BANGLADESH BANK AD-2017

MATH-A : Try to Easy way.

(A). A man sells an article at a profit of 25%. If he had bought it at 20% less and sold it for Tk. 10.50 less, he would have gained 30%. Find the cost price of the article.

Let, cost price = 100 Tk

25% profit Article selling price = $\left(100 + 100 \times \frac{25}{100}\right) = 125$ Tk

20% less Article cost price = $\left(100 - 100 \times \frac{20}{100}\right) = 80$ Tk

30% profit Article selling price = $\left(100 + 100 \times \frac{30}{100}\right) = 130$ Tk

cost price 100 Tk then selling price = 130 Tk

∴ " " 1 " " = $\frac{130}{100}$.

∴ " " 80 " " = $\frac{80 \times 130}{100}$

= 104 Tk

Difference of two selling price = $(125 - 104) = 21$ Tk

when 21 Tk less then cost price = 100 Tk

∴ " 1 " " = $\frac{100}{21}$.

∴ " 10.50 " " = $\frac{100 \times 10.50}{21}$,

= $\frac{100 \times 1050}{21 \times 100}$

= 50 Tk

Ans : 50 Tk

Solution & Completed by Yousuf Ali

মাত্রা 'x' ধরে করতে চান — (BBAD-2017- Math-01)

Let, cost price = x Tk

first selling price = $\left(x + x \times \frac{25}{100}\right) = \frac{5x}{4}$ Tk

20% less cost price = (100-20) or 80% of x = $\frac{80x}{100} = \frac{4x}{5}$ Tk

2nd selling price = $\left(\frac{4x}{5} + \frac{4x}{5} \times \frac{30}{100}\right)$ Tk

$= \frac{26x}{25}$ Tk

According to the question,

1st selling price - 2nd selling price = 10.50

or, $\frac{5x}{4} - \frac{26x}{25} = 10.50$

or, $\frac{125x - 104x}{100} = 10.50$

or, $\frac{21x}{100} = 10.50$

or, $21x = 100 \times 10.50$

or, $x = \frac{100 \times 10.50}{21}$

$\therefore x = 50$

The cost price of the Article = 50 Tk

Ans: 50 Tk

Solution & Completed by Yousuf Ali

MATH-B: A and B can do a piece of work in 18 days; B and C can do it in 24 days; A and C can do it 36 days. In how many days will A, B and C finish it working together and seperately?

Solution: Here,

A and B 18 days done 1 portion work

∴ A and B 1 " " $\frac{1}{18}$ " " ——— (I)

similarly B and C 1 days done = $\frac{1}{24}$ portion ——— (II)

" A and C 1 " " = $\frac{1}{36}$ " ——— (III)

(I) + (II) + (III) ⇒

A+B 1 day's work = $\frac{1}{18}$ portion

B+C " " = $\frac{1}{24}$ "

A+C " " = $\frac{1}{36}$ "

---

2 (A+B+C)'s 1 days work = $\left(\frac{1}{18} + \frac{1}{24} + \frac{1}{36}\right)$ portion

$= \left(\frac{4+3+2}{72}\right)$

$= \frac{9}{72} = \frac{1}{8}$ portion

∴ (A+B+C)'s 1 days work = $\frac{1}{8\times 2} = \frac{1}{16}$ portion

Both (A+B+C) $\frac{1}{16}$ portion work done 1 day

∴ " (A+B+C) 1 or full " " = $\frac{1\times 16}{1}$ = 16 days

Solution & Completed by Yousuf Ali

Now, (A+B+C)'s 1 days work $= \frac{1}{16}$ ——— (iv)

(iv) — (i) ⇒

C's 1 days work $= \left(\frac{1}{16} - \frac{1}{18}\right)$ portion

$= \left(\frac{9-8}{144}\right)$ " $= \frac{1}{144}$ portion work

C, $\frac{1}{144}$ portion work done 1 day

∴ C 1 or full " " $\frac{1 \times 144}{1} = 144$ days

(iv) — (ii) ⇒

A's 1 days work $= \left(\frac{1}{16} - \frac{1}{24}\right)$ portion

$= \left(\frac{3-2}{48}\right) = \frac{1}{48}$ portion

A' $\frac{1}{48}$ portion work done 1 days

∴ A 1 or full " " $\frac{1 \times 48}{1} = 48$ days

(iv) — (iii) ⇒

B' 1 days work $= \left(\frac{1}{16} - \frac{1}{36}\right)$ portion

$= \left(\frac{9-4}{144}\right)$ portion

$= \frac{5}{144}$ portion

B, $\frac{5}{144}$ portion work done 1 day

∴ B 1 or Full " " $\frac{1 \times 144}{5} = 28.8$ or 29 days

Ans: Both 16 days, A 48 days, B 28.8 or 29 days
C 144 days

Solution & Completed by Yousuf Ali

Bangladesh Bank (Cash) — 2017

(A). Shakil started a business investing Tk. 25,000 in 2009. In 2010, he invested an additional amount of Tk. 10,000 and Raihan joined him with an amount of Tk. 35,000. In 2011 Shakil invested another additional amount of Tk. 10,000 and Jafor joined them with an amount of Tk. 35,000. What will be Raihan's share in the profit of Tk. 1,50,000 earned at the end of 3 years from the start of the business in 2009. **20**

Solution:

After 3 year Shakil investment

$= \{(25,000 \times 36) + (10,000 \times 24) + (10,000 \times 12)\}$ Tk

$= (900000 + 240000 + 120000)$ Tk

$= 1260000$ Tk

After 2 year Raihan investment

$= (35,000 \times 24) = 840,000$ Tk

After 1 year Jafor investment

$= (35,000 \times 12) = 420,000$ Tk

Investment ratio of Shakil, Raihan and Jafor

$= 1260000 : 840,000 : 420000$

$= 3 : 2 : 1$

Sum of ratio $= 3+2+1 = 6$

Here, profit $= 1,50,000$ Tk

$\therefore$ Raihan profit shares $= 1,50,000 \times \frac{2}{6}$

$= 50,000$ (Ans.)

Solution & Completed by Yousuf Ali

(B). If 9 engines consume 24 metric tonnes of coal, when each is working 8 hours a day, how much coal will be requjred for 8 engines, each running 13 hours a day, it being given that 3 engines of former type consume as much as 4 engines of latter type? 15

Solution.

According to the question

3 engines former = 4 engines latter

∴ 9 " " $= \frac{4 \times 9}{3} = 12$ "

12 engines working 8 hours a day consume 24 metric tonnes co

∴ 1 " " 1 " " $\frac{24}{12 \times 8}$

∴ 8 " " 13 " $= \frac{24 \times 13 \times 8}{12 \times 8}$ " "

$= 26$ metric tonnes

Ans: 26 metric tonnes

Alternative

ATQ, 4 engines latter = 3 engines former type

∴ 1 " " $\frac{3}{4}$ " "

∴ 8 " " $\frac{3 \times 8}{4} =$ [redacted] "

$= 6$ engines former

Now, 9 engines working 8 hours a day consume 24 metric tons

∴ 6 " " 13 " " $= \frac{24 \times 13 \times 6}{9 \times 8}$

$= 26$ metric tonnes

(Ans)

Solution & Completed by Yousuf Ali

(C). Dawood invested certain amount in three different schemes A, B and C with the rate of interest 10% p.a., 12% p.a. and 15% p.a. respectively. If the total interest accrued in one year was Tk. 3200 and the amount invested in Scheme C was 150% of the amount invested in Scheme A and 240% of the amount invested in Scheme B, what was the amount invested in Scheme B? 15

Solution:

Let,

B investment be $= x$ Tk

ATQ,

$C = 240\%$ of $B = \frac{240}{100} \times x$

or, $C = \frac{12x}{5}$ $\therefore C = \frac{12x}{5}$ Tk

NOW,

$C = 150\%$ of A

or, $\frac{12x}{5} = \frac{150}{100} \times A$

or, $\frac{12x}{5} = \frac{3}{2} A$

$\therefore A = \frac{12x \times 2}{5 \times 3} = \frac{8x}{5}$ Tk

Again, ATQ,

$$\frac{10 \times 1 \times \frac{8x}{5}}{100} + \frac{12 \times x \times 1}{100} + \frac{\frac{12x}{5} \times 1 \times 15}{100} = 3200$$

or, $\frac{16x}{100} + \frac{12x}{100} + \frac{36x}{100} = 3200$

or, $\frac{16x + 12x + 36x}{100} = 3200$

$\therefore x = \frac{3200 \times 100}{64} = 5000$

Ans: 5000 Tk

Solution & Completed by Yousuf Ali

Question: The simple interest on a sum of money will be Tk 600 after 10 years. If the principal is trebled after 5 years will be the total interest at the end of the tenth year? [UCBL PO – 17]

Solution:

Here,

10 years interest = 600 Tk

$\therefore$ 1 " " $= \frac{600}{10} = 60$ Tk

We know, principal & Interest

If the principal is trebled, the interest will also be trebled

So,

The total interest in 10 years

$= \{$ Interest in first 5 years $\} + \{$ interest in next 5 years $\}$

$= (60 \times 5) + (60 \times 5 \times 3)$

$= 1200$ Tk

Ans: 1200 Tk

Solution & Completed by Yousuf Ali

Paper Source

Subject.....

Date:.....Time:.....

Question: Mr Jahed was asked to contruct a road that is 1920 m long in 120 days. He appointed 160 workers and after 24 days found that only one-eighth of the work had been finished. How many additional worker should he appoint in order to complete entire work within the stipulated time? [Dhaka Bank (MTO) -2016] [UCBL (PO) - 2017]

Solution:

Total work left $= \left(1 - \frac{1}{8}\right) = \frac{7}{8}$ portion

Total time left $= (120 - 24) = 96$ days

$\frac{1}{8}$ of the work can be done in 24 days 160 workers

$\therefore$ 1 " " " 24 " $\frac{160 \times 8}{1}$

$\therefore$ 1 " " " $\frac{160 \times 24 \times 8}{1}$

$\therefore \frac{7}{8}$ " " " 96 $= \frac{160 \times 24 \times 8 \times 7}{96 \times 8}$

$= 280$ workers

Additional worker he need $= (280 - 160) = 120$ workers

Ans: 120 workers.

Note: UCBL Mr Jahed Mr X

Question: A fruit salad mixture consists of Apples, peaches and grapes in the ratio 6:5:2 respectively by weigh. If 39 pounds of the mixture is prepared, the mixture includes how many more pounds of apples than grapes.
[Bangladesh krishi Bank (SO) - 2017]

solution: Here,

Ratio of apples : peaches : grapes = 6:5:2

Sum of ratio = (6+5+2) = 13

Now,

Amount of apple in mixture = $\left(39 \times \frac{6}{13}\right)$ = 18 pounds

Amount of graples in mixture = $\left(39 \times \frac{2}{13}\right)$ = 6 pounds

∴ Dibberence between apples and graples = (18-6) = 12 pounds

Ans: 12 pounds

Question: Mr Sakil leaves his obbice at a certain bixed time. If he walks at the rate of 5 km per hour, he is late by 7 minutes. If he walks at the rate of 6 km, he reaches the obbice 5 minutes earlier. how bar is the obbice brom his house?
[Bangladesh Krishi Bank (SO)-2017] [Janata Bank (EO/FA) - 2015]

solution: Let, the distance obbice brom house = x km

Dibberence of time = (7+5) = 12 minutes or $\frac{12}{60}$ hours

According to the question,

$$\left(\frac{x}{5} - \frac{x}{6}\right) = \frac{12}{60}$$

or, $\frac{x}{30} = \frac{1}{5}$

∴ x = 6

Ans: 6 km

Solution & Completed by Yousuf Ali

Question: 20 men can finish a piece of work in 30 days. After how many days should 5 men leave the work so that it may be finished in 35 days? [Sadharan Bima Corporation (AM) – 2016] [Bangladesh Krishi Bank (30) – 2017] [Agrani Bank (30) – 2010]

Solution:

Let, After 'x' days 5 men leave the work

20 men 30 days work done 1 portion

$\therefore$ 20 " 1 " " " $\frac{1}{30}$ "

$\therefore$ 20 " x " " " $\frac{x}{30}$ "

Rest person $= (20-5) = 15$, Rest days $= (35-x)$ days

Let total work $= 1$ portion

Again,

20 men 30 days work done 1 portion

$\therefore$ 1 " 1 " " " $\frac{1}{20\times30}$ "

$\therefore$ 15 " $(35-x)$ " " $= \frac{15\times(35-x)}{20\times30}$ "

$= \frac{35-x}{40}$ portion

According to the question,

$$\frac{x}{30} + \frac{35-x}{40} = 1$$

or, $\frac{4x + 105 - 3x}{120} = 1$

or, $x = 120 - 105$

$\therefore x = 15$

Ans: 15 days

Question: A man income from interest and wages is Tk 5000. If he doubles his investment and also gets an increase of 50% in wages and his income increase to 8000 Tk. what was his original income separately in terms of interest and wages?

[Bangladesh Krishi Bank (SO) -2017] [Same As Southest Bank (PO) -2016]

Solution:

let, his interest income be x and wage income be $=y$

According to the first condition,

$$x+y = 5000$$

$$\therefore y = 5000 - x \quad \text{——— ①}$$

We know, Investment ∝ Interest,

When investment is double then interest be $= 2x$

According to the 2nd condition,

$$2x + 150\% \text{ of } y = 8000$$

$$\text{or, } 2x + \frac{150}{100} \times y = 8000$$

$$\text{or, } 2x + \frac{3y}{2} = 8000$$

$$\text{or, } \frac{4x+3y}{2} = 8000$$

$$\text{or, } 4x + 3(5000 - x) = 16,000$$

$$\text{or, } 4x + 15,000 - 3x = 16,000$$

$$\text{or, } x = 16,000 - 15000$$

From equation ① -

$$y = 5000 - 1000$$

$$\therefore y = 4000$$

Ans: 1000 Tk and 4000 Tk