Simple and Compound Interest

Pinky invested an amount of Rs. 24500 at the rate of 9% per annum. After how many years will she get a simple interest of Rs. 37485 ?

A) 13 years
B) 15 years
C) 17 years
D) 19 years
E) None of these

$P = 24500$

$R = 9\%$

$T = ?$

$SI = 37485$

$$T = \frac{SI \times 100}{P \times R} = \frac{37485 \times 100}{24500 \times 9} = 17$$

Anoop borrowed Rs. 800 at 6 % p.a. & Rs. 1200 at 7 % p.a. for the same duration. He had to pay Rs. 1584 in all as interest. Find the time period.

a) 10 years
b) 11 years
c) 12 years
d) 13 years
e) 15 years

800 @ 6% → 48

1200 @ 7% → 84

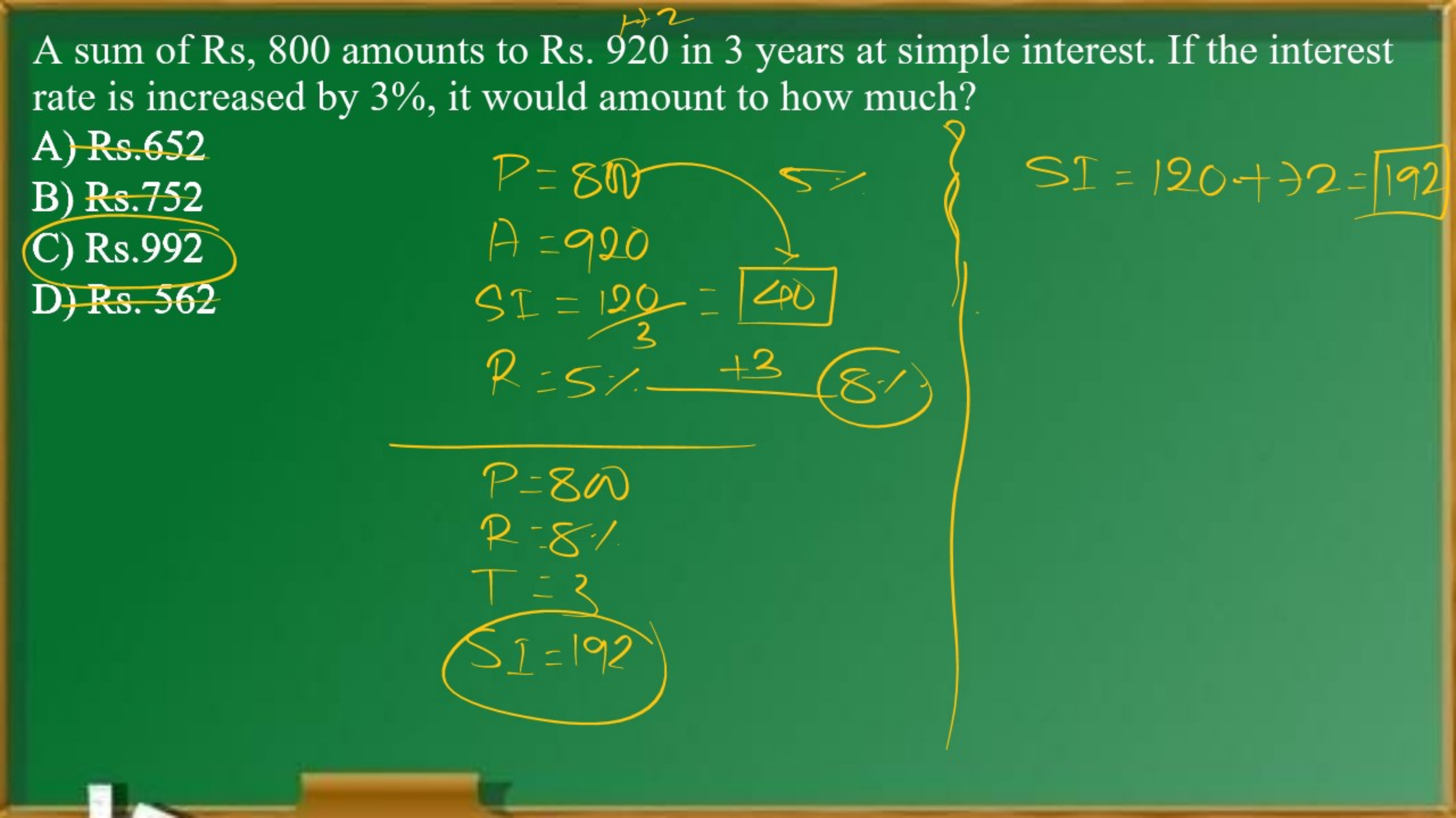
48 + 84 = 132

132 × 12 = 1584

T = 12 years

A sum of Rs, 800 amounts to Rs. 920 in 3 years at simple interest. If the interest rate is increased by 3%, it would amount to how much?

A) ~~Rs.652~~
B) ~~Rs.752~~
C) Rs.992
D) ~~Rs. 562~~



A sum of Rs.1550 was lent partly at 5% and partly at 8% p.a. simple interest. The total interest recieved after 3 years was Rs. 300. The ratio of the money lent at 5% to that lent at 8% is :

A) 5 : 8

B) 8 : 5

C) 16 : 15

D) 31 : 6

E) None

$\frac{100}{1550} \times 100 = \frac{200}{31}$

$x + y = 1550$

$\frac{1}{20}x + \frac{2}{25}y = 100$

1550

$R_1 = 5\%$ $T = 3$ $SI = 15\%$ $P = x$

$R_2 = 8\%$ $T = 3$ $SI = 24\%$ $P = 1550 - x$

$(15\% \text{ of } x) + (1550 - x) \times 24\% = 300$

$-\frac{9x}{100} + 372 = 300$

$\frac{9x}{100} = 72$

$x = 800$

$\frac{5 \times 31}{31}$ $\frac{8 \times 31}{31}$

$\frac{200}{31}$

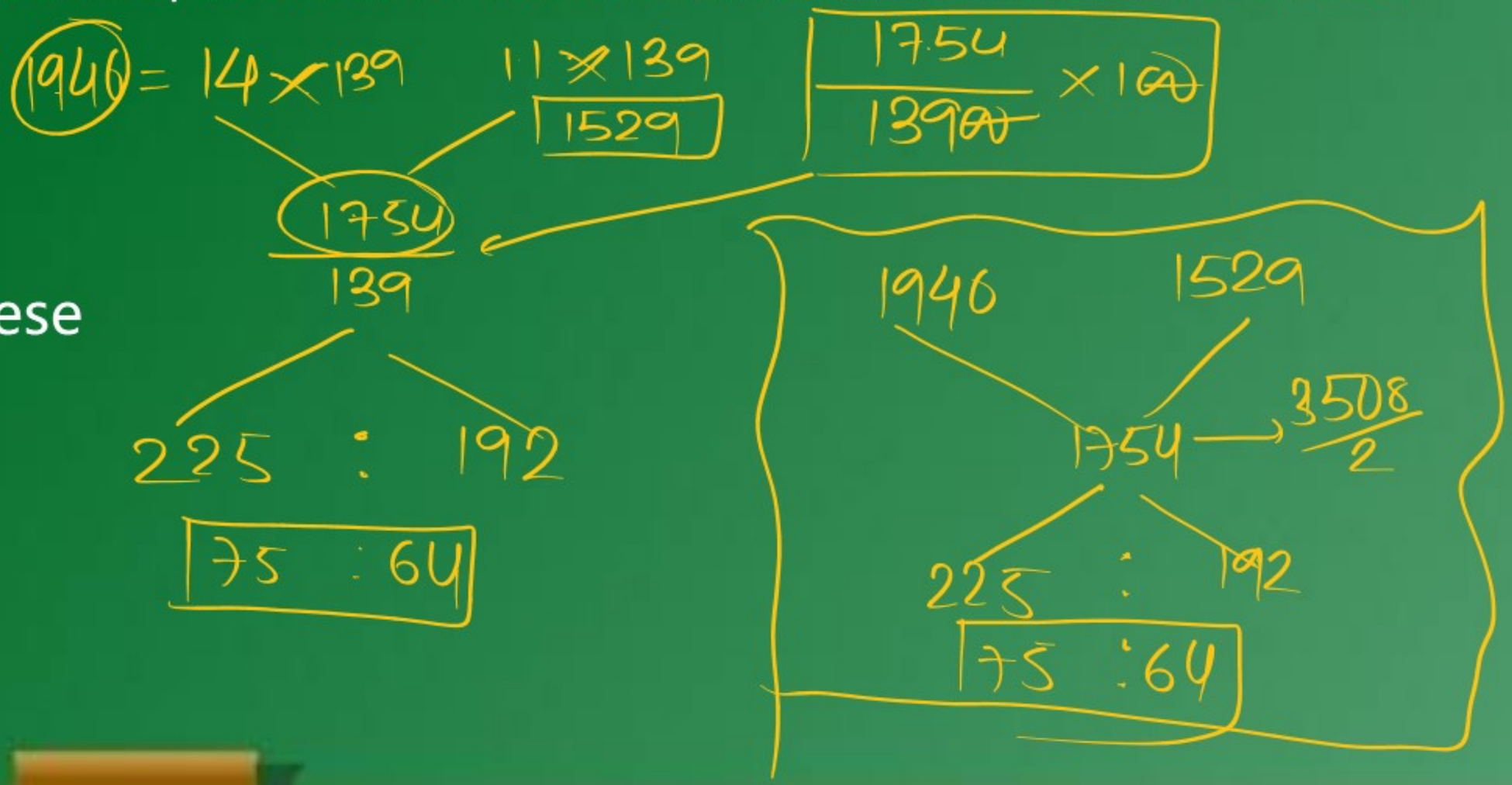
48 : 45

16 : 15

$\frac{I}{II} = \frac{800}{750} = \frac{16}{15}$

Mr. Thomas invested an amount of Rs. 13,900 divided in two different schemes A and B at the simple interest rate of 14% p.a. and 11% p.a. respectively. If the total amount of simple interest earned in 2 years be Rs. 3508, what was the amount invested in Scheme B?

A. Rs. 6400
B. Rs. 6500
C. Rs. 7200
D. Rs. 7500
E. None of these



An automobile financier claims to be lending money at simple interest, but he includes the interest every six months for calculating the principal. If he is charging an interest of 20%, the effective rate of interest becomes:

A.42 %
B.44 %
C.21 %
D.40 %
E. None

$P = 100$

$R = 20\% \xrightarrow{\frac{1}{2}} 10\%$

$T = 2$

$I^{st} = 10$

$II^{nd} = 10 + 1 = 21\%$

Aman and Raghav are two friends. Aman started a business with an investment of Rs 7200, while Raghav puts 60% of his salary at 40% p.a simple interest for 6 months; Raghav takes the amount received after 6 months and joins Aman in the business. If Aman receives a profit of Rs. 2000 out of a total profit of Rs. 2900 at the end of 1 year, what was the original salary of Raghav?

A. Rs. 18000
B. Rs. 9400
C. Rs. 9000
D. Rs. 15000
E. None of these

$$\frac{A}{R} = \frac{7200 \times 12}{72x \times 6} = \frac{2000}{900}$$

$x = 90$

$A + R = 2900$

$A = 2000 \quad R = 900$

Raghav $= 100x \xrightarrow{90} 9000$ — Ans

$P = 60x$

$T = 6 \text{ months} = \frac{6}{12} = \frac{1}{2}$

$R = 40\%$

$ST = 12x$

$A = 72x$

Out of Rs. 60,000 that Rahul has, he lends Rs. 10,000 at 11/2 % per annum simple interest and Rs. 32,000 at 6% per annum simple interest. He lends the remaining money at a certain rate of interest so that he gets total annual interest of Rs. 4000. The rate of interest per annum, at which the remaining money is lent, is?

a. 5%
b. 7.5%
c. 8%
d. 8.5%
e. 10%

$(10000 \times 5.5\%) + (32000 \times 6\%) + (18000 \times x\%) = 4000$

$550 + 1920 + 180x = 4000$

$180x = 1530$

$x = \frac{153}{18} = 8.5\%$

Compound Interest

Albert invested an amount of Rs. 8000 in a fixed deposit scheme for 2 years at compound interest rate 5 p.c.p.a. How much amount will Albert get on maturity of the fixed deposit?

A.Rs. 8600
B.Rs. 8620
C.Rs. 8820
D.Rs. 820
E.None of these

$P = 8000$

$R = 5\%$

$T = 2$

$CI = 2 : 1$

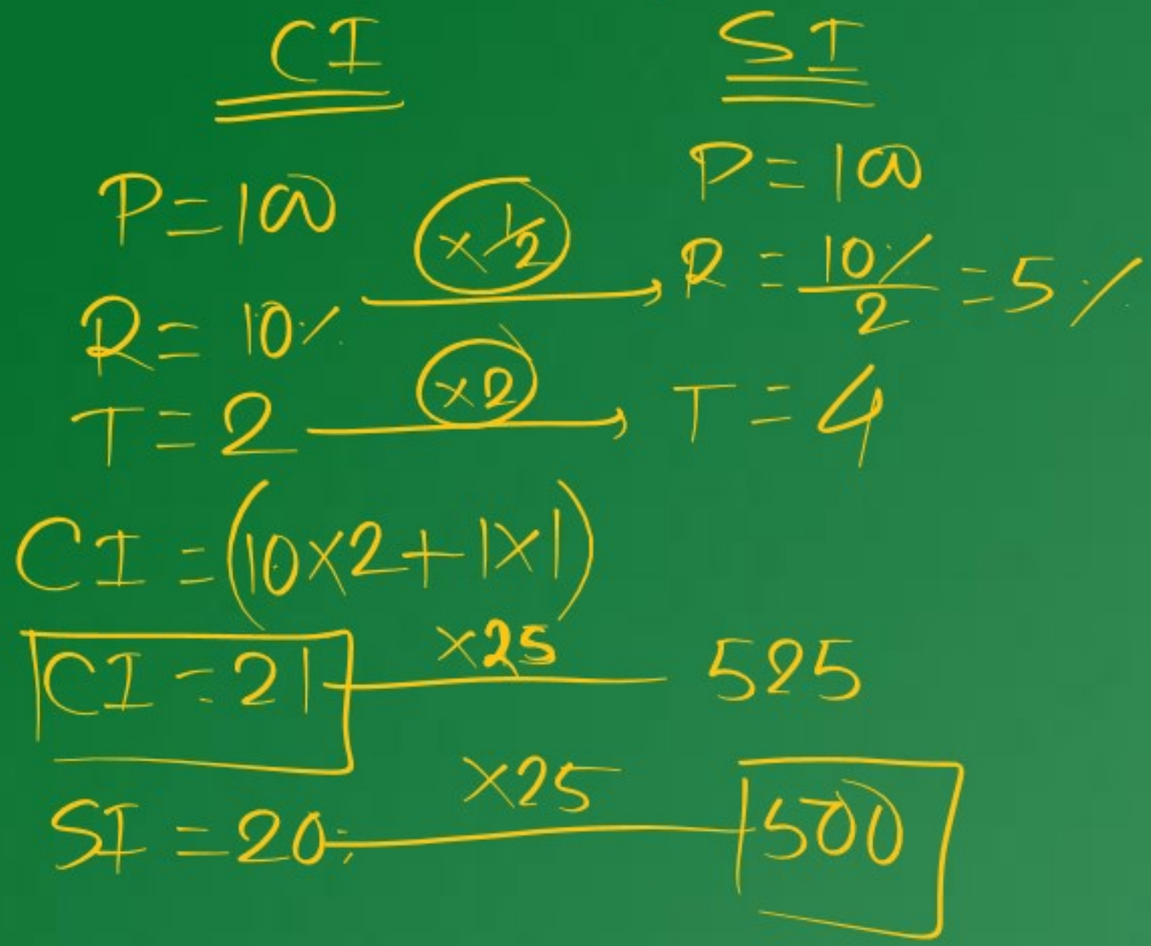
$= (400 \times 2) + (20 \times 1) = 820$

5%

$A = 8820$

The compound interest on a certain sum for 2 years at 10% per annum is Rs. 525. The simple interest on the same sum for double the time at half the rate percent per annum is:

A.Rs. 400
B.Rs. 500
C.Rs. 600
D.Rs. 800
E.Rs. 850



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

SI

P = 1007

T = 3

R = 8%

$SI = \frac{840}{2} = 420$

CI

P = 4000

T = 2

R = 10%

$CI = (10 \times 2) + (1 \times 1) = 21\%$ of 4000 = 840

6

247 — ×70 — 420

1007 — ×70 — 1750

25

A sum of money doubles itself at compound interest in 5 years. In how many years will it become eight times?

a) 20 Years
b) 15 Years
c) 25 Years
d) 30 Years
e) 18 Years

$P = 100$

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

$$200 = 100\left(1 + \frac{R}{100}\right)^5$$

$$2 = \left(1 + \frac{R}{100}\right)^5$$

$$8 = 2^3 = \left(1 + \frac{R}{100}\right)^{5 \times 3} = \boxed{15 \text{ years}}$$

Akash borrowed Rs. 72,000 from a bank to purchase one bike. If the rate of interest be 10% per annum compounded annually, what payment he will have to make after 2 years 4 months?

a) 85000
b) 86350
c) 90024
d) 92258
e) 94250

2 : 1

$R = \frac{10}{3} = 3.33$

$\frac{R}{3}$ %

$10\frac{1}{3}$ %

$P = 72000$

$R = 10\%$

$T = 2$ years 4 months

Amount (Months)

$72000 \times \frac{11}{10} \times \frac{11}{10} \times \frac{31}{30}$

$= 24 \times 11 \times 11 \times 31 = 90024$

for 2 years

$(10 \times 2) + (1 \times 1) = 21\%$

$21\% \text{ of } 72000 = 15120$

4 Month

$R = \frac{10}{3}\%$ $T = 4 \times 3 = 12$ Mon $= 1$ yr

$\frac{10}{3} \times 87120 = 2904$

$A = 72000 + 15120 + 2904 = 90024$

- Pankaj borrowed a total amount of Rs.32500 from his three friends Raj, Akash and Suresh. All of his friends apply different rates of interest in such a way that Raj applies 12%, Akash applies 16% and Suresh applies 18% interest rate respectively and total he gives Rs.5090 as interest. If the amount that Pankaj had taken from Raj is 18/25 of the amount taken from Suresh, then find that what amount Pankaj has taken from Akash?

a) 12000
b) 15000
c) 23000
d) 10000
e) 11000

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पते कि बात !

- Simple Interest

$$SI = \frac{P \times R \times T}{100}$$

$P = 100$ घेऊन $SI = (R \times T)\%$ of P

1) $P = 100$
2) Unitary method

पते कि बात !

A, P, R, T, CI

- Compound Interest

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

(CI) → हा जास्तीत ४ वर्षांपर्यंत विचारला जातो

1) 2 years → 2 : 1
2) 3 years → 3 : 3 : 1
3) 4 years → 4 : 6 : 4 : 1

Compound Interest

1 : 2 : 1
1 : 3 : 3 : 1
1 : 4 : 6 : 4 : 1

Amount

1) CI → Ratio
2) Amount → CI + P
3) Time → % Using Approx
4) Rate → One year CI काढून Approx %

Principal

1) Ratio between capital lent for 2 years compounded annually and for 4 years at simple interest is 6 : 5. Find the interest obtained after given time if rate of interest is 10% for both?

a) 63 : 100
b) 100 : 63
c) 63 : 98
d) Cannot be determined
e) None

A

P = 6x

R = 10%

T = 2

CI = 2 : 1

(10 × 2 + 1 × 1)

CI = 21 : 9x

B

P = 5x

R = 10%

T = 4

SI = 40 : 9x

$$\frac{A(CI)}{B(SI)} = \frac{21 \times 6x}{40 \times 5x}$$

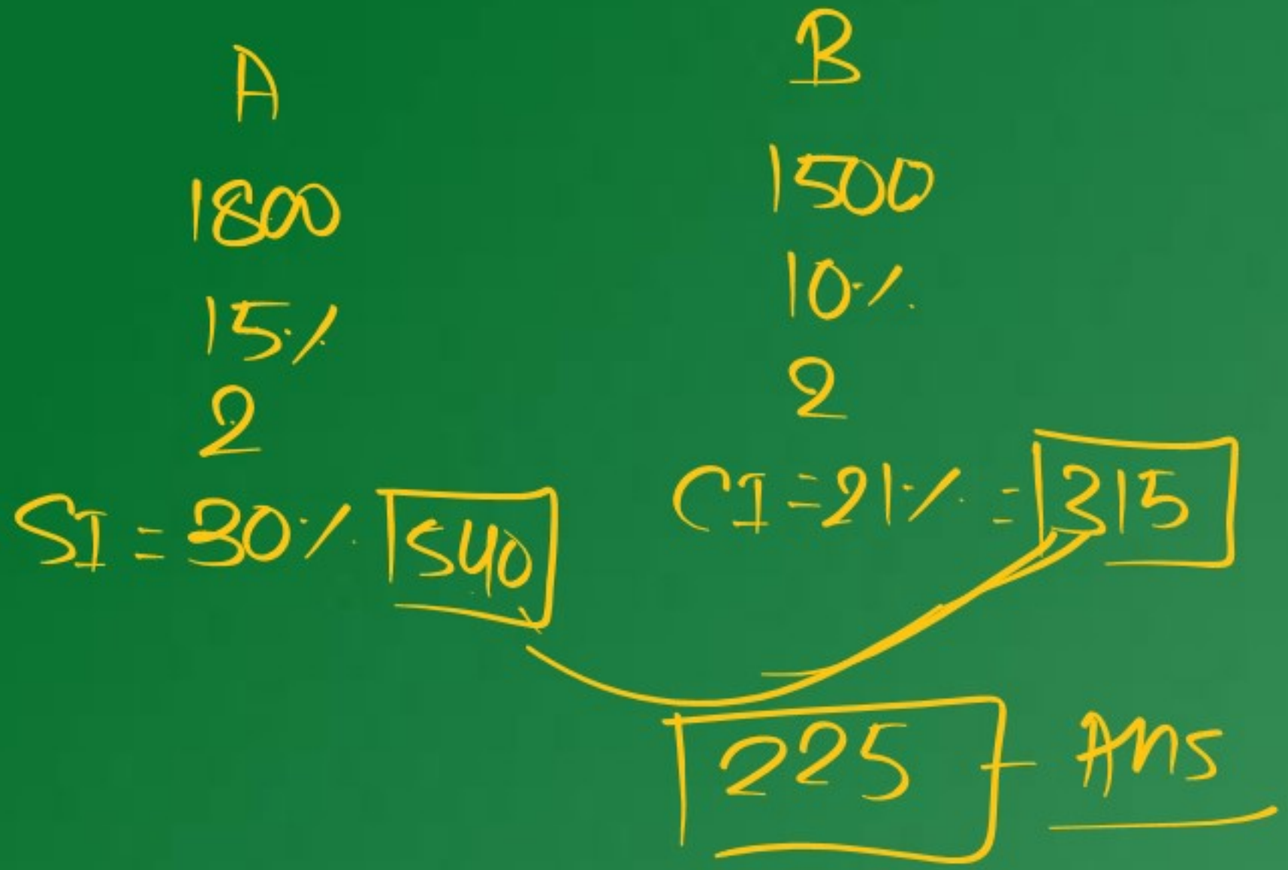
3

20

$$= \frac{63}{100}$$

2) Rs 1800 is invested in scheme A at 15% per annum for 2 years at simple interest while 1500 was invested in scheme B at 10% per annum for 2 years at compound interest then find the difference between the interest earned?

a) Rs. 200
b) Rs. 225
c) Rs. 450
d) Rs. 125
e) Rs. 150



3) Thor invests Rs.(x + 4000) in a simple interest scheme at the rate of 12% per annum for 3 years. After 3 years, Thor received a total 12240, then find the value of x.

a) Rs.5000
b) Rs.4000
c) Rs.4500
d) Rs.5800
e) Rs.6400

$P = (x + 4000) \longrightarrow 100$

$R = 12\%$
$T = 3$] $\longrightarrow 36\% \longrightarrow 36$

$A = 12240 \longrightarrow 136$

$136 \xrightarrow{\times 90} 12240$

$100 \xrightarrow{\times 90} 9000$

$x + 4000 = 9000$

$x = 5000$

4) Henry bought loan from bank at simple interest which worth Rs.16000 at 12% per annum for 2 years, he lends that amount to Gokul for compound interest at 20% for 2 years, find the amount earned as profit by Henry after 2 years?

A.Rs.2000
B.Rs.3600
C.Rs.3200
D.Rs.2400
E.Rs.2800

Henry

$P = 16000$

$R = 12\%$

$T = 2$

$SI = 24\%$

Gokul

$P = 16000$

$R = 20\%$

$T = 2$

$CI = 44\% = (20 \times 2 + 4 \times 1)$

2 : 1

$20\% \text{ of } 16000 = 3200$

5) Potter invested a certain amount at the rate of 5 percent per annum for 4 years and obtained a simple interest of Rs.4600. Had he invested the same amount at the 10 percent per annum for 2 years, how much amount would he have obtained as compound interest at the end of 2 years?

A. Rs.4850
B. Rs.4830
C. Rs.4580
D. Rs.4840
E. None of these

→ उत्तर पाठ्यम

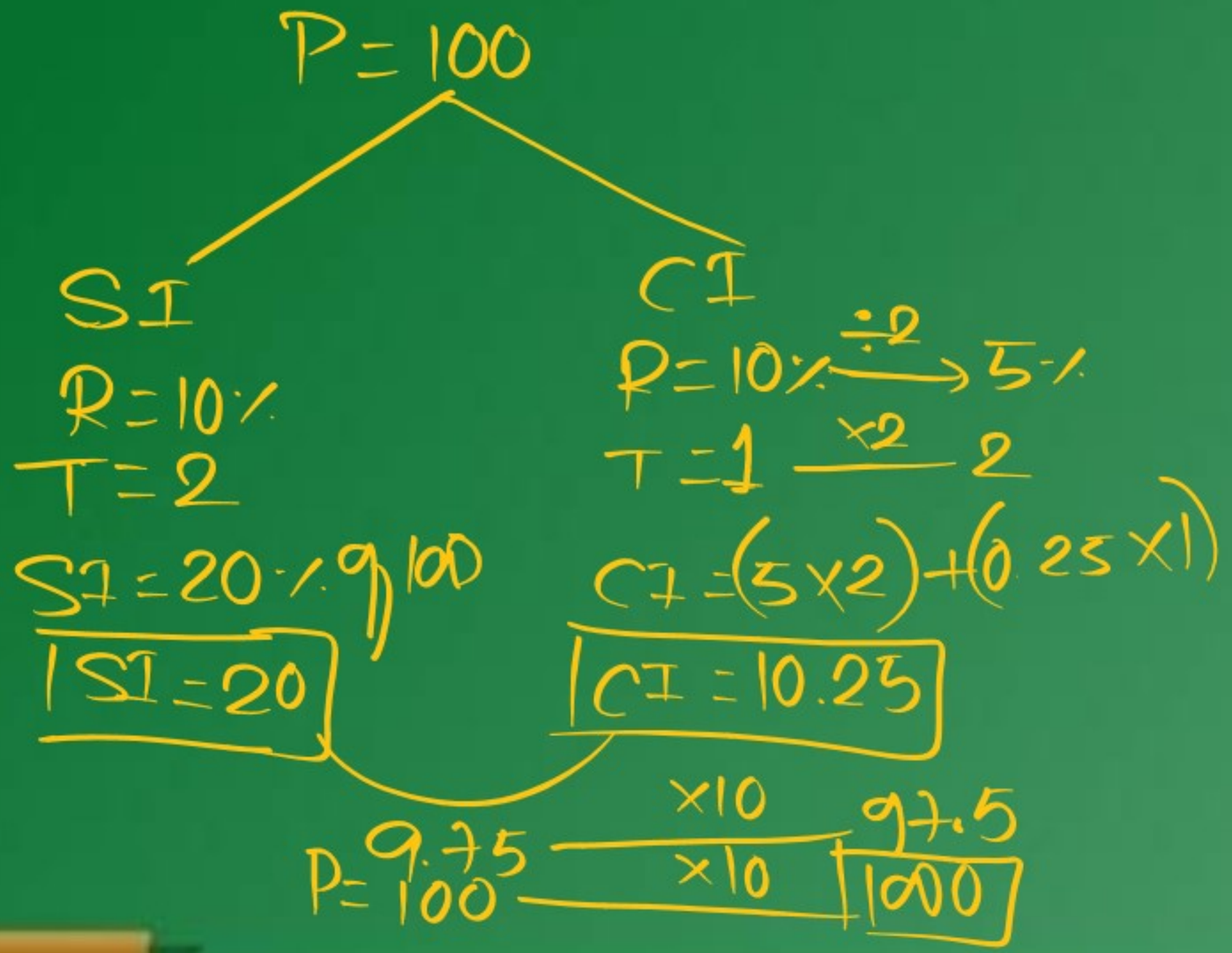
P = 100
R = 5%
T = 4 years
SI = 4600 = 20%

P = 100
T = 2
R = 10%
CI = (2 : 1) = (10 × 2) + (1 × 1) = 21%

20% — ×230 — 4600
✓ 21% — ×230 — 4830

6) If the difference of simple interest of two years of a sum and compound interest of 1 year and interest is calculated half yearly at a rate of 10% is Rs. 97.5 then find out the sum?

a) Rs. 100
b) Rs. 1000
c) Rs. 2000
d) Rs. 1500
e) Rs. 1750



7) A sum of Rs. 20,000 is lent out at 10% per annum compound interest, compounded annually. What is the difference between the compound interest for 3rd and 2nd year?

a) Rs 220
b) Rs 20
c) Rs. 0
d) None of these
e) Rs 150

$P = 20000$

$R = 10\%$

$I^{st} = 2000$

$II^{nd} = 2000 + 200 = 2200$

$III^{rd} = 2000 + 200 + 200 + 20 = 2420$

Diff 220

1 21 331

11.1% of 2000 = 220

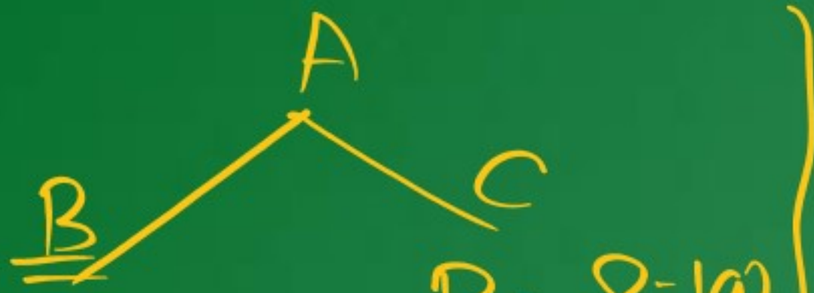
$I^{st} = 10\%$

$II^{nd} = 10\% + 1\% = 11$ — 11.1%

$III^{rd} = 10\% + 1 + 1 + 0.1 = 221$

8) A lent Rs. 25000 to B and at the same time lent some amount to C at the same 7% Simple interest. After 4 years A received Rs. 11200 as interest from B and C . How much did A lent to C?

a) Rs. 25000
b) Rs. 15000
c) Rs. 20000
d) None of these
e) Rs. 17500



P = 25000
R = 7 %
T = 4
SI = 28 %

P = ? = 100
R = 7 %
T = 4
SI = 28 %

7
28 % × 600 4200
100 × 600 15000
25

28 % of 25000 + 28 % of x = 11200
x = 15000

7000 + 4200 = 11200

9) A person invested Rs.'P' in a bank at the rate of 20% per annum compounded annually, after 3 years it becomes Rs.43200. If the same principal is invested in SI for 3 years at the same rate of interest, then find the interest earned by the person ?

A.Rs.6000
B.Rs.5500
C.Rs.7500
D.Rs.8000
E.None of these

Amount

P = 100
R = 20%
T = 3

CI = 20 × 3 + 4 × 3 + 0.8 × 1 = 72.8

72.8 — 43200
×250
100 — 25000

72.8 — 43200
60 — ? = 15000

P = 100
R = 20%
T = 3
SI = 60% of 25000
= 15000

10) Hanuman invests Rs.x on a simple interest scheme at the rate of 16% per annum for 3 years and Rani invests Rs.y on a simple interest scheme at the rate of 12% per annum for 2 years. If the ratio of the total amount received by Hanuman to Rani at the end of scheme is 1:1, the initial amount invests by Hanuman is what percent of the amount invests by Rani ?

A.78.85%
B.80.45%
C.83.78%
D.85.58%
E.77.78%

P = x
R = 16%
T = 3
SI = 48%
A = 148% of x

P = y
R = 12%
T = 2
SI = 24%
A = 124% of y

$$\frac{148\%\ \text{of}\ x}{124\%\ \text{of}\ y} = \frac{1}{1}$$

$$\frac{x}{y} = \frac{31}{37}$$

$$\frac{x}{y} \times 100 = \frac{31}{37} \times 100 = \frac{3100}{37}$$

≈ 83

11) Ram invested Rs.x at simple interest at the rate of 14% per annum for 5 years and Sam invested Rs.(x + 1000) at compound interest rate of 10% per annum for two years. If Ram received the interest amount is Rs.2240 more than that of Sam, then find the value of x.

A. Rs.4000
B. Rs.3000
C. Rs.5000
D. Rs.6000
E. None of these

Ram
R = 14%
T = 5
SI = 70%

Sam
R = 10%
T = 2
CI = 21%

$(70\%\ of\ x) - 21\%\ of\ (x + 1000) = 2240$

TIMETOS

Ram	Sam
100	100 + 1000
14 × 5	2
70%	21% 210

49% — ×50 — 2450
100 — 5000

12) Randheer invested Rs.4000 at the rate of 20% per annum compounded annually for three years. After 3 years, she deposited the total amount into scheme B which gave a simple interest of 10% for 3 years. What is the amount Randheer will have at the end of 6 years?

A. Rs.6260
B. Rs.7950.5
C. Rs.8240
D. Rs.8985.6
E. None of these

13) A person invested a certain amount in simple interest at the rate of 10% per annum and earned Rs. 4500 as an interest at the end of three years. Had the interest been compounded every year, how much more interest would have been earned by him on the same amount with the same interest rate after three years?

A. Rs. 484
B. Rs. 465
C. Rs. 524
D. Rs. 625
E. None of these

14) The simple interest on Rs. P at 15% p.a for 2 years is Rs.300 more than the simple interest on Rs.(P + 500) at 12% for 2 years. What is the interest, if (2P + 500) is lent for 2 years at 12% SI rate?

A. Rs.1750
B. Rs.2350
C. Rs.3480
D. Rs.4810
E. None of these

Rahul

P = 100x
R = 15%
T = 2
SI = 30x

100x + 500
R = 12%
T = 2
SI = 24x + 120

(30x) − (24x + 120) = 300

6x − 120 = 300
6x = 420
x = 70

P = 100 × 70 = 7000

P = 2P + 500 = 14500
R = 12%
T = 2
SI = 24% of 14500 = 3480

15) A certain amount becomes 5 times of its principal in 8 years at the rate of x% per annum for Simple Interest. If Rs.8400 invested in another scheme for compound interest at the rate of (2x/5)% per annum for 2 years, then find the compound interest received after 2 years?

A. Rs.3697
B. Rs.3698
C. Rs.3696
D. Rs.3689
E. None of these

So/year

P = 100
A = 500
SI = 400
T = 8
R = 50% = x

P = 8400
$R = \frac{2x}{5}\% = \frac{2 \times 50}{5} = 20\%$
T = 2
$CI = 44 \times 84 = 3696$

16) Ram invested a sum at the rate of 20% per annum compounded annually and after two years he reinvested the half of the initial amount. The man got Rs. 1080 as interest after three years, find the amount received by him if he invested the same sum at 15% per annum on simple interest for 3 years?

a) Rs. 800

b) Rs. 900

c) Rs. 1100

d) Rs. 1100

e) Rs. 1000

17) Difference between the compound interest and simple interest on a sum at 20% per annum after two years will be Rs.800.
Quantity I: Find the simple interest on the sum at 10% per annum after two years.
Quantity II: Find the compound interest on the sum at 10% per annum after two years.
a) Quantity I > Quantity II
b) Quantity I Quantity II
c) Quantity II > Quantity I
d) Quantity II Quantity I
e) Quantity I = Quantity II or Relationship cannot be established.


THANK
YOU!