

# Pubali Bank Written Math Questions with Solutions 2000–16

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## Pusali Bank Sr. officer/officer-2016

1. A certain sum of money amounts to Tk. 1008 in 2 years and to Tk. 1164 in  $3\frac{1}{2}$  years. Find the sum and the rate of interest.

In  $3\frac{1}{2}$  years, the amount will be = 1164 Tk.  
 " 2 " " " " = 1008 Tk.

In  $1\frac{1}{2}$  years, the amount will be = 156 Tk.  
 " 1 " " " =  $\frac{156}{1\frac{1}{2}}$   
 " 2 " " " =  $\frac{156 \times 2 \times 2}{3}$   
 = 208 Tk.

$\therefore$  The principal is =  $1008 - 208 = 800$  Tk.

The interest of Tk. 800 in 2 years is = 208 Tk.  
 " " " " 1 " 1 " =  $\frac{208}{800 \times 2}$   
 " " " " 100 " 1 " =  $\frac{208 \times 100}{800 \times 2}$   
 = 13 Tk.

Ans: The amount of sum is Tk. 800 & the interest is 13%.

2. Four milkmen rented a pasture. A grazed 24 cows for 3 months, B 10 cows for 5 months, C 35 cows for 4 months and D 21 cows for 3 months. If A's share of rent is Tk. 720, find the total rent of the field.





Now, papered area =  $\frac{1720}{10} \text{ m}^2 = 172 \text{ m}^2$

Area of 1 door and 2 windows =  $8 \text{ m}^2$

Total area of 4 walls =  $(172 + 8) \text{ m}^2 = 180 \text{ m}^2$

$$\therefore 2 \times (9 + 6) \times h = 180$$

$$\Rightarrow h = 6 \text{ m}$$

So, Length =  $9 \text{ m}$ , breadth =  $6 \text{ m}$ , height =  $6 \text{ m}$

$$\therefore \text{Dimension of the Area} = (9 \times 6 \times 6) \text{ m}^3 = 324 \text{ m}^3$$

### Pubali Bank Junior Officers cash-2016

1. A retailer buys 40 pens at the market price of the 36 pens from wholesaler. If he sells these pens giving a discount of 1%. What is the profit percent.

Let, the cost price of each pen be  $x$

So, " " " 36 pens be  $36x$

And the price of 40 pens be  $40x$  at 1% discount.

The selling price of retailer Tk.  $\left(40x - \frac{40x \times 1}{100}\right)$

$$= \frac{198x}{5}$$

profit of retailer Tk =  $\left(\frac{198x}{5} - 36x\right) = \frac{18x}{5}$

$$\text{percentage of profit} = \left(\frac{18x/5}{36x} \times 100\right)\% = 10\%$$

2. A, B and C started a business by investing <sup>A</sup>TK 120,000, TK 135,000 and TK. 150,000 respectively. Find the share of each, out of an annual profit of TK. 56700.

The investment Ratio of A, B and C is  
 $= 120000 : 135000 : 150000$   
 $= 8 : 9 : 10$

Sum of investment ratio terms  $= 8 + 9 + 10 = 27$

So, A get the share of profit TK.  $\left(\frac{8}{27} \times 56700\right) = 16800$  TK.  
 B " " " " "  $\left(\frac{9}{27} \times 56700\right) = 18900$  TK.  
 C " " " " "  $\left(\frac{10}{27} \times 56700\right) = 21000$  TK.

3. The simple interest on a certain sum of money for  $2\frac{1}{2}$  years at 12% per annum is TK. 40 less than the simple interest on the same sum for  $3\frac{1}{2}$  years at 10% per annum. Find the sum.

Let, the sum =  $x$

$$\text{A.T.Q.}, x \times 10\% \times \frac{7}{2} - x \times 12\% \times \frac{5}{2} = 40$$

$$\Rightarrow \frac{70x}{200} - \frac{60x}{200} = 40$$

$$\Rightarrow 10x = 40 \times 200$$

$$\Rightarrow x = 800$$

Ans: 800.

1. When a producer allows 36% commission on the retail price of his product, he earns a profit of 8.8%. What would be his profit percent if the commission is reduced by 24%?

Let  $n$  be the selling price.

He pays 36% commission so he nets  $(100-36)\% = 64\%$  of  $n$ .

$$= 0.64n.$$

He makes 8.8% profit on that, so his cost is

$$= \frac{0.64n}{1.088}$$

$$= 0.588n.$$

at, 24% commission,

$$\text{Selling price} = x - x \times 24\% = 0.76n.$$

$$\therefore \text{profit} = 0.76n - 0.588n = 0.172n.$$

$$\therefore \text{profit percent} = \frac{0.172n \times 100}{0.588n}$$

$$= 29.25\%.$$

2. A and B start a business with investments of Tk 5000 and Tk 4500 respectively. After 4 months, A takes out half of his capital. After two more months, B takes out one third of his capital while C joins them with a capital of Tk 7000. At the end of a year, they earn a profit of Tk 5080. Find the share of each member in the profit.



$$A : B : C = (5000 \times 9 + 2500 \times 8) : (4500 \times 6) + 3000 \times 6 : (7000 \times 6)$$

$$= 40 : 45 : 42$$

$$\text{Sum of their ratio} = 40 + 45 + 42 = 127$$

$$A's \text{ share} = \frac{5080 \times 40}{127} = 1600 \text{ TK.}$$

$$B's \text{ " } = \frac{5080 \times 45}{127} = 1800 \text{ TK.}$$

$$C's \text{ " } = \frac{5080 \times 42}{127} = 1680 \text{ TK.}$$

3. 2 men and 3 boys can do a piece of work in 10 days while 3 men and 2 boys can do the same work in 8 days. In how many days can 2 men and 1 boy do the work?

$$\text{Let, Man} = M$$

$$\text{Boy} = B$$

$$\therefore (2M + 3B)'s \text{ 10 days work} = (3M + 2B)'s \text{ 8 days work}$$

$$\Rightarrow 20M + 30B = 24M + 16B$$

$$\Rightarrow 4M = 14B$$

$$\Rightarrow 2B = 2B$$

$$\text{Now, } 2M + 1B = 7B + 1B = 8B$$

$$\text{and } 2M + 3B = 7B + 3B = 10B$$

$$\frac{10 \text{ Boys take 10 days}}{8 \text{ " " } \frac{10 \times 10}{8}} = 12.5 \text{ days.}$$

1. A salesman's commission is 5% on all sales upto Tk. 10,000 and 4% on all sales exceeding this. He remits Tk. 31,100 to his parent company (after deducting his commission). Find the Total sales.

Let his total sales be  $x$  Tk.

Now, Total sales - commission = 31100

$$\Rightarrow x - [5\% \text{ of } 10000 + 4\% \text{ of } (x - 10000)] = 31100$$

$$\Rightarrow x - \left[ \frac{5}{100} \times 10000 + \frac{4}{100} \times (x - 10000) \right] = 31100$$

$$\Rightarrow x = 32500.$$

2. Padma purchased 30 kg of rice at the rate of Tk. 17.50 per kg and another 30 kg rice at a certain rate. He mixed the two and sold the entire quantity at the rate of Tk. 18.60 per kg and made 20% overall profit. At what price per kg did he purchase the lot of another 30 kg rice?

Let,  $x$  be the cost rate of the other rice

$$\text{Total cost} = 30x + 30 \times 17.50 = 30x + 525$$

$$\text{The revenue from selling } 60 \times 18.6 = 1116.$$

Given as 20% profit of the total cost,

$$\text{So, } 1.2(30x + 525) = 1116$$

$$\Rightarrow x = 13.50 \text{ Tk.}$$



Q. The ratio of the number of boys and girls in a school is 3:2. If 20% of the boys and 25% of the girls are relationship holders, what percentage of the students does not get the scholarship.

Let. The number of boys and girls be  $3n$  and  $2n$  respectively.

$\therefore \text{Total students} = 3n + 2n = 5n.$

Number of boys who are scholarship holders =  $3n \times 20\% = \frac{3n}{5}$   
 " " Girls " " =  $2n \times 25\% = \frac{2n}{4}$

$$\begin{aligned} \text{Number of students who does not get scholarship} &= 5n - \left( \frac{2n}{5} + \frac{2n}{4} \right) \\ &= \frac{78n}{20} \end{aligned}$$
$$\text{percentage} = \left( \frac{78 \frac{11}{20}}{51} \times 100 \right) \% = 78\%$$

Pulali Bank Senior officers - 2013

1.  $a, b, c, d$  and  $e$  are five consecutive numbers in increasing order of size. Deleting one of the five numbers from the set decreased the sum of the remaining numbers in the set by 20%. Which one of the numbers was deleted from  $a, b, c, d$  and  $e$ ?

Let  $a = x$        $e = x + 4$   
 $b = x + 1$   
 $c = x + 2$   
 $d = x + 3$





$$\text{profit} = 1.2n + 30 - n - 50 = 0.2n - 20$$

$$\begin{aligned}\text{But, profit} &= (20 - 3\frac{1}{2})\% \text{ of } (n + 50) \\ &= 16\frac{1}{2}\% \text{ of } (n + 50)\end{aligned}$$

$$\begin{aligned}\therefore 0.2n - 20 &= \frac{50}{3}\% \times (n + 50) \\ \Rightarrow 300(0.2n - 20) &= 50(n + 50) \\ \Rightarrow n &= 850 \text{ Tk.}\end{aligned}$$

### Pubali Bank Junior Officers Cash - 2013

A team of 2 men and 5 women completed one-fourth of a job in 3 days. After 3 days another man joined the team and they took 2 days to complete another one-fourth of the job. How many men can complete the whole job in 4 days?

$$\begin{aligned}(2M + 5W) \text{ 3 days complete} &= \frac{1}{4} \text{ portion} \\ 1 \text{ " " " } &= \frac{1}{12} \text{ " " "}\end{aligned}$$

$$\begin{aligned}\text{Again } (3M + 5W) \text{ 2 days complete} &= \frac{1}{4} \text{ portion} \\ 1 \text{ " " " } &= \frac{1}{8} \text{ " " "}\end{aligned}$$

$$3M + 5W = \frac{1}{8}$$

$$2M + 5W = \frac{1}{12}$$

$$M = \frac{1}{8} - \frac{1}{12}$$

$$= \frac{3-2}{24} = \frac{1}{24}$$



In 1 day  $\frac{1}{24}$  parts can do 1 man  
 " " " " " " 24 men  
 " " " " " "  $\frac{24}{4}$  "   
 = 6 men ..

2. 4000 soldiers in a camp have enough food for 190 days. After 30 days, 800 soldiers are posted elsewhere. How long would the remaining food last?

Remaining days =  $190 - 30 = 160$  days  
 " soldiers =  $4000 - 800 = 3200$

4000 soldiers have food for 160 days  
 " " " " " "  $160 \times 4000$  days  
 =  $\frac{160 \times 4000}{3200}$   
 = 200 days.

3. A worker buys some shirts and ties. Shirts cost Tk. 20 each and the ties cost Tk. 30 each. If the man spends exactly Tk 810 and buys the maximum number of shirts possible under these conditions, what is the ratio of shirts to ties?

Since the man buys maximum number of shirts, so the following calculation may follow

If maximum no. of shirt is 12, total cost =  $12 \times 70 = 840$  which greater than given total cost.  
 If maximum no. of shirt is 11, total cost =  $11 \times 70 = 770$  and cost of ties =  $810 - 770 = 40$   
 " " " " " 10 " " =  $10 \times 70 = 700$  " " =  $810 - 700 = 110$   
 " " " " " 9 " " =  $9 \times 70 = 630$  " " =  $810 - 630 = 180$

Here 40 and 110 is not divisible by 30, so these two are not possible, but 180 is divisible by 30,

$$\text{So number of ties} = 180 \div 30 = 6$$

$$\therefore \text{Ratio of shirts to ties} = 9:6 = 3:2$$

## Punjab Bank Ltd Junior Officers - 2012

- A worker is paid Tk. X for the first 5 hours he works each day. He is paid Tk. Y per hour for each hour he works in excess of 5 hours. During one week, he works 8 hours on Saturday, 11 hours on Sunday, 12 hours on Monday, 10 hours on Tuesday and 9 hours on Wednesday. What is the average daily wage in Tk. Take for the five days week?



Daywise earning of the workers is:

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$$\text{Saturday: } \{5x + (8-5)y\} = (5x + 3y) \text{ Taka.}$$

$$\text{Sunday: } \{5x + (11-5)y\} = (5x + 6y) "$$

$$\text{Monday: } \{5x + (12-5)y\} = (5x + 7y) "$$

$$\text{Tuesday: } \{5x + (10-5)y\} = (5x + 5y) "$$

$$\text{Wednesday: } \{5x + (10-5)y\} = (5x + 4y) "$$

$$\text{Sum of five days} = (25x + 25y) \text{ Taka}$$

$$\text{Average earning for five days} = \frac{25x + 25y}{5} \text{ Taka} \\ = (5x + 5y) \text{ Taka}$$

2. A borrower pays 8% interest per year on the first Taka 600 he borrows and 7% per year on the part of the loan in excess of Taka 600. How much interest will the borrower pay on a loan of Taka 6000 for one year?

Out of Tk. 6000

$$\text{First Tk. 600 will be of 8\% interest} = 600 \times 8\% \\ = 48$$

$$\text{Rest of the amount} = (6000 - 600) = 5400$$

$$\text{at the rate of 7\% interest} = 5400 \times 7\% \\ = 378$$

$$\therefore \text{Total interest in one year} = (48 + 378) \\ = 426 \text{ Tk.}$$



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 9. Ripon, Liton and Pintu started a business jointly with a total amount of Taka 280. Ripon paid Taka 45 more than Liton and Liton paid Taka 70 less than Pintu. If the company made a profit of Taka 56, how much profit should Liton receive?

Let Liton paid for the business = L Taka  
 Ripon " " " " =  $(L + 45)$ "  
 Pintu " " " " =  $(L + 70)$ "

ATQ,  $L + (L + 45) + (L + 70) = 280$

$\Rightarrow 3L = 280 - 115$

$\Rightarrow L = 55$

$\therefore$  Liton's percentage of contribution =  $\left(\frac{55}{280} \times 100\right)$   
 $= 19.64$

Company made a profit of Taka 56

$\therefore$  Liton will receive profit = Tk.  $\left(\frac{19.64 \times 56}{100}\right)$   
 $= \text{Tk. } 10.99$   
 $= \text{Tk. } 11$

Purbali Bank Ltd. Senior Officer - 2000

1. An item was sold at 6% profit. If the cost was 4% less and selling price was Tk. 4 more selling. Then the trader would have made a profit of 12.5%. What was the cost of the item?

If 6% profit, the selling price =  $100 + 6 = 106 \text{ Tk.}$   
 " 4% less, " cost " =  $100 - 4 = 96 \text{ Tk.}$

Again, in 12.5% profit the selling price =  $(96 + \frac{96 \times 12.5}{100}) \text{ Tk.}$   
 $= 108 \text{ Tk.}$

Difference between selling price =  $108 - 106 = 2 \text{ Tk}$

For difference Tk. 2 the cost = Tk. 100  
 " " " 4 " " =  $\frac{100 \times 4}{2}$   
 $= \text{Tk. } 200.$

2. Seven kgs of mango cost as much as 10 kgs of apple and 1 kg of orange, 2 kgs of orange cost as much as 1 kg of mango and 2 kgs of apple. How many kgs of apple can be purchased by the amount of money required to purchase 12 kgs of mango?

$$7 \text{ kgs mango} = 10 \text{ kgs apple} + 1 \text{ kg orange} \text{ --- (i)}$$

$$7 \text{ kgs orange} = 1 \text{ kg mango} + 2 \text{ kgs apple} \text{ --- (ii)}$$

$$\text{or, } 1 \text{ kg mango} = 7 \text{ kgs orange} - 2 \text{ kgs apple} \text{ --- (iii)}$$

Now, from (i)  $\times 7$  --- (iii) we get

$$49 \text{ kgs mango} = 70 \text{ kgs apple} + 7 \text{ kgs orange}$$

$$1 \text{ kg mango} = 7 \text{ kgs orange} - 2 \text{ kgs apple}$$

$$48 \text{ kgs mango} = 22 \text{ kgs apple}$$

$$12 \text{ kgs apple} = \frac{22 \times 12}{48} \text{ " "}$$

$$= 18 \text{ kgs apple}$$

16  
A trader had 22 pens and he sold some of them at a profit of TK 05 per unit — had some at a loss of TK 10 per unit. If his total profit was TK 635, how many pens did he sell at a loss?

Let he sold  $x$  number of pens at profit  
(22-x) " " = at loss

So, 1 unit makes profit = TK. 05  
 $x$  " " " = TK.  $05x$

1 unit makes loss = TK. 10

$\therefore$  (22-x) unit makes loss =  $10(22-x)$

Ans,

$$05x - 10(22-x) = 635$$

$$\Rightarrow 05x - 220 - 10x = 635$$

$$\Rightarrow x = 19$$

$\therefore$  He sold at loss =  $22 - 19 = 3$  pens.

1. Arif can do a particular job in 4 days. Afzal can do the same job in 5 days. They worked together to complete the job and received a total payment of TK 45. How much money should Arif get?

Arif takes 4 days for 1 work

" " 1 day "  $\frac{1}{4}$  "

Afzal takes 5 days for 1 work

" " 1 " "  $\frac{1}{5}$  "



$$\text{Aarif \& Afzal 1 days work} = \frac{1}{4} + \frac{1}{5} = \frac{9}{20}$$

So, they can do  $\frac{9}{20}$  work in 1 day  
 " " " 1 " "  $\frac{20}{9}$  day

$$\text{Aarif takes 1 day for} = \frac{1}{4} \text{ work}$$

$$\text{" " } \frac{20}{9} \text{ " " } = \frac{20}{9 \times 4} = \frac{5}{9}$$

$$\therefore \text{Afzal done} = 1 - \frac{5}{9} = \frac{4}{9}$$

$$\text{So, Aarif : Afzal} = \frac{5}{9} : \frac{4}{9} = 5 : 4$$

$$\text{Sum of this two ratio} = 5 + 4 = 9$$

$$\text{Aarif will get} = 450 \times \frac{5}{9} = \text{TK. } 250$$

5. In a group consisting of 40 people 24 were female and the rest were male. Half of the members were smokers and rest were non smokers. If  $\frac{1}{3}$ rd of the female members were smokers, how of the male members were non smokers?

$$\text{Total people} = 40$$

$$\text{Female} = 24$$

$$\therefore \text{Male} = 40 - 24 = 16$$

$$\text{Total smokers} = 40 \div 2 = 20$$

$$\text{Female smokers} = 24 \times \frac{1}{3} = 8$$

$$\text{Male " " } = 20 - 8 = 12$$

$$\text{Number of male non-smokers} = (16 - 12) = 4$$

6. A boat sailing against the current takes 8 hours to travel 32 kms. While sailing with the current, it takes only 4 hours to travel the same distance. What is the speed of boat? What is the speed of the current?

Let, Speed of boat =  $x$

" " current =  $y$

$\therefore$  While traveling against current, it can sail  $(x-y)$  km/hr & while sailing with the current, it can travel  $(x+y)$  hr km.

$$8(x-y) = 32 \quad \text{--- (i)}$$

$$4(x+y) = 32 \quad \text{--- (ii)}$$

(i) + (ii)

$$x-y=4$$

$$x+y=8$$

$$\begin{array}{r} x-y=4 \\ x+y=8 \\ \hline 2x=12 \\ x=6 \end{array}$$

and  $y = 2$

Ans: 6, 2.

7. You can now buy 4 meters of more cloth with the Tk 800 because of a reduction in price by 20%. Calculate the original price and current price of per meter of cloth.

At, 20% reduction, when past price Tk 100 then present price =  $(100-20) = \text{Tk. } 80$ .

When, past price Tk 800 then present price =  $\text{Tk. } \frac{80 \times 800}{100} = \text{Tk. } 640$



The present price of 4 meters cloth =  $800 - 640 = \text{Tk. } 160$ .

The current price of 4 meters = Tk. 160

" " " of " 1 " = Tk.  $\frac{160}{4} = \text{Tk. } 40$ .

If present price Tk. 80 than past price = Tk. 100

" " " " 40 " " =  $\frac{100 \times 40}{80} = \text{Tk. } 50$

Ans: The original price of per meter cloth is Tk. 50 and current price is Tk. 40.

8. A bank has a parking lot of 70 parking spaces. Each row in the parking lot contains the same number of parking spaces. The bank has purchased additional land for expansion of the office spaces. When the expansion is made, two more rows will be added to the parking lot. After the expansion is made, the capacity of the parking lot will remain the same and each row will contain the same number of parking spaces. How many rows were there in the parking lot before expansion has made?

Let, each row contains  $x$  No. of parking spaces

The No. of row =  $\frac{70}{x}$

After expansion, each row contains  $(x-2)$  no. of parking spaces

After expansion each No. of row =  $\frac{70}{x-2}$

$$\text{ATQ, } \frac{70}{x} + 2 = \frac{70}{x-2}$$

$$\Rightarrow 4x^2 - 8x - 140 = 0$$

$$\Rightarrow (x+5)(x-7) = 0$$

$$\therefore x = 7$$

$\therefore$  The number of rows =  $\frac{70}{7} = 10$