

TOPIC- INTREST

1. Find the simple interest on Rs. 5200 for 2 years at 6% per annum.

5200 रुपये पर साधारण ब्याज ज्ञात करें 2 साल के लिए 6% प्रति वर्ष की दर से।

A. Rs. 450

B. Rs. 524

C. Rs. 600

D. Rs. 624

Answer: D. Rs. 624

Solution: P = Principal Amount

T = Time period

R = Rate of Interest

$$I = P \times T \times R / 100$$

$$I = 5200 \times 2 \times 6 / 100$$

$$I = 624.$$

2. Rs. 1200 is lent out at 5% per annum simple interest for 3 years. Find the amount after 3 years.

रु. 1200 को 3 साल के लिए 5% प्रति वर्ष साधारण ब्याज पर उधार दिया जाता है। 3 वर्ष बाद राशि ज्ञात कीजिए।

A. Rs. 1380

B. Rs. 1290

C. Rs. 1470

D. Rs. 1200

Answer: A. Rs. 1380

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Solution: $A=P+I$

$$A=1200+\frac{PTR}{100}$$

$$A=1200+\frac{1200 \times 5 \times 3}{100}$$

Amount, $A=\text{Rs.}1380$

3. Interest obtained on a sum of Rs. 5000 for 3 years is Rs. 1500. Find the rate percent.

रुपये की राशि पर प्राप्त ब्याज. 3 साल के लिए 5000 रु. 1500.
प्रतिशत दर ज्ञात कीजिए।

- A. 8%
- B. 9%
- C. 10%
- D. 11%

Answer: C. 10%

Solution: Let rate is $R\%$ We have, $I=\frac{PTR}{100}$

$$\text{Here, } 1500=\frac{5000 \times 3 \times R}{100}$$

Thus, $R=10\%$

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

रु. 2100 रुपये को 2 वर्ष के लिए 5% प्रति वर्ष के चक्रवृद्धि ब्याज पर उधार दिया गया है। दो वर्ष बाद राशि ज्ञात कीजिए।

- A. Rs. 2300
- B. Rs. 2315.25
- C. Rs. 2310
- D. Rs. 2320

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Answer: B .Rs. 2315.25

Solution: We can use formula of compound interest

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

$$A = 2100 \times \left[1 + \left(\frac{5}{100}\right)\right]^2$$

$$A = 2100 \times \left[1 + \frac{5}{100}\right]^2$$

$$A = 2100 \times 11025/10000$$

Hence, Amount A = Rs. 2315.25

5. Find the difference between the simple interest and the compound interest at 5% per annum for 2 years on principal of Rs. 2000.

2000 रुपये के मूलधन पर 2 वर्षों के लिए 5% प्रति वर्ष की दर से साधारण ब्याज और चक्रवृद्धि ब्याज के बीच अंतर ज्ञात करें।

A. 5

B. 10.5

C. 4.5

D. 5.5

Answer: A. 5

Solution: The difference between compound interest and simple interest over two years is given by $\frac{Pr^2}{100^2}$ or $P(r)^2$ Here ,

Principal (P) = Rs. 2000 Rate (r) = 5% Now difference,

$$D = 2000 \times 5 \times 5 / 100 \times 100 = Rs. 5$$

6. Find the rate of interest if the amount after 2 years of simple interest on a capital of Rs. 1200 is Rs.

यदि किसी पूंजी पर 2 वर्ष के बाद साधारण ब्याज की राशि रु. 1200 रुपये है.

- A. 8%
- B. 9%
- C. 10%
- D. 11%

Answer: C. 10%

Solution: Amount, A=Rs.1440

Principal , P=Rs.1200

Interest , I=Rs.(1440-1200)=240

$$R = \frac{240 \times 100}{1200 \times 2} = 10\%$$

Alternatively, We can go through a thought process i.e.

$$1200 \Rightarrow 20\% \uparrow (240 \text{ in } 2 \text{ years})$$

$$\Rightarrow 1400$$

That means 10% rise in each year

7. 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 ? 500 रुपये के मूलधन पर साधारण ब्याज के बीच अंतर क्या है? 5% की गणना 3 साल के लिए प्रति वर्ष और 4 साल के लिए 4% प्रति वर्ष की दर से की जा रही है?

- A. Rs. 5
- B. Rs. 10
- C. Rs. 20
- D. Rs. 40

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Answer: A. Rs. 5

Solution: $I1 = \frac{PT_1R_1}{100}$

$$I1 = 500 \times 3 \times 5 / 100$$

$$= \text{Rs. } 75$$

$$I2 = \frac{PT_2R_2}{100}$$

$$I2 = \frac{500 \times 4 \times 4}{100} = \text{Rs. } 80$$

$$\text{Difference} = 80 - 75$$

$$= \text{Rs. } 5$$

Alternatively

The interest is calculated simply and then it will have a rise of 15% in 1st case and 16% in 2nd case.

$$\text{Difference} = 1\% \text{ on } 500 = \text{Rs. } 5$$

Other way ,

$$500 \Rightarrow 15\%$$

↑

$$\Rightarrow 575 \text{ (1st case)}$$

$$500 \Rightarrow 16\%$$

↑

$$\Rightarrow 580 \text{ (2nd case)}$$

We can see clear difference of Rs. 5

8. 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?

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700 रुपये की राशि पर साधारण ब्याज क्या है? यदि पहले 3 वर्षों के लिए ब्याज दर 8% प्रति वर्ष है और अंतिम 2 वर्षों के लिए 7.5% प्रति वर्ष है?

A. Rs. 269.5

B. Rs. 283

C. Rs. 273

D. Rs. 280

Answer: C. Rs. 273

Solution: 1st case:

$$I_1 = \frac{700 \times 3 \times 8}{100}$$

$$= \text{Rs. } 168$$

2nd case:

$$I_2 = \frac{700 \times 2 \times 7.5}{100} = \text{Rs. } 105$$

Then total interest for five years

$$= (I_1 + I_2)$$

$$= \text{Rs. } 273$$

Alternatively,

As interest is calculated as simple interest

So, we can add up rates for all given 5 years and calculate it easily i.e.

For the five years rate

$$= (8 \times 3 + 7.5 \times 2)$$

$$= 39\%$$

Now,

$$700 = 39\%$$

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↑

⇒ 973

Interest = Rs. 273

The thought can go this way we internally calculated

$$10\% \text{ of } 700 = \frac{700}{10} = 70$$

$$\begin{aligned} \text{Then, } 39\% \text{ of } 700 &= (40\% - 1\%) \text{ of } 700 \\ &= (280 - 7) = 273 \end{aligned}$$

9 .Find the compound interest on Rs. 1000 at the rate of 20% per annum for 18 month when interest is compounded half yearly.

1000 रुपये पर चक्रवृद्धि ब्याज ज्ञात करें। 18 महीने के लिए 20% प्रति वर्ष की दर से, जब ब्याज अर्धवार्षिक रूप से संयोजित होता है।

A. Rs. 331

B. Rs. 1331

C. Rs. 320

D. Rs. 325

Answer: A. Rs. 331

Solution: Given , Principal , P=Rs.1000

Compound rate, R=20% per annum

$$= \frac{20}{2} = 10\% \text{ half - yearly Time} = 18 \text{ month} = 3 \text{ half - years Amount,}$$

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

$$= \{ 1000 \times [1 + (10/100)]^3 \} =$$

$$1000 \times 11 \times 11 \times 11 = 1331000$$

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A=Rs.1331 Hence,

Compound interest=Rs.331

10. Find the principal if the interest compounded at the rate of 10% per annum for two years is Rs. 420. यदि दो वर्षों के लिए 10% प्रति वर्ष की दर से चक्रवृद्धि ब्याज रु.420 है तो मूलधन ज्ञात कीजिए।

A. Rs. 1000

B. Rs. 2200

C. Rs. 2000

D. Rs. 1100

Answer: C. Rs. 2000

Solution: Given,

Compound rate, $R=10\%$ per annum

Time=2 years

CI=Rs.420

Let P be the required principal $A = (P+CI)$

Amount, $A = \left\{ P \times \left[1 + \left(\frac{R}{100} \right) \right]^n \right\}$

$(P+CI) = \left\{ P \times \left[\frac{1+10}{100} \right]^2 \right\}$

$(P+420) = P \times \left[\frac{11}{10} \right]^2$

$P - 1.21P = -420$

$0.21P = 420$

Hence, $P = 2000$

$0.21 = \text{Rs.} 2000$

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11. In what time will Rs. 3300 becomes Rs. 3399 at 6% per annum interest compounded half-yearly? कितने समय में मिलेंगे रु. 3300 रुपये हो गए. 3399 6% प्रति वर्ष अर्धवार्षिक चक्रवृद्धि ब्याज पर?

A. 6 months

B. 1 year

C. 112 years

D. 3 months

Answer : A. 6 months

Solution: $P = \text{Rs. } 3300$

$A = \text{Rs. } 3399$

$R = 6\%$ per annum Let the time be n years. Compound interest is

taken half yearly. $A = P \times \left[1 + \left(\frac{R}{2} \times 100\right)\right]^{2n}$

$$3399 = 3300 \left(1 + \frac{3}{100}\right)^{2n}$$

$$(1.03)^{2n} = \frac{3399}{3300}$$

$$(1.03)^{2n} = (1.03)^1 \text{ Thus, } 2n = 1 \text{ year}$$

$$n = 12 \text{ year} = 6 \text{ months}$$

12. Rahul purchased a Maruti van for Rs. 1, 96,000 and the rate of depreciation is 1427% per annum. Find the value of the van after two years.

राहुल ने रु. 1,96,000 में एक मारुति वैन खरीदी और मूल्यहास की दर है 1427% प्रति वर्ष। दो वर्ष बाद वैन का मूल्य ज्ञात कीजिये।

A. Rs. 1,40,000

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B. Rs.1,44,000

C. Rs. 1,50,000

D. Rs. 1,60,000

Answer:B. Rs.1,44,000

Solution: Value of maruti Van, $V_0 = \text{Rs.} 196000$ Rate of depreciation,

$$R = 14\frac{2}{7}\% = \frac{100}{7}\%;$$

Time, $t = 2$ years Let V_1 is the value after

depreciation. $V_1 = V_0 \times [1 - (\frac{r}{100})]^t$

$$V_1 = 196000 \times [1 - (\frac{\frac{100}{7}}{100})]^2$$

$$V_1 = 196000 \times (\frac{6}{7})^2$$

$$V_1 = \frac{(196000 \times 36)}{49}$$

$$V_1 = \text{Rs.} 144000$$

13. What is the rate of simple interest for the first 4 years if the sum of Rs. 360 becomes Rs. 540 in 9 years and the rate of interest for the last 5 years is 6%?

यदि राशि रु. 360 पर है तो पहले 4 वर्षों के लिए साधारण ब्याज की दर क्या है? 9 वर्षों में 540 रुपये हो गए और पिछले 5 वर्षों के लिए ब्याज दर 6% है?

A. 4%

B. 5%

C. 3%

D. 6%

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Answer: B. 5%

Solution: Interest for the last 5 years $= \frac{PTR}{100}$

$= 360 \times 5 \times 6100 = \text{Rs. } 108$ Interest

for year $= 540 - 360 = 180$ So, interest for first four

years $= 180 - 108 = \text{Rs. } 72$; Now, rate for first four

years $= \frac{72 \times 100}{360 \times 4} = 5\%$

14. What will be the simple interest on Rs. 700 at 9% per annum for the period from February 5, 1994 to April 18, 1994? 700 रुपये पर साधारण ब्याज क्या होगा? 5 फरवरी 1994 से 18 अप्रैल 1994 तक की अवधि के लिए पर 9% प्रति वर्ष की दर से?

A. Rs. 12.60

B. Rs. 11.30

C. Rs. 15

D. Rs. 13

Answer: A. Rs. 12.60

Solution: Here, time interval is given as February 5, 1994 to April 18, 1994 $= 73$ days $= \frac{73}{365} = 0.2$ years. Now

interest $= \frac{PTR}{100} = \frac{700 \times 9 \times 0.2}{100} = \text{Rs. } 12.60$

15. Asif borrows Rs. 1500 from two moneylenders. He pays interest at the rate of 12% per annum for one loan and at the rate of 14% per annum for the other. The total interest he pays for the entire year is Rs. 186. How much does he borrow at the rate of आसिफ़ ने रुपये उधार लिए दो

साहूकारों से 1500 रु. वह एक ऋण के लिए 12% प्रति वर्ष की दर से और दूसरे के लिए 14% प्रति वर्ष की दर से ब्याज देता है। पूरे वर्ष के लिए वह कुल ब्याज रु. 186. वह 12% की दर पर कितना उधार लेता है

A. Rs. 1200

B. Rs.1300

C. Rs. 1400

D. Rs. 300

Answer:A. Rs. 1200

Solution:Let Asif lent Rs. X at 14% per year.

Hence, Money lent at 12% = (1500 - x);

Given, total interest = Rs. 186

$$(x \times 14 \times 1)100 + \frac{[(1500 - x) \times 12 \times 1]}{100}$$

$$= 186$$

$$\frac{14x}{100} + \frac{18000 - 12x}{100} = 186$$

$$14x + 18000 - 12x = 186 \times 100$$

$$2x = 18600 - 18000$$

$$x = \frac{600}{2}$$

$$= \text{Rs. } 300$$

Hence, money lent at 12% = 1500 - 300

$$= \text{Rs. } 1200$$

16.A sum was invested at simple interest at a certain interest for 2 years. It would have fetched Rs. 60 more had it been invested at 2% higher rate. What was the sum? एक

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राशि को 2 वर्षों के लिए एक निश्चित ब्याज पर साधारण ब्याज पर निवेश किया गया था। इससे रुपये मिलते. यदि इसे 2% अधिक दर पर निवेश किया जाता तो 60 रु. अधिक मिलते। योग कितना था?

A. Rs. 1500

B. Rs. 1300

C. Rs. 2500

D. Rs. 1000

Answer:A. Rs. 1500

Solution:Let the rate be R at which Principal P is invested for 2 years.

According to question,

{Interest at Rate (R + 2)}% - (interest at rate R%) = Rs. 60

$\frac{(P \times 2 \times (R+2))}{100}$

$$\frac{(P \times 2 \times R)}{100}$$

=60

$$\frac{2PR+4P-2PR}{100}=60$$

4P=60×100 Or,

$$P=\frac{60 \times 100}{4}$$

Hence, P=Rs.1500

17.The difference between simple and compound interest on a sum of money at 20% per annum for 3 years is Rs. 48.

What is the sum? किसी धनराशि पर 3 वर्ष के लिए 20%

वार्षिक ब्याज की दर से साधारण और चक्रवृद्धि ब्याज के बीच का अंतर रु. 48. योग कितना है?

- A. Rs. 550
- B. Rs. 500
- C. Rs. 375
- D. Rs. 400

Answer: C. Rs. 375

Solution: Let sum is P. The difference between compound interest and simple interest over three years is given by

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

$$48 = P \times \left(\frac{20}{100} \right)^2 \times \left\{ \left(\frac{20}{100} \right) + 3 \right\}$$

$$48 = P \times \frac{4}{100} \times 165$$

$$= P \times 64500 \text{ Or,}$$

$$64P = 48 \times 500$$

$$\text{Hence, } P = \text{Rs. } 375$$

18. In what time will the simple interest on Rs. 1750 at 9% per annum be the same as that on Rs. 2500 at 10.5% per annum in 4 years? कितने समय में रुपये पर साधारण ब्याज मिलेगा? 1750 पर 9% प्रति वर्ष की दर से वही होगी जो रु. 10.5% प्रति वर्ष की दर से 4 साल में 2500 रु.

- A. 6 years and 8 months
- B. 7 years and 3 months
- C. 6 years
- D. 7 years and 6 months

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Answer: A. 6 years and 8 months

Solution: Let time is T years .According to question $\frac{1750 \times 9 \times T}{100}$

$$=(2500 \times 10.5 \times 4)100$$

$$\text{Or, } T = 2500 \times 10.5 \times 4 \div 1750 \times 9$$

$$\text{Or, } T = 6.66 = 6 \text{ years and } 8 \text{ months}$$

19. Raju lent Rs. 400 to Ajay for 2 years and Rs. 100 to Manoj for 4 years and received together from both Rs. 60 as interest. Find the rate of interest, simple interest being calculated. राजुलेंट रु. अजय को 2 साल के लिए 400 रु. 4 वर्षों के लिए मनोज को 100 रु और दोनों को मिलाकर रु. ब्याज के रूप में 60 रु. ब्याज की दर ज्ञात कीजिए, साधारण ब्याज की गणना की जा रही है।

A. 5%

B. 6%

C. 8%

D. 9%

Answer: A. 5%

Solution: Let rate is R % According to the

$$\text{question, } \left[\frac{400 \times 2 \times R}{100} \right] + \left[\frac{100 \times 4 \times R}{100} \right] = 60$$

$$8R + 4R = 60$$

$$\text{Hence, } R = 5\%$$

20. A sum becomes 4 times at simple interest in 10 years.

What is the rate of interest? एक राशि साधारण ब्याज पर 10 वर्षों में 4 गुना हो जाती है। ब्याज दर क्या है?

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A. 10%

B. 20%

C. 30%

D. 40%

Answer:C. 30%

Solution: 1st Method:

Let rate is R% Now ,P=100,

A=400,

I=400-100=300,

Time ,T=10years

$$I = \frac{PTR}{100} \text{ Or, } R = \frac{100 \times I \text{ Or } PT}{PT},$$

$$R = \frac{100 \times 300}{100 \times 10}$$

Hence, R=30%

2nd Method :

Here, the sum become 4 times that means 100, become 400.

Rate of such question is given by

$$R = \text{interest time} = \frac{300}{10} = 30\%$$

3rd Method :

Here, 300% of rise in the sum so

100 — 300% ↑ — 400; R = total percentage rise given
time = 300% 10 = 30%

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

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times? चक्रवृद्धि ब्याज पर रखी गई एक धनराशि 4 वर्षों में दोगुनी हो जाती है। कितने वर्षों में यह राशि 8 गुना हो जाएगी?

- A. 9 years
- B. 8 years
- C. 27 years
- D. 12 years

Answer:D. 12 years

Solution:Let,

Principal=Rs.100

Amount=Rs.200 Rate=r% Time=4years

Now, $A = P \times [1 + (r/100)]^n$

$$200 = 100 \times [1 + (\frac{r}{100})]^4$$

$$2 = [1 + (\frac{r}{100})]^4 \text{---(i)}$$

If sum become 8 times in the time n years then, $8 = (1 + (\frac{r}{100}))^n$

$$2^3 = (1 + (\frac{r}{100}))^n \text{---(ii)}$$

Using eqn (i) in (ii), we get $([1 + (\frac{r}{100})]^4)^3$

$$= (1 + (\frac{r}{100}))^n$$

$$[1 + (\frac{r}{100})]^{12} = (1 + (\frac{r}{100}))^n$$

Thus, $n = 12$ years.

22. Divide Rs. 6000 into two parts so that simple interest on the first part for 2 years at 6% p.a. may be equal to the simple interest on the second part for 3 years at 8% p.a.

रुपये बांटो. 6000 को दो भागों में बांटा गया ताकि पहले भाग पर

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2 वर्षों के लिए 6% प्रति वर्ष की दर से साधारण ब्याज प्राप्त हो। दूसरे भाग पर 3 वर्ष के लिए 8% प्रति वर्ष की दर से साधारण ब्याज के बराबर हो सकता है।

- A. Rs. 4000, Rs. 2000
- B. Rs. 5000, Rs. 1000
- C. Rs. 3000, Rs. 3000
- D. None of these

Answer: A. Rs. 4000, Rs. 2000

Solution: Let 1st part is x and 2nd part is (6000-x) According to question, $\frac{x \times 2 \times 6}{100} = \frac{(6000-x) \times 3 \times 8}{100}$

$$12x = 144000 - 24x$$

$$\text{Or, } 36x = 144000$$

$$\text{Or, } x = \frac{144000}{36}$$

$$= \text{Rs. } 4000$$

1st part

$$= \text{Rs. } 4000$$

$$2^{\text{nd}} \text{ part} = \text{Rs. } 2000$$

23. A sum of money becomes 74 of itself in 6 years at a certain rate of simple interest. Find the rate of interest.

साधारण ब्याज की एक निश्चित दर पर एक धनराशि 6 वर्षों में 74% हो जाती है। ब्याज दर ज्ञात कीजिये।

- A. 12%
- B. $12\frac{1}{2}\%$
- C. 8%

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D. 14%

Answer: B. $12\frac{1}{2}\%$

Solution: Let sum is Rs. 100, Then it become 74 times

i.e. Rs. $\frac{700}{4}$ in 6 years .

Interest = $\frac{700}{4} - 100 = \text{Rs. } \frac{300}{4}$ Hence, Rate = $\frac{\text{total intrest}}{\text{Given time}} = \frac{300}{4} \times 6 = 12\frac{1}{2}\%$

24. If a certain sum of money becomes doubles at simple interest in 12 years, what would be the rate of interest per annum? यदि एक निश्चित धनराशि साधारण ब्याज पर 12 वर्षों में दोगुनी हो जाती है, तो वार्षिक ब्याज दर क्या होगी?

A. $8\frac{1}{3}$

B. 10

C. 12

D. 14

Answer: A. $8\frac{1}{3}$

Solution: Let,

Principal, P = Rs. 100;

Amount, A = Rs. 200;

Time = 12 years;

Interest = Rs. 100;

Rate of interest

$$= \frac{\text{TOTAL INTREST}}{\text{Given Time}} = \frac{100}{12} = 8\frac{1}{3}\%$$

25. If a sum of Rs. 13040 is to be repaid in two equal installments at $3\frac{3}{4}\%$ per annum, what is the amount of

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each installment? यदि रु. 13040 रुपये को दो समान किश्तों में 33/4% प्रति वर्ष की दर से चुकाया जाना है, प्रत्येक किस्त की राशि क्या है?

- A. 7045
- B. 8000
- C. 65067
- D. 6889

Answer:D. 6889

Solution:Let each instalment be P Hence, $x\left(\frac{100}{100+r}\right)+\left(\frac{100}{100+r}\right)^2$
Or, $\frac{x}{1+15400}+x/(1+(15400))^2=Rs.13040$ On solving, it gives
 $x=Rs.6889$

26.What is the amount of equal installment, if a sum of Rs. 1428 due 2 years hence has to be completely repaid in 2 equal annual installments starting next year?. समान स्थापना की राशि क्या है, यदि राशि रु. 2 वर्ष बाद देय 1428 रुपये को अगले वर्ष से शुरू होने वाली 2 समान वार्षिक किश्तों में पूरी तरह से चुकाया जाना होगा।

- A. 700
- B. 800
- C. 650
- D. cannot be determined

Answer: D. cannot be determined

Solution:As short - cut of installment for 2 installments is given by

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$$\text{Instalment} = P\left(\frac{100}{100+R}\right) + (100/(100 + R))^2$$

There is the need of rate (R) which is unavailable in the question.

so, we cannot determine the answer

27. A milkman sells cow milk at the rate of Rs. 55 litre including a profit 12 per cent. He also sells buffalo milk at the rate of Rs. 36 per litre including a profit of 20%. How much profit will he earn in five days if he sells 8 litres of cow milk and 10 litres of buffalo milk per day?

एक दूधवाला गाय का दूध रुपये की दर से बेचता है। 12 प्रतिशत लाभ सहित 55 लीटर। वह भैंस का दूध भी रुपये की दर से बेचते हैं। 20% लाभ सहित 36 प्रति लीटर। यदि वह प्रतिदिन 8 लीटर गाय का दूध और 10 लीटर भैंस का दूध बेचता है तो पांच दिनों में कितना लाभ कमाएगा?

- A. Rs. 632
- B. Rs. 624
- C. Rs. 646
- D. Rs. 642
- E. None of these

Answer: Option E

Solution: Total cow milk sold in five days = $5 \times 8 = 40$ litres

Total buffalo milk sold in five days = $5 \times 10 = 50$ litres Hence, SP of 40 litres cow milk = $40 \times 55 = \text{Rs. } 2200$ Hence, Profit on cow

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$$\text{milk} = \frac{2200 \times 12}{112} = \text{Rs.} 235.71 \text{ Profit on buffalo milk}$$

$$= 50 \times 36 \times 20120 = \text{Rs.} 300$$

$$\text{Thus, Total Profit} = 235.71 + 300 = \text{Rs.} 535.71$$

28. The population of vultures in a particular locality is decreases by certain rate of interest (compounded annually). If the current population of vultures be 29160 and the ratio of decrease in population for second year and 3rd year be 10 : 9. What was the population of vultures 3 years ago? किसी विशेष इलाके में गिद्धों की आबादी एक निश्चित ब्याज दर (वार्षिक रूप से चक्रवृद्धि) से कम हो जाती है। यदि गिद्धों की वर्तमान जनसंख्या 29160 है और दूसरे वर्ष और तीसरे वर्ष जनसंख्या में कमी का अनुपात 10:9 है। 3 वर्ष पहले गिद्धों की जनसंख्या कितनी थी?

A. 30000

B. 35000

C. 40000

D. 50000

Answer: C. 40000

Solution: Decrease in second year Decrease in third

$$\text{year} = \frac{100}{(100-r)} = \frac{10}{9} \rightarrow r = 10\%$$

Let the population of vultures 3 years ago be P, then

$$P \times \left[1 - \left(\frac{10}{100}\right)\right]^3 = 29160 \rightarrow P = 40000$$

29. A man had 1000 hens at the beginning of year 2001 and the number of hens each year increases by 10% by giving

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birth. At the end of each year we double the no. of hens by purchasing the same no. of hens as there is the no. of hens with us at the time. What is the no. of hens at the beginning of 2004? वर्ष 2001 की शुरुआत में एक आदमी के पास 1000 मुर्गियाँ थीं और हर साल बच्चे देने से मुर्गियों की संख्या 10% बढ़ जाती है। प्रत्येक वर्ष के अंत में हम संख्या दोगुनी कर देते हैं। समान संख्या में मुर्गियाँ खरीदकर। मुर्गियों की संख्या जितनी है। उस समय हमारे साथ मुर्गियाँ थीं। क्या नहीं है? 2004 की शुरुआत में मुर्गियों की?

- A. 10600
- B. 10648
- C. 8848
- D. 8226

Answer: Option B

Solution: $1000 \Rightarrow 10\% \uparrow \Rightarrow 1100 \Rightarrow \text{Double} \Rightarrow 2200 \Rightarrow 10\% \uparrow \Rightarrow 2420 \Rightarrow \text{Double} \Rightarrow 4840 \Rightarrow 10\% \uparrow \Rightarrow 5324 \Rightarrow \text{Double} \Rightarrow 10648$

30. The difference between simple and compound interest for the fourth year is Rs. 7280 at 20% p.a. What is the principal sum?

चौथे वर्ष के लिए साधारण और चक्रवृद्धि ब्याज के बीच का अंतर रु. 7280 20% प्रतिवर्ष पर। मूल राशि क्या है?

- A. 10000
- B. 50000
- C. 70000

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D. 40000

Answer: B. 50000

Solution: Difference between Compound interest and Simple interest for the fourth year is Rs. 7280

$$P\left(\frac{6}{5}\right)^3(15) - \frac{P}{5}$$

$$= 7280$$

$$P/5[(65)^3 - 1]$$

$$= 7280$$

$$\frac{P}{5} \left[\frac{216}{125} - 1 \right]$$

$$= 7280$$

$$\frac{P}{5} \times \frac{91}{125} = 7280$$

$$\therefore P = 50000$$

