Compound Interest(Preli. & Written)

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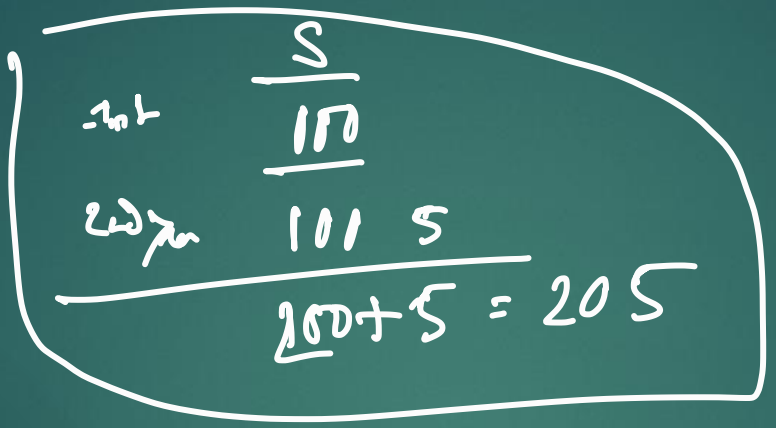
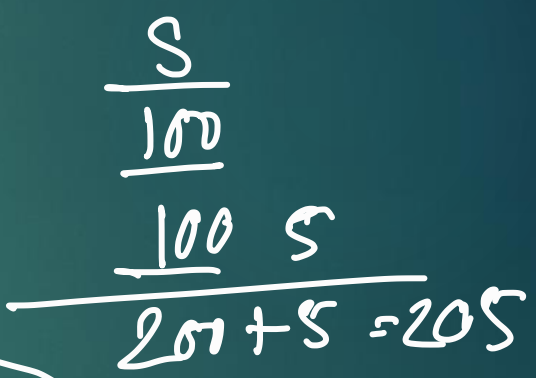
1. How much interest will TK. 2,000 earn at an annual rate of 10% in one year if the interest is compounded every 6 months?

A) 200
B) 210
C) 220
~~D) None of these~~

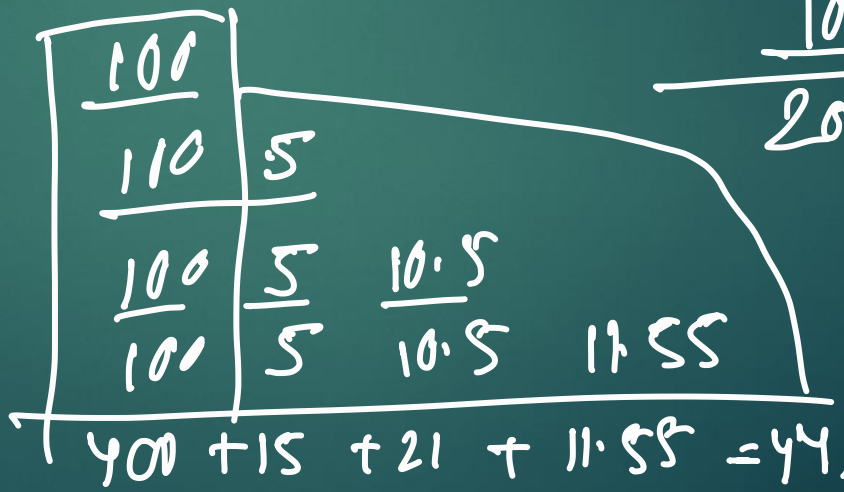


5%

2100



$2000\left(1+\frac{10}{100}\right)^2$



11.5.5.

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

A) 2160
B) 3120
C) 3972
D) 6240
E) None of these

100 + 10 = 110

→ 110 + 11

= 121

12,000

rate of interest = 10%

→ 10

→ 10 1

→ 10 1 1.1

30 + 2 + 1.1 = 33.1%

30 + 3 + 0.1

3600 + 360 + 12

= 3972

10 + 1 = 11

→ 10

→ 10 1

→ 10 1 1.1

30 + 2 + 1.1

= 33.1

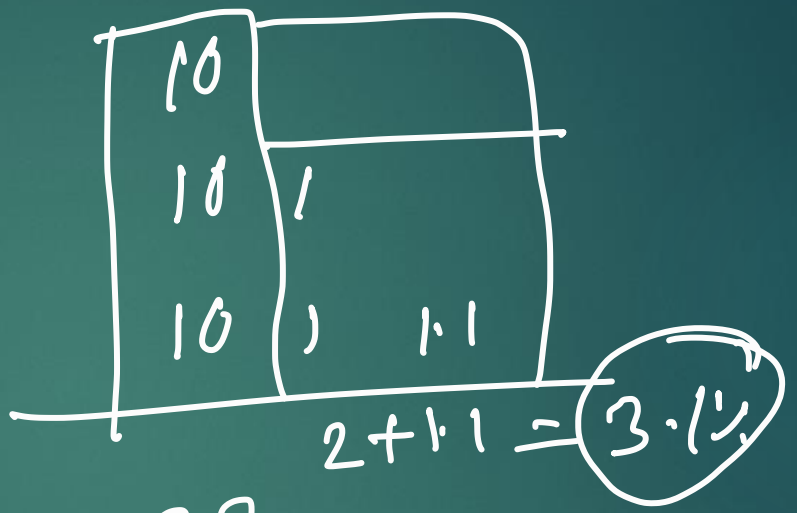
3. The difference between CI and SI for 3 years Rs. 992. If rate of interest is 10%. Find the Principal ?

A. Rs. 22000

B. Rs. 30000

C. Rs. 28000

D. Rs. 32000



$$\frac{32}{\cancel{992} \times 100 \times 10} = 3200$$
$$\cancel{31}$$

4. The least number of complete years in which a sum of money put out at 20% compound interest will be more than doubled is:

A. 3
B. 4
C. 5
D. 6

Rule of 72 :

$$\frac{72}{\text{Rate of interest}} = \frac{72}{20}$$

$$100\left(1+\frac{20}{100}\right)^n = 200$$

$$\left(1+\frac{20}{100}\right)^n = 2$$

$$n = \log_{\left(1+\frac{20}{100}\right)} 2 \approx 4 \text{ years.}$$

5. What will be the compound interest on a sum of Tk. 25,000 after 3 years at the rate of 12% p.a.?

A. Tk. 9000.30
B. Tk. 9720
C. Tk. 10123.20
D. Tk. 10483.20
E. None of these

12% = 10 + 2%

2500 + 500 = 3000

3000

→ 3000 360

→ 3000 360 403.2

3000 + 720 + 403.2

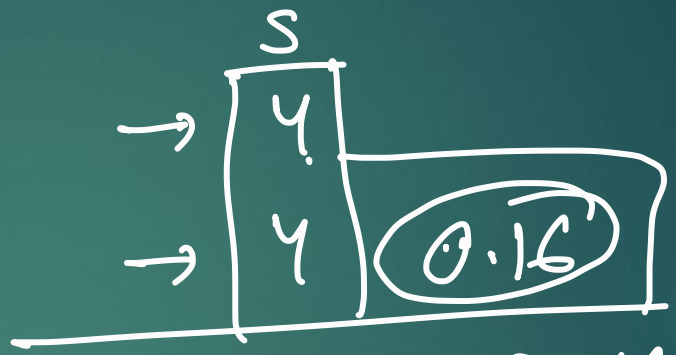
= 10123.2

3360

336
67.2
403.2

6. The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 4% per annum is Tk. 1. The sum is:

A. 625
B. 630
C. 640
D. 650



0.16%

$$\frac{1 \times 25 \times 25}{4} = 625$$

7. If the compound interest on a sum for 2 years at 12.5% per annum is TK. 510 the simple interest on the same at the same rate for the same period of time is :

A. TK. 400
B. TK. 450
C. TK. 460
D. TK. 480

12.5 = 10 + 2 + 0.5

1.25 + 0.250 + 0.0625 → 1.5625

12.5
12.5
1.5625

25 + 1.5625 = 26.5625%

1.25
.125
× 2
.250
0.0625
0.3125
1.25
1.5625

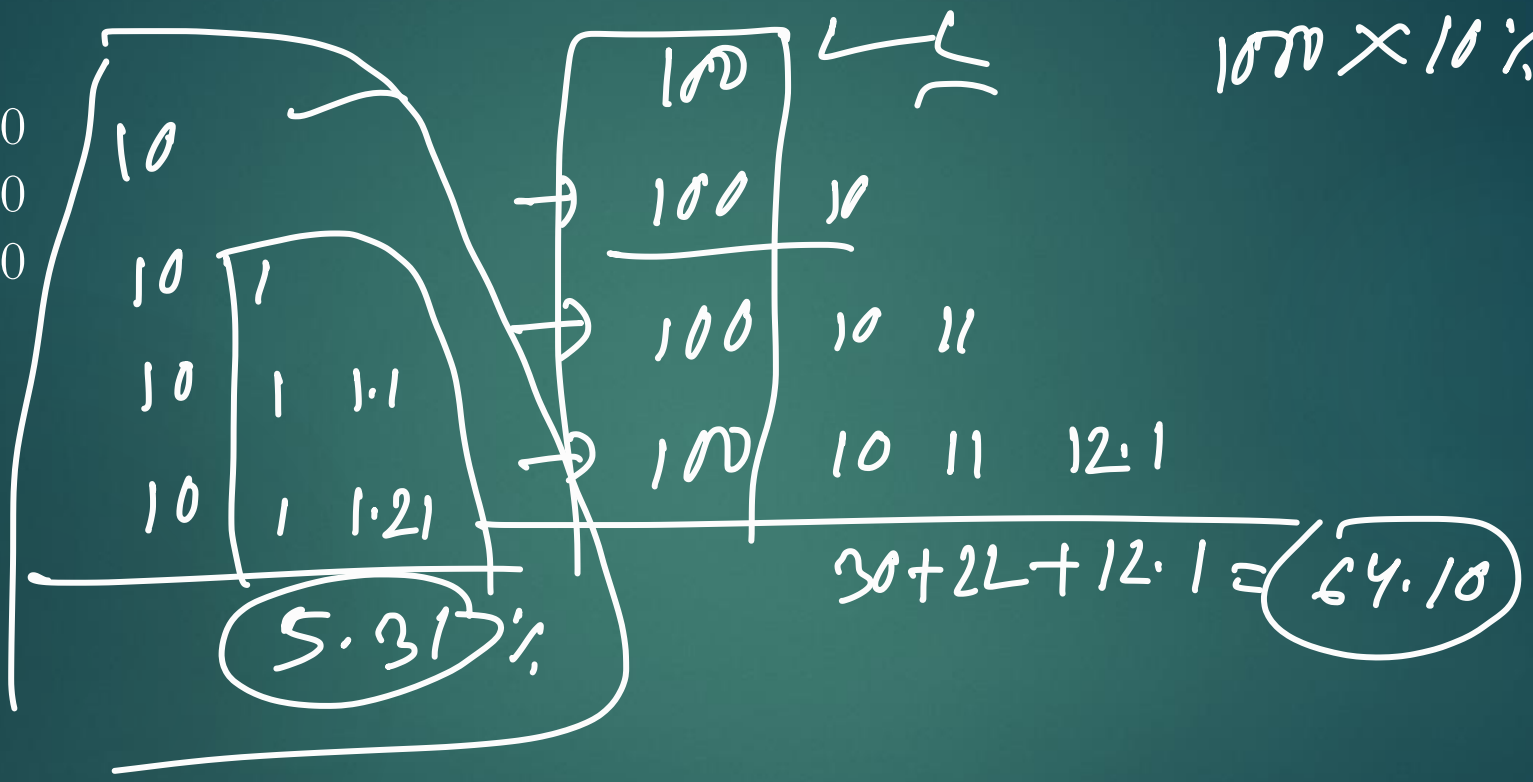
1% = .125
2% = 0.250
0.0625

30 → 510 × 25 × 10000 / 480 / 16
265625
10625
425
17

= 480

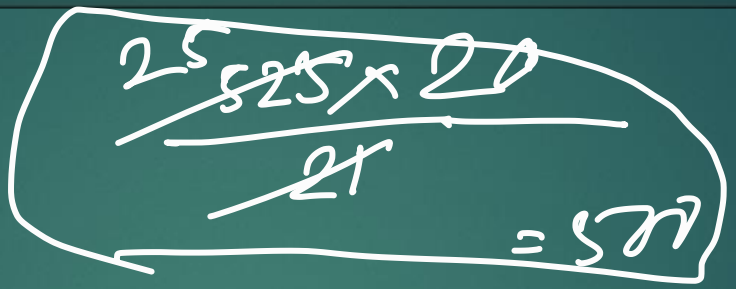
8. What will be the difference between simple and compound interest at 10% per annum on a sum of Tk.1000 after 4years?

A. Tk.31
B. Tk. 32.10
C. Tk. 40.40
D. Tk. 64.10



9. 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. 400
B. 500
C. 600
D. 800



10. What is the difference between the compound interest on Tk. 5000 for 1.5 years 4% per annum compounded yearly and half-yearly?

A. 2.04
B. 3.06
C. 4.80
D. 8.30

yearly

200 + 104

= 304

Half yearly

100

100 2

100 2 2.04

300 + 4 + 2.04

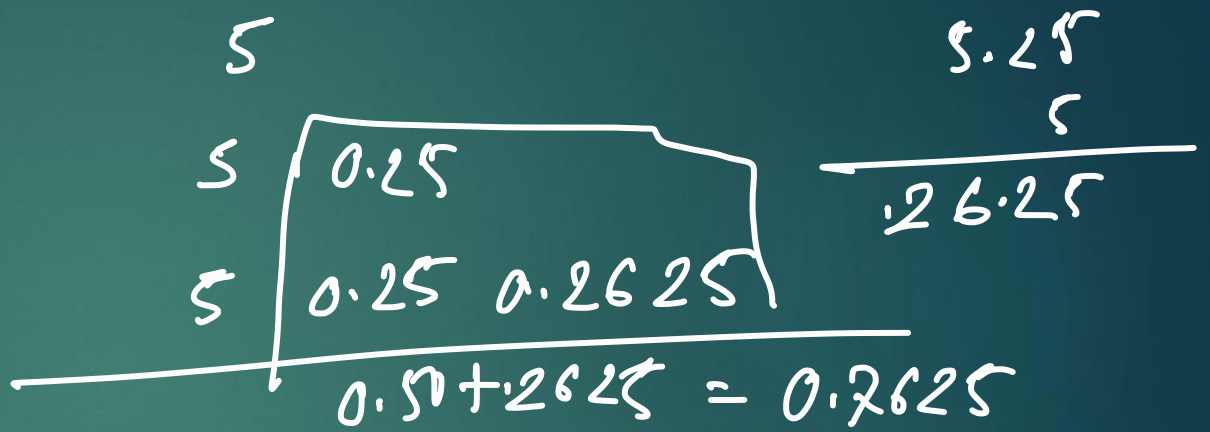
= 306.04

306.04
304.00
2.04

1.02

11. The difference between the compound and simple interest on a sum of 5% rate of interest per annum for 3 years is Tk. 36.60, Then the sum is-

A. 8000
B. 8400
C. 4400
D. 4800



$$\frac{36.60 \times 100}{0.7625} = \frac{3660 \times 100}{7625} = 4800$$

12. A sum of Tk. 50,000 is invested at 8% p.a. compounded annually. After how many years will the investment amount double?

A) 8.5 years
B) 9 years
C) 9.5 years
D) 10 years

$$\frac{72}{8} = 9$$

13. A loan is to be returned in two equal yearly instalments. If the rate of interest is 10% p.a. compounded annually and each instalment is Rs. 5,808, then 60% of the total interest (nearest to a Rs.) charge in this scheme

A. 917
B. 922
C. 913
D. 911

$$PV = CF\left\{\frac{1-(1+r)^{-n}}{r}\right\}$$

$$= 5808\left\{\frac{1-\left(1+\frac{10}{100}\right)^{-2}}{10/100}\right\}$$

$$= 5808\left\{\frac{1-(1.10)^{-2}}{1/10}\right\}$$

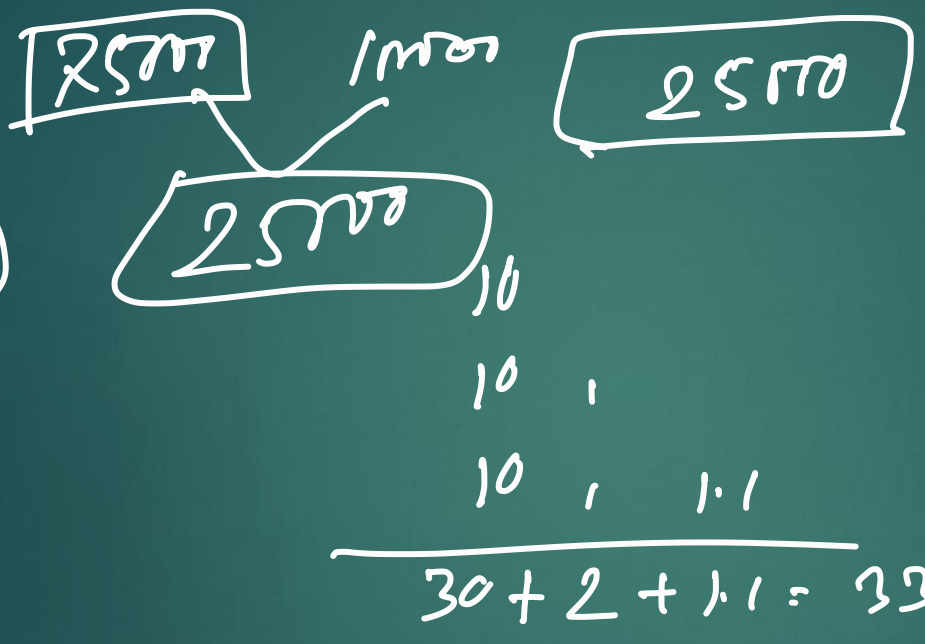
$$= 5808\left(\frac{1-\frac{1}{1.21}}{1/10}\right)$$

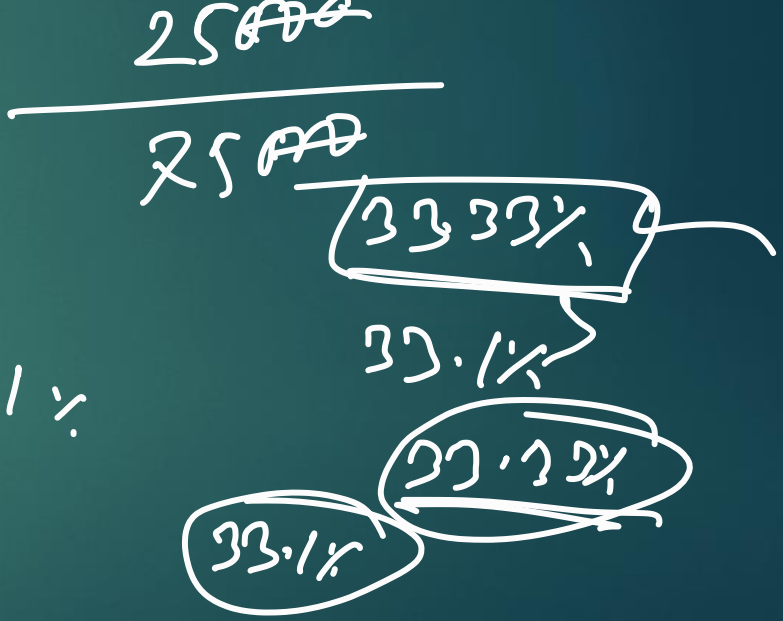
PV = present value
CF = cash flow / instalment

$1.10^2 = 1.21$

14. An investment of Tk. 75,000 grows to Tk. 1,00,000 in 3 years under compound interest. What is the annual rate of interest (compounded annually)?

A) 9%
B) 9.5%
~~C) 10%~~
D) 10.5%





$$= 5808 \times \left(\frac{1.21 - 1}{\frac{1.21}{1/10}} \right)$$

$$= 5808 \times \frac{0.21}{1.20} \times \frac{10}{1} = \frac{4840}{5808} \times \frac{21}{120}$$

$$= 10080$$

$$\begin{array}{r} 5808 \\ \times\ 2 \\ \hline 11616 \end{array}$$

$$= (11616 - 10080)$$

$$= 1536$$

$$\begin{array}{r} 153.6 \\ \times\ 6 \\ \hline 921.6 \end{array}$$

Thank You