



GENERAL APTITUDE

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Interest

If P = Principal, R = Rate of interest, N = Time in years, I = Interest, A = Amount

Then $A = P + I$

Simple Interest

$$S.I. = (P \times R \times N) / 100$$

Basic principal remains constant.

S.I. is good example of AP(Arithmetic Progression)

Compound Interest

$$A = P (1 + R/100)^T$$

T = periods of compounding,

$$C.I. = A - P$$

R = rate for compounding period

Basic principal keeps on increasing as we get interest on interest.

C.I. is good example of GP(Geometric Progression)



Interest

Q. A shopkeeper with an OD facility at 18% with a bank borrowed Rs. 15000 on Jan 8, 2011 and returned the money on June 3, 2011 so as to clear the debt. The amount that he paid was -

- A. Rs. 16080 B. Rs. 16280 C. Rs. 16400 D. None of these

Soln:

- $P = 15000$, $r = 18\%$, $T = 23(\text{jan}) + 28(\text{feb-nonleap}) + 31(\text{march}) + 30(\text{April}) + 31(\text{may}) + 3(\text{june}) = 146$ days
- $146/365$ days = $2/5$ years.
- $SI = 15000 \times 18 \times 2/5 \times 1/100 = 30 \times 18 \times 2 = 1080$

$$\begin{aligned}\text{Amount} &= P + SI \\ &= 15000 + 1080 \\ &= \text{Rs. } 16080\end{aligned}$$

Ans: A



Interest

Q. A sum of money at simple interest amounts to Rs. 815 in 3 years and to Rs. 854 in 4 years. The sum is:

A. Rs. 650

B. Rs. 690

C. Rs. 698

D. Rs. 700

Soln:-

amount after 4 years = amount after 3 years + simple interest in one year

S.I. in one year = Rs. $(854 - 815) = \text{Rs. } 39$.

S.I. for 3 years = Rs. $(39 \times 3) = \text{Rs. } 117$.

Principal = amount - interest

Principal = $815 - 117$
= Rs. 698.

Ans: C



Interest

Q. A farmer borrowed Rs.3600 at 15% simple interest per annum. At the end of 4 years, he cleared this account by paying Rs.4000 and a donkey. The cost of the donkey is -

A. Rs. 1000

B. Rs. 1200

C. Rs. 1550

D. Rs. 1760

Soln:

SI for 4 years = Rs. $(3600 \times 0.15 \times 4) = \text{Rs. } 2160$

Amount after 4 years = Rs. $(3600 + 2160) = \text{Rs. } 5760$

Cost of donkey = Rs. $(5760 - 4000) = \text{Rs. } 1760$

Ans: D



Interest

Q. P =Rs. 2000, R =10%, N =2yrs , Find A and CI

Soln:

$$\begin{aligned}A &= 2000\left(1 + \frac{10}{100}\right)^2 \\&= 2000\left(\frac{110}{100}\right)^2 \\&= 2000\left(\frac{121}{100}\right) \\&= \text{Rs. } 2420\end{aligned}$$

$$\text{CI} = 2420 - 2000 = \text{Rs. } 420$$

$$2000 \rightarrow 10\% = 200$$

$$10\% \quad 10\%$$

$$2000 \longrightarrow 2200 \longrightarrow 2420$$

$$\text{CI} = 2420 - 2000 = 420$$



Interest

Q. Simple interest on a certain sum of money for 3 years at 8% per annum is half the compound interest on Rs. 4000 for 2 years at 10% per annum. The sum placed on simple interest is:

A. Rs. 1550

B. Rs. 1650

C. Rs. 1750

D. Rs. 2000

Soln:

$$A = P \left(1 + \frac{R}{100} \right)^N = 4000 \left(1 + \frac{10}{100} \right)^2 = 4000 \times \left(\frac{11}{10} \right)^2 = 4000 \times \frac{11}{10} \times \frac{11}{10} = \text{Rs. } 4840$$

OR

$$\begin{array}{ccccc} 4000 & \xrightarrow[1^{\text{st}} \text{ yr}]{10\%} & 4400 & \xrightarrow[2^{\text{nd}} \text{ yr}]{10\%} & 4840 \end{array}$$

$$CI = A - P$$

$$CI = 4840 - 4000 = \text{Rs. } 840$$

Ans: C

$$SI = \frac{1}{2} CI$$

$$\frac{PNR}{100} = \frac{1}{2} \times 840$$

$$\frac{P \times 3 \times 8}{100} = 420$$

$$\begin{aligned} P(\text{sum}) &= \frac{420 \times 100}{3 \times 8} \\ &= \text{Rs. } 1750 \end{aligned}$$



Interest

Q. P =Rs. 4000, R =20% per annum, N =6months.Find CI computed quarterly for given period.

Soln:

N =6months(2 quarterly)

rate(R) = 20 % per annum = 5 % quarterly

After every 3 months CI will be calculated.

| | | | | |
|------|------------------|------|------------------|------|
| | by <u>5%=200</u> | | by <u>5%=210</u> | |
| 4000 | | 4200 | | 4410 |

$$\begin{aligned} I &= 4410 - 4000 \\ &= \text{Rs. } 410 \end{aligned}$$



Interest

Q. Difference between Compound interest & simple interest on a sum placed at 8% p.a. compounded annually for 2 years is Rs 128. Find the Principal

- A. 20000
- B. 24000
- C. 26000
- D. 15000

- **Soln:**

- Let the principal be $P = \text{Rs. } 100$.
- time $N = 2$ years, rate of interest $R = 8\%$ per annum
- simple interest = $\frac{PNR}{100} = \frac{100 \times 8 \times 2}{100} = \text{Rs. } 16$

- CI (for 2 years)

- $\begin{array}{ccc} & 8\% & 8\% \\ 100 & \xrightarrow{\quad} & 108 \xrightarrow{\quad} & 116.64 \end{array}$

| | | | |
|-----|-------|-------|------|
| | 16.64 | | |
| P | SI | CI | Diff |
| 100 | 16 | 16.64 | 0.64 |

- $0.64 \rightarrow 100$
- $128 \rightarrow ?$
- $\frac{12800}{0.64} = \text{Rs. } 20000$



Interest

Q. Difference between Compound interest & simple interest on a sum placed at 8% p.a. compounded annually for 2 years is Rs 128. Find the principal

- A. 20000 B. 24000 C. 26000 D. 15000

- **Soln:**
- Let the principal be $P = \text{Rs. } 100$.
- time $N = 2$ years, rate of interest $R = 8\%$ per annum
- simple interest = $\frac{PNR}{100} = \frac{100 \times 8 \times 2}{100} = \text{Rs. } 16$
- compound amount = $P(1 + \frac{R}{100})^N$
- $= 100 \times (1 + \frac{8}{100})^2 = 100 \times (\frac{108}{100})^2 = 100 \times (\frac{11664}{10000}) = \frac{11664}{100} = 116.64$
- compound interest = compound amount – principal
- $C.I = A - P$
 $= 116.64 - 100 = \text{Rs. } 16.64$
- the difference between the compound interest and simple interest = $16.64 - 16.00 = \text{Rs. } 0.64$
- $\frac{0.64}{100} \rightarrow 100$
- $\frac{128}{0.64} \rightarrow ?$
- $= \frac{128 \times 100}{0.64} = 20000$
- Thus, the principal is Rs. 20000.

Interest

- If the difference between compound and simple interest is of **two years** than,
Difference = $P(R)^2/(100)^2$
Where P = principal amount, R = rate of interest
- If the difference between compound and simple interest is of **three years** than,
Difference = $3 \times P(R)^2/(100)^2 + P (R/100)^3$.
Here also, P = principal amount, R = rate of interest



Partnership

Q.A started business with Rs. 45,000 and B joined afterwards with 30,000. If the profit at the end of a year was divided in the ratio 2 : 1 respectively, then B would have joined A for business after.

A. 1 month

B. 2 months

C. 3 months

D. 4 months

Soln:

- Capital of A = Rs. 45,000 Capital of B = Rs. 30,000
- Ratio of P1:P2=2:1
- using formula,
- $\frac{C_1T_1}{C_2T_2} = \frac{P_1}{P_2}$
- In this type , the time period is 12 months i.e. one year
- $\frac{45000 \times 12}{30000 \times T_2} = \frac{2}{1}$
- $T_2=9$
- B would join business after $(12 - 9) = 3$ months
- **Ans: C**



Partnership

Q. If 4 (A's capital) = 6 (B's capital) = 10 (C's capital), then out of a profit of Rs. 4650, C will receive _____

A) Rs.700

B) Rs.800

C) Rs.900

D) Rs.1000

Soln:

$$4A = 6B = 10C$$

$$A = 10/4C = 5/2C \quad \text{and} \quad B = 10/6C = 5/3C$$

$$A + B + C = 4650$$

$$5/2C + 5/3C + C = 4650$$

$$C = 900$$

Share of C or C will receive Rs.900

Ans: C



Partnership

Q. A, B & C enter into a partnership with total of Rs 8,200. A's capital is Rs 1000 more than B's & Rs 2000 less than C's. What is B's share of annual profit of Rs 2,460?

A. Rs 1320

B. Rs 720

C. Rs 420

D. Rs 520

Ans: C



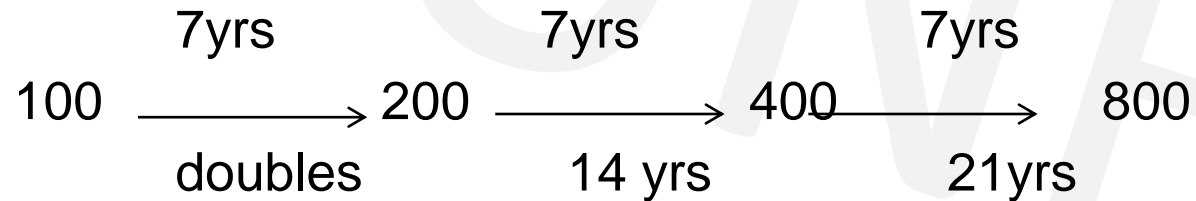
Interest(Assignment)

Q. A sum of money placed at compound interest doubles in 7 years. In how many years the principal becomes-

- a. 4 times of itself
- b. 8 times of itself

Soln:

Let initial value be 100



- a. In 14yrs
- b. In 21 yrs

OR

100----->200 in 7 years

200----->400 in again 7 years then,

400----->800 in 7 years again, thus

the time becomes= $7+7+7= 21$ years.



Interest(Assignment)

Q. A started a business by investing Rs. 32000. After 2 months B joined him with some investments. At the end of the year the total profit was divided in the ratio 8:5. How much capital was invested by B?

A. Rs. 30,000 B. Rs. 28000 C. Rs. 24000 D. Rs. 19000

- Soln:
- using formula,
- $\frac{C_1 T_1}{C_2 T_2} = \frac{P_1}{P_2}$
- $\frac{32000 \times 12}{C_2 \times 10} = \frac{8}{5}$
- $C_2 = \text{Rs. } 24000$

Ans: C



Interest(Assignment)

Q. When annual compounding is done, a sum amounts to Rs 5000 in 6 years and 7200 in 8 years.
What is the int rate?

A. 10%

B. 15%

C. 20%

D. 25%

Soln

Let P be the principal & R the int rate

$$\rightarrow 5000 = P(1+R/100)^6 \dots\dots(1)$$

$$\rightarrow 7200 = P(1+R/100)^8 \dots\dots(2)$$

$$\rightarrow 36/25 = (1+R/100)^2$$

\rightarrow Taking square roots of both sides

$$\rightarrow 1+R/100 = 6/5$$

$$\rightarrow R/100 = 1/5$$

$$\rightarrow R = 20\%$$

Ans: C



Interest(Assignment)

Q. A sum fetched a total simple interest of Rs.7056 at the rate of 8 percent per year in 7 years. What is the sum?

A. Rs 12600

B) Rs 15120

C) Rs 10080

D) Rs 7560

Ans : A



Interest(Assignment)

Q. Find the compound interest on Rs. 15,625 for 9 months at 16% per annum compounded quarterly.

A. Rs. 1851

B. Rs. 1941

C. Rs. 1951

D. Rs. 1961

Ans: C



Interest(Assignment)

Q. What is the difference between the simple interest on a principal of Rs. 500 being calculated at 5% per annum for 3 years and 4% per annum for 4 years?

A.Rs. 5 B.Rs. 10 C.Rs. 20 D.Rs. 40 E. None of these

$$\begin{aligned} SI_1 &= P N_1 R_1 / 100 \\ &= \frac{500 \times 3 \times 5}{100} = \text{Rs. } 75 \end{aligned}$$

$$\begin{aligned} SI_2 &= P N_2 R_2 / 100 \\ &= \frac{500 \times 4 \times 4}{100} = \text{Rs. } 80 \end{aligned}$$

$$\text{Difference} = 80 - 75 = \text{Rs. } 5$$

OR

$$500 \Rightarrow 15\% \uparrow \Rightarrow 575 \text{ (1st case)}$$

$$500 \Rightarrow 16\% \uparrow \Rightarrow 580 \text{ (2nd case)}$$

$$\text{difference} = 580 - 575 = \text{Rs. } 5$$

Ans : A



Interest(Assignment)

Q. A sum of money placed at compound interest doubles itself in 4 years. In how many years will it amount to 8 times?

A. 9 years

B. 8 years

C. 27 years

D. 12 years

Ans: D



Interest(Assignment)

Q. Difference between Compound interest & simple interest on a sum placed at 20% per annum compounded annually for 2 years is Rs. 72. Find the sum.

A. Rs. 2400

B. Rs. 8400

C. Rs. 1800

D. Rs. 900

Ans : C



Interest(Assignment)

Q. What is the simple interest on a sum of Rs. 700 if the rate of interest for the first 3 years is 8% per annum and for the last 2 years is 7.5% per annum?

A.Rs. 269.5 B.Rs. 283 C.Rs. 273 D.Rs. 280 E. None of these

Ans: C



Interest(Assignment)

Q. Rs.2100 is lent at compound interest of 5% per annum for 2 years. Find the amount after two years.

- A.Rs. 2300
- B.Rs. 2315.25
- C.Rs. 2310
- D.Rs. 2320
- E. None of these

• **Soln:**

- $A = P (1 + R/100)^T$

- $A = 2100(1+5/100)^2$

- $A = 2100 \times [105/100]^2$

- $A = \frac{2100 \times 11025}{10000}$

- Amount, A=Rs.2315.25

- **Ans : B**



Interest(Assignment)

Q. A man borrowed total Rs 2500 at Simple interest from two money lenders. He paid interest at 12% p.a. to one and 14% p.a. to the other. The total interest paid for the year was Rs.326. How much did he borrow at 14%?

A. Rs 1000

B. Rs 1200

C. Rs 1300

D. Rs 1500

Soln:

Let, x = Principal at 12%

&

$2500 - x$ = Principal at 14%

$$\text{SI at Rs. } x = \frac{x \times 1 \times 12}{100} = \frac{12x}{100} = \frac{3x}{25}$$

$$\text{SI at Rs. } 2500 - x = \frac{2500 - x \times 1 \times 14}{100} = \frac{(2500 - x) \times 7}{50} = \frac{17500 - 7x}{50}$$

$$\text{SI at } x + \text{SI at } 2500 - x = 326$$

Substitute and solving the equation gives $x = \text{Rs. } 1200$

We need Principal at $2500 - x = 2500 - 1200 = \text{Rs. } 1300$

Ans: C



Interest(Assignment)

Q.A certain sum of money amounts to Rs. 704 in two years and Rs 800 in 5 years. Find the Principal.

A. Rs. 640

B. Rs. 600

C. Rs. 550

D. Rs. 450

Ans: A



Interest(Assignment)

Q. A started a business by investing Rs. 32000. After 4 months B joined him with some investments. At the end of the year the total profit was divided in the ratio 6:5. How much capital was invested by B?

A. Rs. 30,000

B. Rs. 28000

C. Rs. 40000

D. Rs. 19000

Ans: C



Interest(Assignment)

Q. Three persons started a partnership business with a capital of Rs. 3000. B invests Rs. 600 less than A and C invests Rs. 300 less than B. What is B's share in a profit of Rs. 886 ?

- A. Rs. 443
- B. Rs. 354.40
- C. Rs. 265.80
- D. Rs. 177.20

Ans: C



Interest(Assignment)

Q. What should be the simple interest obtained on an amount of Rs 5,760 at the rate of 6% p.a. after 3 years?

- A. Rs 1036.80
- B. Rs 1666.80
- C. Rs 1336.80
- D. Rs 1063.80
- E. None of these

Ans : A



Interest(Assignment)

Q. Anand and Deepak started a business investing Rs.22,500 and Rs.35,000 respectively. Out of a total profit of Rs. 13,800. Deepak's share is

A. Rs 9600

B. Rs 8500

C. Rs 8450

D. Rs 8400

Ans: D

Ratio of their shares-

= 22500 : 35000

= 9 : 14

Deepak's share = Rs.(13800×14/23)

= Rs. 8400



Interest(Assignment)

Q. A started a business with Rs. 21,000 and is joined afterwards by B with Rs. 36,000. After how many months did B join if the profits at the end of the year are divided equally?

A. 4

B. 5

C. 6

D. 7

Ans: B

- Capital of A = Rs. 21000
- Capital of B = Rs. 36000
- Ratio of P1:P2=1:1
- using formula,
- $\frac{C_1T_1}{C_2T_2} = \frac{P_1}{P_2}$
- In this type , the time period is 12 months i.e. one year
- $\frac{21000 \times 12}{36000 \times T_2} = \frac{1}{1}$
- $T_2 = 7$
- B would join business after $(12 - 7) = 5$ months



Interest(Assignment)

Q. A,B,C subscribes Rs. 50000 for a buisness. A subscribes Rs. 4000 more than B and B Rs. 5000 more than C. Out of a total profit of Rs. 35000, A receives :

- A. Rs. 8400
- B. Rs. 11900
- C. Rs. 13600
- D. Rs. 14700

Ans: D



Interest(Assignment)

Q. The simple interest on Rs.1820 from March 9, 2012 to May 21, 2012 at 7.5% rate will be

- A. Rs. 22.50
- B. Rs. 27.30
- C. Rs. 28.80
- D. Rs. 29

Ans: B



