Simple Interest

Instructor:
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1. How much interest will tk. 10,000 earn in 9 months at an annual rate of 6%?

A. 900
B. 750
C. 600
D. 450

10 000

4.5%

0.5%

4.5

100×4 = 400
50
450

100×6 = 600

150
600×3
12
4

= 450

2. What is the percentage to simple interest if the capital of 100 is doubled in 5 years?

A. 20%
B. 25%
C. 30%
D. 10%
E. None of them

100 — 5 → 200

$\frac{100}{5} = 20\%$

200 − 100 = 100

$\frac{20 \times 100}{100} = 20\%$

$\frac{100}{5} = 20$

3. The sum of principal and simple interest of a certain amount of money would be TK. 460 after 3 years from now and TK. 500 after 5 years from now . What is the related interest rate ?

A. 18%

B. 15%

C. 26%

D. 5%

E. 20%

4. A total of Taka 1200 is deposited in two savings accounts for one year, part at 5% and the remainder at 7% . If Taka 72 was earned in interest , how much was deposited at 5% ?

A. 300
B. 500
C. 700
D. 600
E. None of them

$$\frac{x \times 1 \times 5}{100} + (1200 - x) \times 1 \times \frac{7}{100} = 72$$

$$\Rightarrow \frac{5x}{100} + \frac{8400 - 7x}{100} = 72$$

$$\Rightarrow 5x + 8400 - 7x = 7200$$

$$\Rightarrow 2x = 1200$$

$$x = 600$$

$I = Prn$

$x \times 1 \times 5/100$

$(1200 - x) \times 1 \times \frac{7}{100}$

P

5. Bank X pays a simple interest of Taka 80 on principal of taka 1,000 annually . Bank y pays a simple interest of Taka 140 on a principal of Taka 1000 annually . What is the ratio of the interest rates of Bank x to Bank y ?

A. 4:7
B. 6:8
C. 9:18
D. 2:7
E. None of them

x $\frac{80 \times 100}{1000} = 8\%$

y $\frac{140 \times 100}{1000} = 14\%$

$x : y = 8 : 14$

$= 4 : 7$

6. The simple interest on a sum of money will be TK. 600 after 10 years. If the principal is trebled after 5 years , what will be the total interest at the end of the tenth year ?

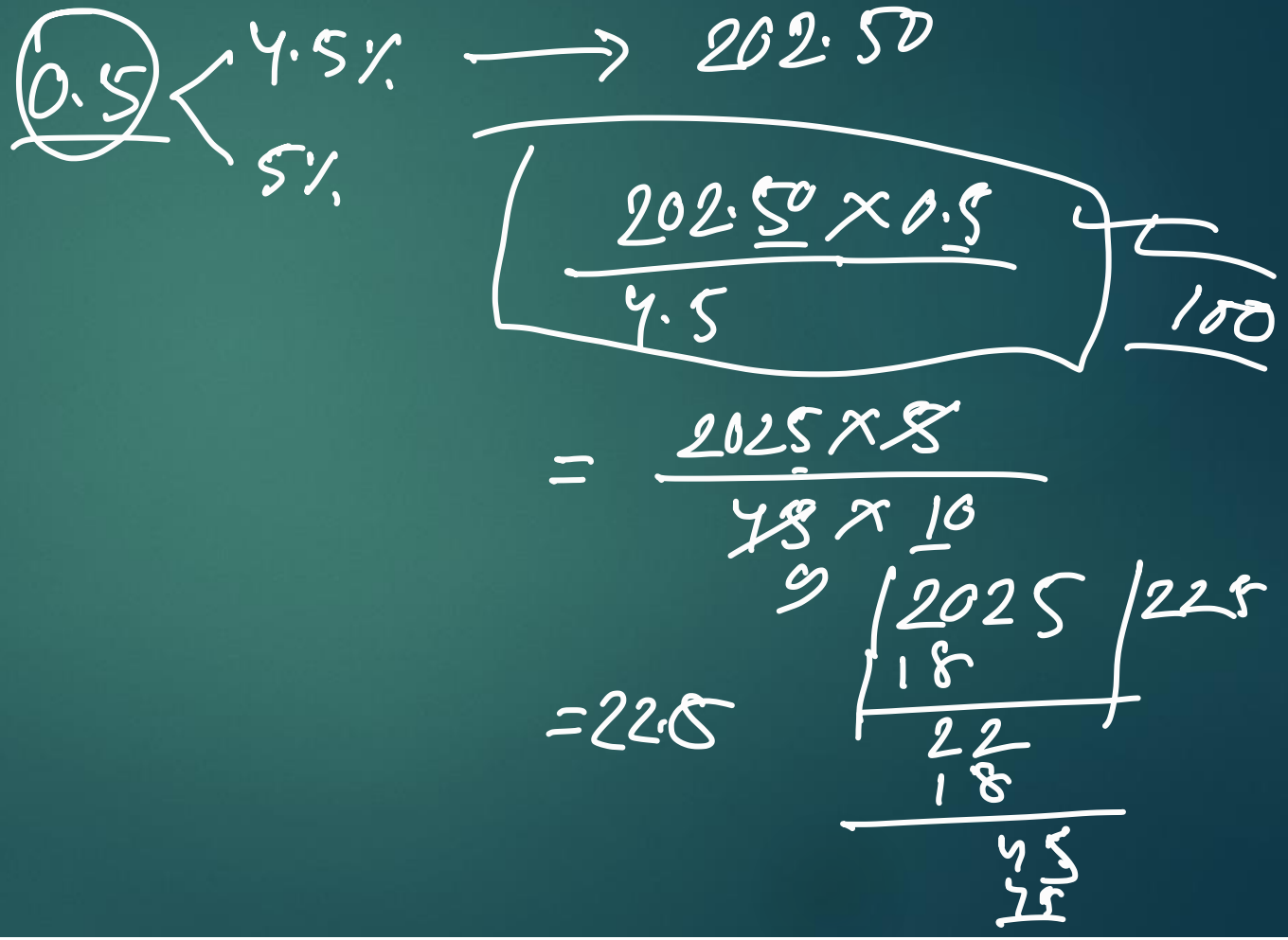
A. TK. 600
B. TK. 900
C. TK. 1200
D. TK. 1500

60 × 5 = 300
900
1200

$\frac{600}{10} = 60$

7. The interest on a certain deposit at 4.5% p.a. is TK. 202.50 in one year. How much will the additional interest in one year be on the same deposit at 5% p.a. ?

A. TK. 22.50
B. TK. 25
C. TK. 20.25
D. TK. 42.75



8. In how many years, Tk. 150 will produce the same interest @8%, Tk.800 produce in 3 years @4.5% ?

A. 6
B. 8
~~C. 9~~
D. 12

$$\frac{150 \times n \times 8}{100} = \frac{800 \times 3 \times 4.5}{100}$$

$$n = 9$$

9. Muzahid wants to borrow Tk. 2,00,000 from a bank. The amount with interest rate of 15% is to be repaid 18 months from now. How much will be the repayment amount?

A. Tk. 1,63,200
B. Tk. 2,58,000
C. Tk. 2,45,000
D. Tk. 2,85,000
E. None of these

18

$15 \times 1.5 = 22.5$

$2000 \times 2 = 4000$

$200 \times 2 = 400$

$200 + 400 = 2450$

$\frac{200000 \times 22.5}{100} = 45000$

2450

40000
4000
100
4500

10. The simple interest on a certain sum of money at 4% per annum for 4 years is Tk. 87.5 more than interest on the same sum for 3 years at 5% per annum. Find the sum of money.

A. Tk. 6,700
B. Tk, 7, 500
C. Tk. 8,750
D. Tk. 9, 500
E. On fixed deposits

4% × 4 = 16%
5% × 3 = 15%
1%

$\frac{87.5 \times 10}{1} = 875$

11. Bank X offers an interest of 13.5% per year and Bank Y offers 14.00% per annum. Arianna kept taka one million with Bank X for a year and Tatiana kept the same amount in Bank Y also for a year? How much did Arianna lose at the end of the year in taka?.

A. 5,000
B. 6,000
C. 4,500
D. 5,500
E. None of these

A ⟶ 13.5%
T ⟶ 14.00
⟩ 0.5%

10000000

12. A borrower pays 18% interest per year on the first Tk. 600 he borrows and 17% per year on the part of the loan in excess of Tk. 600. How much interests will the borrower pay on a loan of Tk. 6000 for one year?

A. 926
B. 1020
C. 1026
D. 1080

600 → 60+48 = 108

5400 → 540+378 = 918

918
108
1026

Written

1. If the interest on Taka 500 for 4 years and Taka 600 for 5 years is Taka 500; what will be the rate of interest?

Let,

$r\%$ be the rate of interest

ATQ,

$$500 \times 4 \times \frac{r}{100} + 600 \times 5 \times \frac{r}{100} = 500$$

$$\Rightarrow 20r + 30r = 500$$

$$\Rightarrow 50r = 500$$

$$\therefore r = 10\%$$

Ans

2. Mr. Thomas invested an amount of Tk. 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 Tk. 3508, what was the amount invested in Scheme B?

Let,

Tk. x was invested in scheme B.

ATQ,

$$(13900 - x) \times 2 \times \frac{14}{100} + x \times 2 \times \frac{11}{100} = 3508$$

$$\Rightarrow 28(13900 - x) + 22x = 350800$$

$$\Rightarrow 389200 - 28x + 22x = 350800$$

$$\Rightarrow 6x = 38400$$

$\Rightarrow x = \frac{3840}{6}$

$= 640$

$\therefore$ Tk. 640 was invested in scheme B.

3. A lent Tk. 5000 to B for 2 years and Tk. 3000 to C for 4 years on simple interest at the same rate of interest and received Tk. 2200 in all from both of them as interest. The rate of interest per annum is:

Let,
the interest rate be r%

ATQ,
$$5000 \times 2 \times \frac{r}{100} + 3000 \times 4 \times \frac{r}{100} = 2200$$

$$\Rightarrow 100r + 120r = 2200$$

$$\Rightarrow 220r = 2200$$

$$\therefore r = 10\%$$

rate of interest will be 10%

4. A sum of Tk. 725 is lent in the beginning of a year at a certain rate of interest. After 8 months, a sum of Tk. 362.50 more is lent but at the rate twice the former. At the end of the year, Tk. 33.50 is earned as interest from both the loans. What was the original rate of interest?

Let,
the original rate of interest was $r\%$

ATQ,

$$\left(725 \times 1 \times \frac{r}{100}\right) + 362.50 \times \frac{4}{12} \times \frac{2r}{100} = 33.50$$

$$\Rightarrow 3 \times 725r + 725r = 3350 \times 3$$

$$\Rightarrow 2175r + 725r = 10050$$

$$\Rightarrow 2900r = 10050$$

$$x + \frac{y}{3} = 2$$

$$\Rightarrow 3x + y = 12$$

$$\Rightarrow n = \frac{100 \times 8}{250 \times} \square$$

$$= \underline{3.47\%}$$

5. Mr. Amin invests Tk. 24,000 in a Bank at 7.5%. How much additional money must he invest at 10% so that the total annual income will be equal to 9.25% of his entire investment?

Let, Additional investment will be Tk. x.

ATQ,

$$24000 \times 1 \times \frac{7.5}{100} + x \times 1 \times \frac{10}{100} = \frac{9.25}{100}(24000 + x)$$

$$\Rightarrow 180000 + 10x = 222000 + 9.25x$$

$$\Rightarrow 0.75x = 42000$$

$$\Rightarrow x = \frac{42000 \times 100}{75} = 56000$$

Ans

9.25% of (24000+x)

$\frac{9.25}{100} \times (24000+x)$

6. Ms. Wazaiha invested a total amount of BDT 50,000 in two bonds namely BEXIMCO and DBBL that pay annual interest, at the rate of 6.5% and 9%, respectively. If she likes to receive BDT 4,000 as interest income, how much should she invest in each bond?

?

Ans: 2nd, 3rd

Beximco DBBL

$(50000-x)\times 1\times\frac{6.5}{100}+x\times 1\times\frac{9}{100}=4000$

7. Nayem plans to invest x taka in the bond of 'M' company, which pays 10% interest and y taka in 'N' company bonds, which pay 9% interest. He will invest 9,000 taka require that he receives 850 taka as interest. How much should be invest in each company?

Given that,

Nayem's invested in company M in Tk. x

" " " N in Tk. y.

ATQ,

$x + y = 9000$

or, $x = 9000 - y$ —

Again,

$$\frac{10x}{100} + \frac{9y}{100} = 850$$

$\Rightarrow 10x + 5y = 8500$

$\Rightarrow 10(300 - y) + 5y = 8500$

$\Rightarrow 3000 - 10y + 5y = 8500$

$\Rightarrow y = 500$

$\therefore x = 300 - 500 = 400.$

Ans: $x = 400, y = 500.$

8. A man agrees to refund the loan of Tk. 7,900 in a few installments. Each installment is Tk. 5 more than the immediate past installment. If the first installment is Tk. 100, in how many installments will the man be able to refund amount?

Given that,

total amount $S = 2500$

1st installment $a = 100$.

Difference of ind. amount $d = 5$ tk

required installment $n = ?$

we know

$$S = \frac{n}{2}\{2a + (n-1)d\}$$

$\Rightarrow 790 = \frac{n}{2}\{2\times 100 + (n-1)5\}$

$\Rightarrow 158n = n(200 + 5n - 5)$

$\Rightarrow 158n = 5n^2 + 195n$.

$\Rightarrow 5n^2 + 195n - 158n = 0$

$\Rightarrow n^2 + 39n - 3160 = 0$

$\Rightarrow n^2 + 79n - 40n - 3160 = 0$

$\Rightarrow (n+79)(n-40) = 0$

$n = -79$ [no. installment can not be negative]

$n = 40$. $\therefore$ total no. of installment 40

9. A depositor deposited Tk. 4,000 at x% simple interest and Tk. 5,000 at y % simple interest. He received annual interest of Tk. 320 on his deposited amounts at the year end. If he could deposit Tk. 5,000 at x% simple interest and Tk. 4,000 at y% simple interest, he would receive annual interest of Tk. 310. Find the value of x and y.

ATQ>

$4000 \times \frac{x}{100} + 5000 \times \frac{y}{100} = 320$

$\Rightarrow 40x + 50y = 320$

$\Rightarrow 4x + 5y = 32$ ——— (I)

Again

$5000 \times \frac{x}{100} + 4000 \times \frac{y}{100} = 310$

$\Rightarrow 5x + 4y = 31$ ——— (II)

① × 4 − ② × 5. we will get,

$$16x + 20y = 124$$
$$\ominus \quad 25x + 20y = 155$$
$$-9x = -28$$

$$\Rightarrow x = 3$$

substitute the value of x at eqⁿ ①,

$$4 \times 3 + 5y = 32$$
$$\Rightarrow 5y = 20$$
$$\therefore y = 4.$$

Ans: $x = 3$%, $y = 4$%

- Mr. Rahman invests Tk. 2,400 in a bank at 5% interest. How much additional money must he invest at 8% interest so that the total annual income will be equal to 6% of his entire investment?

- A man has Tk. 1,00,000 to invest. He invests Tk. 40,000 at 5% and Tk. 35,000 at 4% interest rate. In order to have a yearly income of Tk. 5,000, at what rate of interest he must invest the reminder amount.

Thank You