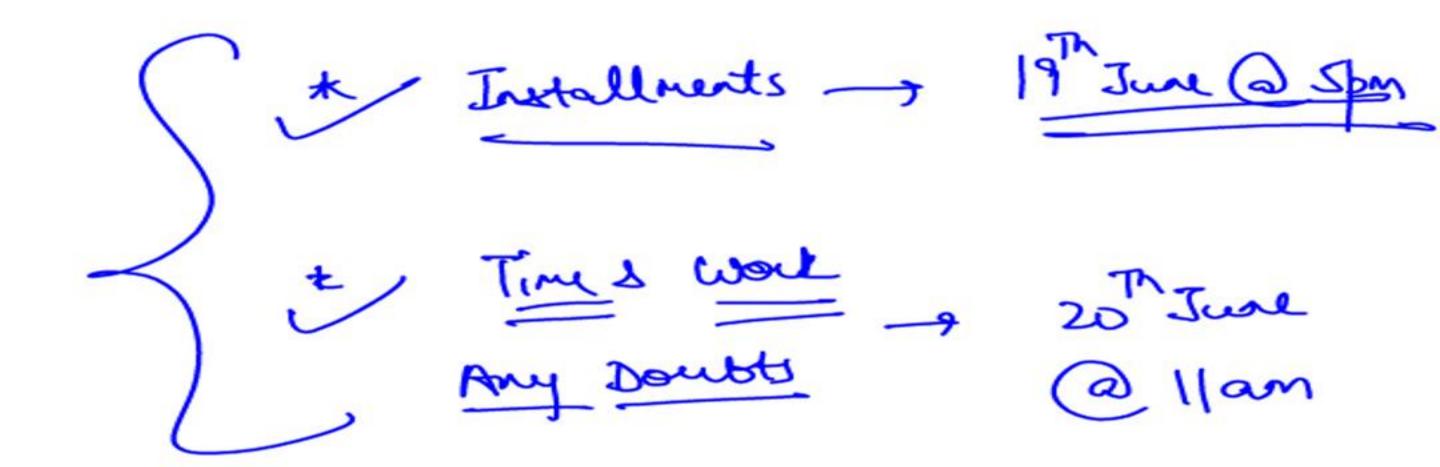




Sahi Prep Hai Toh Life Set Hai

INSTALLMENTS







Simple Interest

[Justall ments -> 5:50-5:55 pm

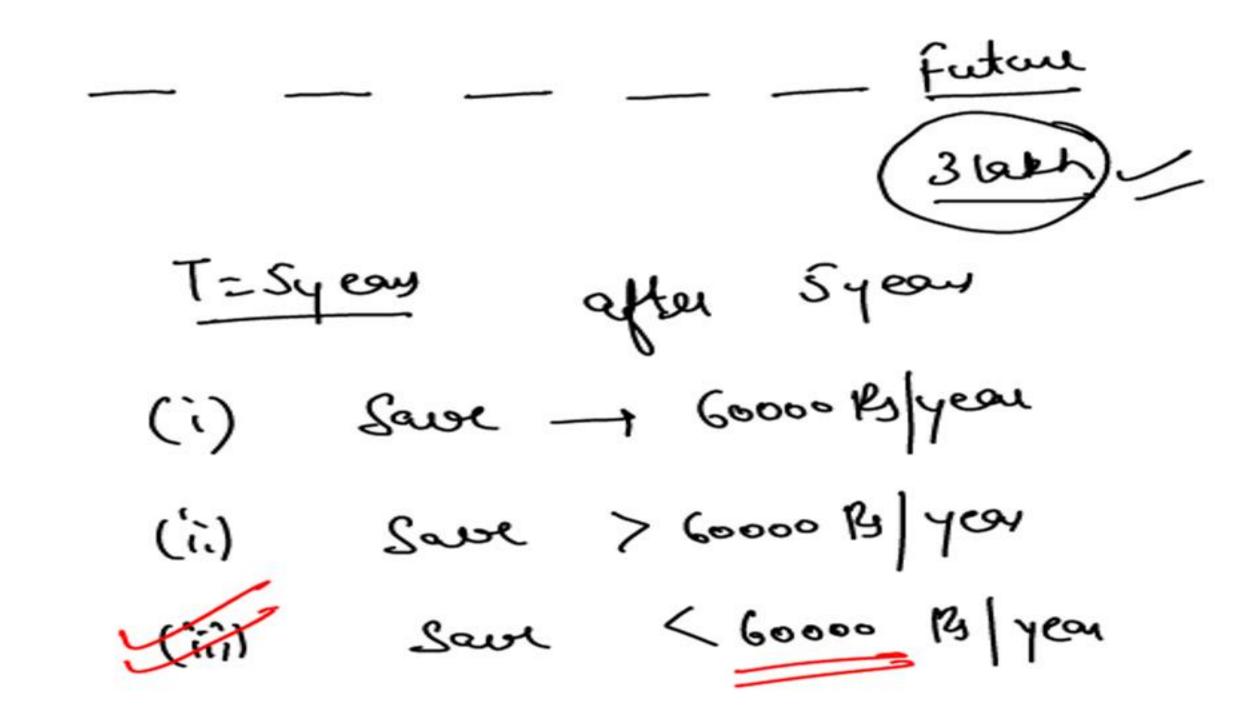
Compound Interest

Installment -> 6:40=6:45

Installment



Installments questions based on Simple Interest





CONCEPT

R = 5% p.a.

(Installment is given at the end of every year)*



The annual installment that will discharge a debt of Rs. A due in n years at r% p.a. simple interest.



R-5/ A-6450 Eg. The annual installment that will discharge a debt of Rs. 6450 due in 4 years at 5% p.a. simple interest.

Detailed at the east of I - 6750 (00



Examples:

(i)
$$n=4$$

$$\sqrt{(ii)}$$
 n = 3

$$(iv) n = 4$$



Other Examples:

(i)
$$n = 5$$

$$R = 3\% p.a.$$

$$R = 8\% \text{ p.a.}$$

(iv)
$$n = 7$$

$$R = 2\% p.a.$$

(v)
$$n = 8$$

$$R = 3\% p.a.$$



Q1. What annual installment will discharge a debt of Rs. 1740 due in 5 years at 8% simple interest.





Q2. What annual installment will discharge a debt of Rs. 848 due in 4 years at 4% simple interest.

(a) Rs. 212

(c) Rs. 250

with the help of option

848 - 212

4 212





Q3. What annual installment will discharge a debt of Rs. 13260 due in 4 years at 7% simple interest.

(a) Rs. 2700

(b) Rs. 3000

(c) Rs. 3300

(d) Rs. 3450





Q4. What quarterly installment will discharge a debt of Rs. 19,080 due in 1 year at 16% p.a.?

Installment period -> Ouarterly

every3math N = 4 S = 4% installment

424% of I = 19080 I = 19080 × 100 424 I = 4500 B





Q5. What quarterly payment will discharge a debt of Rs. 2120 in one year at 16% per annum simple interest?

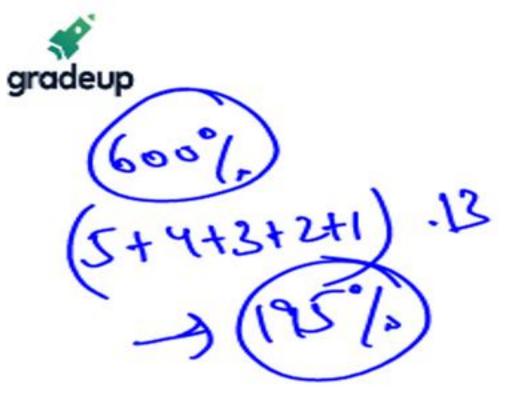
(a) Rs. 450

(b) Rs. 400

(c) Rs. 600

(d) Rs. 500





N=6

Q6. What annual installment will discharge a debt of Rs. 33390 due in 6 years at 13% simple interest.

(a) 3800

(b) 4000

(c) 4200

(d) 4400





Q7. The annual payment of Rs. 90 in 5 years at 4% per annum simple interest will discharge a debt of

(a) Rs. 450

(c) Rs. 500

(b) Rs. 486

(d) Rs. 530





Mobile Phone

- I. Cash: Rs. 18,000
- II. Down Payment:

Rs. 6,000 & six monthly installments of Rs.2400 each.

Find r??

(If nothing is given by default rate of interest p.a.)



1st Approach

(18000) cash

×

6000 DP

2400 x 6 monthly netall

en steel interest month.

12000 + 12000 · ot · 6

(600+ 15.9)%. of 2400

12000+ 720 x= 14400 + 360 x

3602 = 2400

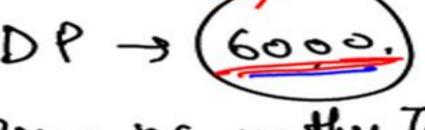
23864 3364

Rate of interest -



2nd Approach





2400 ×6 mothy Int



Let in rating interest

880+ 884.31.6 =
$$(600 + 15.3)$$
 16. Find the rate of simple interest.

880+528× = 960+24×

36

Q8. A watch is available at Rs. 1200 cash payment for sale. A man purchase that watch for Rs. 320 on down payment and installment of Rs. 160 of each month for 6 months. Find the rate of simple interest.

(a)
$$66\frac{2}{3}\%$$
 (b) 20%

 $\frac{23\frac{1}{3}\%}{3}$ (d) 25%

$$R = \frac{100}{3} \times 1^{2}$$

$$= \frac{33}{33} \frac{1}{3} \frac{3}{3}$$







2-1 rate of 1 terest month

Q9. A computer is available for Rs. 39000 cash or Rs. 17000 as cash down payment followed by five monthly installments of Rs. 4800 each. What is the rate of interest under the installment plan?



39000

Q

1300 DP (1800) X 5 modelly 24000







Q10. An article is available for Rs. 2500 cash or Rs. 520 cash down payments followed by 4 equal monthly installments. If the rate of interest is 25% per annum, calculate the monthly installment?

(a) Rs. 520

(b) Rs. 480

(c) Rs. 485

(d) Rs. 500







Loan Art = 10

nnothly 1 By north

Q11. A sum of Rs. 10 is lent to be returned in 11 equal monthly installments of Rs. 1. What is the rate of simple interest per annum.

(a)
$$9\frac{1}{11}$$
 %

(d)
$$21\frac{9}{11}\%$$

(b) 10%









Installments questions based on Compound Interest

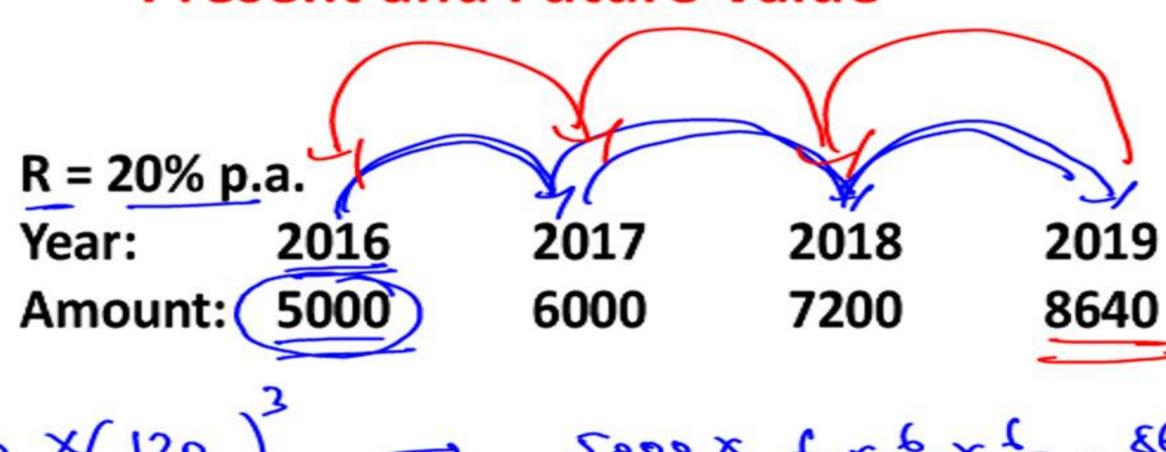
Today

6 lakh

(i) = 2,00,000 7209000 (ii) < 2,00,000



Present and Future Value





2016

2017

2018

2019

1 R%

after 19 years

X (100+R)

n years ago 700 / (100)



Rs. A is to be paid back in n equal annual installments of Rs. I each and the rate of interest is r% p.a. Here,

A = Present value of your loan

I = Value of each installment

r = Rate of interest p.a.

n = No. of installments



$$A = \mathbf{I} \left[\frac{100}{100 + r} \right]^{1} + \left(\frac{100}{100 + r} \right)^{2} + \dots + \left(\frac{100}{100 + r} \right)^{n} \right]$$

Here,

A = Present value of your loan

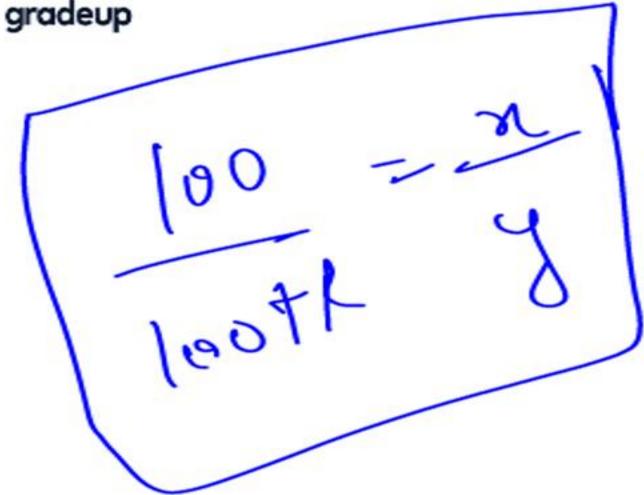
I = Value of each installment

r = Rate of interest p.a.

n = No. of installments







Let,
$$\frac{100}{100+r} = \frac{x}{y}$$
 [x < y]

$$I\left[\left(\frac{x}{y}\right)^{1} + \left(\frac{x}{y}\right)^{2} + \left(\frac{x}{y}\right)^{3} + \dots + \left(\frac{x}{y}\right)^{n}\right] = A$$

2 Installments:

$$I\left[\frac{x}{y} + \left(\frac{x}{y}\right)^2\right] = A$$

$$I \cdot \frac{x}{y} \left[1 + \frac{x}{y} \right] = A$$

$$\left| \frac{\mathbf{I} \cdot \frac{x}{y}}{y} \right| \frac{x+y}{y} \right| = A$$



For 2 installments (If I and r are same)

$$\mathbf{A} = \mathbf{I} \cdot \frac{\mathbf{x}}{\mathbf{y}} \left[\frac{\mathbf{x} + \mathbf{y}}{\mathbf{y}} \right]$$

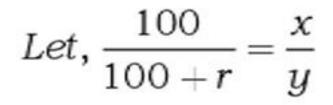


For 3 installments (If I and r are same)

$$A = 1 \cdot \frac{x}{y} \left[\frac{x^2 + xy + y^2}{y^2} \right]$$







x/y
10/11
5/6
10/13
5/7

r	х/у
5% 1/20	20/21
15% 3/20	20/23
25% 1/	4/5
19	

r	х/у
4% /25	25/26
8% 7/15	25/27
12%3/25	25/28
16% %	25/29
76	



$$Let, \frac{100}{100+r} = \frac{x}{y}$$

r	х/у
$12\frac{1}{2}\%$ $\frac{1}{8}$	8 9
$14\frac{2}{7}\%$ $\frac{1}{7}$	7 8
$16\frac{2}{3}\%$ $\frac{1}{6}$	<u>6</u> 7
11 1/9 /9	9 10



$$I\left(\frac{100}{100+R}\right) + \left(\frac{100}{100+R}\right) + --- \left(\frac{100}{100+R}\right)^{4} - A$$

3host

$$I\left(\frac{100}{100+1}\right) + \left(\frac{100}{100+1}\right) = 2100$$

Q1. A sum of Rs. 2100 is to be paid back in (2 equal annual installments. How much is each installment if the interest is compounded annually at 10% per annum?

~(a) Rs. 1210

(b) Rs. 1240





Q2. A sum of Rs. 25500 is to be paid back in 2 equal annual installments. How much is each installment if the interest is compounded annually at 4% per annum?

(a) Rs. 13530

(b) Rs. 13570

(c) Rs. 13510





$$I = 2809 \qquad N = 2$$

$$R = 6^{\circ} (-\frac{16^{3}}{100050}) \qquad \frac{21-350}{31-353}$$

$$I \cdot 2 \cdot 24 - A$$

$$Y = A$$

Q3. A sum is to be paid back in 2 equal annual installments. The interest is compounded annually at 6% per annum. If each installment be Rs. 2809 then what is the sum?

(a) Rs. 5100

(b) Rs. 5140

(c) Rs. 5130





Q4. A sum of Rs. 45500 is to be paid back in 3 equal annual installments. How much is each installment if the interest is compounded annually at 20% per annum?

(a) Rs. 21600 (b) Rs. 21700 (c) Rs. 21800 (d) Rs. 21900





I. 24 (420+44) - 18224 (a) Rs. 9361

I= 9261

Q5. A sum of Rs. 25220 is to be paid 5% $\left(\frac{1}{2}\right)$ $\frac{1}{2}$ back in 3 equal annual installments. How much is each installment if the interest is compounded annually at 5% per annum?

(c) Rs. 9621





Q6. A sum of Rs. 52725 is to be $R=12^{2}/4$ $\left(\frac{3}{26}\right)^{\frac{1}{28}}$ paid back in 3 equal annual installments. How much is each installment if the interest is compounded annually at 12% per

(b) Rs. 21592



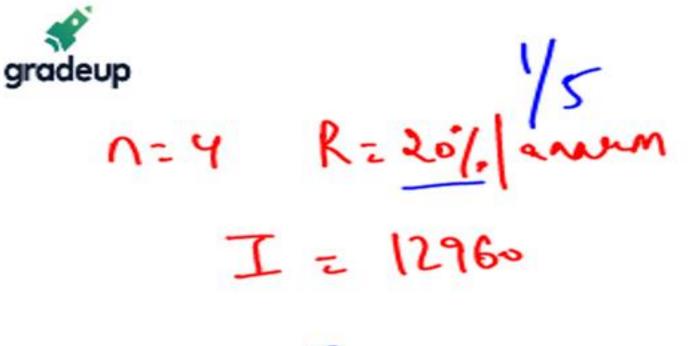


Q7. A sum is to be paid back in 3 equal annual installments. The interest is compounded annually at 30% per annum. If each installment be Rs. 21970 then what is the sum?

(a) Rs. 39800 (b) Rs. 39900

(c) Rs. 39950 (d) Rs. 39990





25

Q8. A sum is to be paid back in 4 equal annual installments. The interest is compounded annually at 20% per annum. If each installment be Rs. 12960 then what is the sum?

(a) Rs. 34400 (b) Rs. 35400

(c) Rs. 34500 (d) Rs. 33550

$$I\left(\frac{\pi}{3}\right)^{4} + \left(\frac{\pi}{3}\right)^{3} + \left(\frac{\pi}{3}\right)^{3} + \left(\frac{\pi}{3}\right)^{3} - A$$

$$12960 \cdot \frac{\pi}{6} \cdot \left[1 + \frac{\pi}{6} + \frac{25}{36} + \frac{125}{216}\right] = A$$

$$10 \quad 12960 \cdot \frac{\pi}{6} \cdot \left[\frac{216 + 180 + 150 + 126}{216}\right] = \frac{216}{3550}$$

$$50 \times 671 = 33550$$



Q9. Neeraj took Rs. 6800 as a loan which along with interest is to be repaid in two equal annual installments. If the rate of interest is 12½% compounded annually, then the value of each installment is:

- (a) Rs. 8100
- (b) Rs. 4150
- (c) Rs. 4050
- (d) Rs. 4000

PYQ & SSC





R- 83% - 387 7 - 80 400 80 7 87 T-84-167 - 1336 (c) Rs. 7009 (d) Rs. 7500 I= 87 756)

Q10. A sum of Rs. 13360 was borrowed at 83/8 p.a. compound interest and paid back in two years in two equal annual installments. What was the amount of each installment?

355 D & 226



2'install weats - each of 16224 B

52424. 25. 51 26 26

Q11. A man buys a scooter on down payment of Rs. 16224 and two more yearly installments of equivalent amount in next two years. If the rate of interest is 4% per annum, compounded yearly, the cash value of the scooter, is:

- (a) Rs. 40000 HS Rs. 46824
- (c) Rs. 46000 (d) Rs. 50000

Pya & ssc

Cash value of scoote





Q12. Subhash purchased a refrigerator on the terms that he is required to pay Rs. 1500 cash down payment followed by Rs. 1020 at then end of first year, Rs. 1500 cash down payment followed Rs. 1003 at the end of second year and Rs. 990 at the end of third year. Interest is charged at the rate of 10%



gradeup Ans. (b) 9





Sahi Prep Hai Toh Life Set Hai

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