P \times 10.5 \times 8}{100} - \frac{P \times r \times 8}{100} = 2100$$

$$P = \frac{2100 \times 100}{8 \times 10.5} = \frac{210000}{84} = \frac{52500}{21} = \underline{2500}$$

COMPOUND INTEREST

→ Interest is added to principal, whenever calculated.



COMPOUND INTEREST

for n years, at $r\%$, amount calculated with CI,

$$A = P \left(1 + \frac{r}{100} \right)^n$$

$$CI = A - P$$

$$= P \left(1 + \frac{r}{100} \right)^n - P = P \left[\underbrace{\left(1 + \frac{r}{100} \right)^n - 1}_{\text{}} \right]$$

Q) If the amount on a certain principal in 3 years at 12% rate of interest compounded annually is ₹ 12,000, what will be the amount (in ₹) after the 4th year?

- (a) 14330 (b) 15440 (c) 13440 (d) 14550

$$12000 = P \left(1 + \frac{12}{100} \right)^3$$

375
250
3000

$$\frac{12000 \times 100 \times 100 \times 100}{112 \times 112 \times 112} = P$$

25 25 25

~~28~~ ~~28~~ ~~28~~ 14

7 7 7

$$P = \frac{375 \times 25 \times 25 \times 25}{7 \times 7 \times 7 \times 14}$$

$$A = P \left(1 + \frac{r}{100} \right)^4$$

Q) If the amount on a certain principal in 3 years at 12% rate of interest compounded annually is ₹ 12,000, what will be the amount (in ₹) after the 4th year?

- (a) 14330 (b) 15440 (c) 13440 (d) 14550

Ans: (c)

COMPOUND INTEREST – COMPOUNDED MONTHLY

$$A = P \left(1 + \frac{R}{12 \times 100} \right)^{12n}$$

$$\left(\frac{\text{rate}}{12} \right)$$

$$\underline{\text{time} \times 12}$$

Half-yearly \rightarrow $\left\{ \begin{array}{l} 6 \text{ months} \text{ — } 12 \text{ months} \\ \frac{6}{12} = \left(\frac{1}{2} \right) \end{array} \right.$

\rightarrow reciprocal \times time \rightarrow

$$A = P \left(1 + \frac{1}{2} \left(\frac{R}{100} \right) \right)^{2n}$$

CDS & AFCAT 1 2025 LIVE CLASS - MATHS - PART 2

$$\frac{3}{12} = \frac{1}{4}$$

$$A = P \left(1 + \left(\frac{1}{4} \right) \left(\frac{R}{100} \right) \right)^{4n} = \underline{P \left(1 + \frac{R}{400} \right)^{4n}}$$

10 months $\rightarrow \frac{10}{12} = \frac{5}{6} \rightarrow \times R$

$$A = P \left(1 + \frac{5}{6} \left(\frac{R}{100} \right) \right)^{\frac{6}{5} \times t} \quad \frac{6}{5} \rightarrow \times \text{time in years}$$

Q) What will be the compound interest on a sum of ₹31,250 for 2 years at 12% p.a., if the interest is compounded 8-monthly?

- (a) ₹8,106 (b) ₹8,116 (c) ₹8,016 (d) ₹8,156

$$\frac{8}{12} = \frac{2}{3}$$

$$P = 31,250 \quad t = \underline{2 \text{ years}} \quad r = 12\%$$

$$A = P \left(1 + \frac{2}{3} \left(\frac{R}{100} \right) \right)^{\frac{3}{2} \times 2}$$

$$= 31250 \left(1 + \frac{2 \times 12}{300} \right)^3 = 31250 \left(1 + \frac{1}{25} \right)^3$$

$$= 31250 \times \frac{26}{25} \times \frac{26}{25} \times \frac{26}{25}$$

Q)What will be the compound interest on a sum of ₹31,250 for 2 years at 12% p.a., if the interest is compounded 8-monthly?

- (a) ₹ 8,106 (b) ₹ 8,116 (c) ₹ 8,016 (d) ₹ 8,156

Ans: (b)

EQUAL INSTALLMENTS

Equal annual instalment to pay the borrowed amount

Let the value of each instalment = ₹x

Rate = r% and time = n years

Then, Borrowed Amount

$$\text{---} = \frac{x}{\left(1 + \frac{r}{100}\right)} + \frac{x}{\left(1 + \frac{r}{100}\right)^2} + \dots + \frac{x}{\left(1 + \frac{r}{100}\right)^n}$$

DIFFERENCE BETWEEN SI AND CI

$$CI - SI = P \left(\frac{R}{100} \right)^2 \text{ for } T = \underline{2 \text{ years}}$$

$$CI - SI = \frac{PR^2}{100^2}$$

$$CI - SI = \frac{PR^2(300 + R)}{(100^3)} \text{ for } T = 3 \text{ years}$$

$$CI - SI = \frac{PR^2(300 + R)}{100^3}$$

CDS & AFCAT 1 2025 LIVE CLASS - MATHS - PART 2

If the rate of interest is 5%, then what would be the difference between compound interest and simple interest received on ₹ 10,000 (each) after 3 years from now ?

(PYQ – 2024 – I)

- (a) ₹ 175.25
- (b) ₹ 152.25
- (c) ₹ 76.25 ✓
- (d) ₹ 24.25

$$CI - SI = \frac{PR^2(300 + R)}{100^3}$$

$$= \frac{10000 \times 5^2 (300 + 5)}{100 \times 100 \times 100}$$

$$= \frac{25 \times 305}{100} = \underline{76.25}$$

CDS & AFCAT 1 2025 LIVE CLASS - MATHS - PART 2

Let x be the compound interest at the end of 3 years on a sum of ₹ 1000 at the rate of 10% compounded annually and y be the simple interest at the end of 3 years on a sum of ₹ 1000 at the annual rate of 11%. What is the difference between x and y ?

- (a) ₹ 16
- (b) ₹ 15
- (c) ₹ 5
- (d) ₹ 1 ✓

$$\text{SI} = \frac{1000 \times 11 \times 3}{100}$$

$$= 330$$

(PYQ - 2024 - I)

$$= (11)^3 - (10)^3$$

$$= 1331 - 1000$$

$$CI = 331$$

$$\text{diff.} = 331 - 330 = ₹ 1$$

$$A = 1000 \left(1 + \frac{10}{100}\right)^3 - 1000$$

$$= \cancel{1000} \times \frac{11}{\cancel{10}} \times \frac{11}{\cancel{10}} \times \frac{11}{\cancel{10}} - 1000$$

Q) What is the least number of years in which a sum of money at 20% compound interest will be more than doubled ?

(a) 7

(b) 6

(c) 5

(d) 4

$$P \left(1 + \frac{20}{100} \right)^t > 2P$$

$$\left(\frac{6}{5} \right)^t > 2$$

$$t = 1$$

$$t = 2 \quad \text{---} \quad \frac{36}{25} = 1.44 \quad \text{---} \quad \alpha$$

$$t = 3 \quad \text{---} \quad \frac{216}{125} \quad \text{---} \quad \alpha$$

$$t = 4 \quad \text{---} \quad \frac{216 \times 6}{125 \times 5} = \frac{1296}{625} \quad \text{---} \quad \checkmark$$

1250

Q) What is the least number of years in which a sum of money at 20% compound interest will be more than doubled ?

(a) 7

(b) 6

(c) 5

(d) 4

Ans: (d)

Q) There is 60% increase in an amount in 6 years at simple interest. What will be the compound interest on ₹ 12,000 after 3 years at the same rate of interest?

- (a) ₹ 2,160 (b) ₹ 3,120
(c) ₹ 3,972 (d) ₹ 6,240

Q) There is 60% increase in an amount in 6 years at simple interest. What will be the compound interest on ₹ 12,000 after 3 years at the same rate of interest?

- | | |
|-------------|-------------|
| (a) ₹ 2,160 | (b) ₹ 3,120 |
| (c) ₹ 3,972 | (d) ₹ 6,240 |

Ans: (c)

CDS & AFCAT 1 2025 LIVE CLASS - MATHS - PART 2

Three amounts x , y , z are such that y is the compound interest on x ; and z is the compound interest on y . The rate of interest per annum and the time period in years are same. Which one of the following is correct ?

- (a) $x^2 = yz$
- (b) $y^2 = zx$
- (c) $z^2 = xy$
- (d) $x = yz$

(PYQ – 2024 – II)

$$y = x \left(1 + \frac{r}{100}\right)^t \Rightarrow \left(1 + \frac{r}{100}\right)^t = \frac{y}{x}$$

$$z = y \left(1 + \frac{r}{100}\right)^t$$

$$z = y \left(\frac{y}{x}\right)$$

$$xz = y^2$$

Q) In 3 years ₹ 3000 amounts to ₹ 3993 at $x\%$ compound interest, compounded annually. The value of x is

- (a) 10 (b) 8 (c) 5 (d) $3\frac{1}{3}$

$$\begin{aligned} 3993 &= 3000 \left(1 + \frac{x}{100}\right)^3 \\ \frac{1331}{1000} &= \left(1 + \frac{x}{100}\right)^3 \end{aligned} \left. \begin{aligned} \frac{11}{10} &= 1 + \frac{x}{100} \\ \frac{1}{10} &= \frac{x}{100} \end{aligned} \right\} \begin{aligned} & \\ & \\ & x = 10\% \end{aligned}$$

Q) In 3 years ₹ 3000 amounts to ₹ 3993 at $x\%$ compound interest, compounded annually. The value of x is

- (a) 10 (b) 8 (c) 5 (d) $3\frac{1}{3}$

Ans: (a)

Q) A sum of ₹ 18,000 is lent at 10% p.a. compound interest, compounded annually. What is the difference between the compound interest for 3rd year and 4th year?

- (a) ₹ 220.60 (b) ₹ 217.80
(c) ₹ 221.80 (d) ₹ 215.40

Q) A sum of ₹ 18,000 is lent at 10% p.a. compound interest, compounded annually. What is the difference between the compound interest for 3rd year and 4th year?

- (a) ₹ 220.60 (b) ₹ 217.80
(c) ₹ 221.80 (d) ₹ 215.40

Ans: (b)

CDS-AFCAT 1 2025

SSBCrack
EXAMS

LIVE

MATHS

SIMPLE &
COMPOUND INTEREST

CLASS 3

NAVJYOTI SIR

