Mixed Maths Questions for SBI PO Pre, IBPS PO Pre, IBPS Clerk Mains and SBI Clerk Mains Exams.

Bank PO Maths Quiz 3

Direction: Study the following questions carefully and choose the right answer.

1. 12 marbles are selected at random from a large collection of white, red, green and yellow marbles. The number of marbles of each colour is unlimited. Find the probability that the selection contains atleast one marble of each colour?

A. $\dfrac{34}{91}$　　　　B. $\dfrac{33}{91}$　　　　C. $\dfrac{36}{91}$　　　　D. $\dfrac{23}{91}$　　　　E. None of these

2. Three persons Amar, Akbar and Anthony invested different amounts in a fixed deposit scheme for one year at the rate of 12% per annum and earned a total interest of Rs 3240 at the end of the year. If the amount invested by Akbar is Rs 5000 more than the amount invested by Amar and the invested by Anthony is Rs 2000 more than the amount invested by Akbar, what is the amount invested by Akbar?

A. Rs. 12000　　　　B. Rs. 10000　　　　C. Rs. 8000　　　　D. Rs. 16000　　　　E. None of these

3. Two stations Lucknow and Bhadohi are 162 km apart. A train leaves from Lucknow for Bhadohi and simultaneously another train leaves from Bhadohi for Lucknow. They meet at the end of 6 hours. If the former train travels 8 km/hour faster than the other, then speed of train starting from Bhadohi is:

A. $9\dfrac{1}{2}$ km/hr　　　　B. $8\dfrac{1}{2}$ km/hr　　　　C. $10\dfrac{5}{6}$ km/hr　　　　D. $12\dfrac{5}{8}$ km/hr　　　　E. None of these

4. A person purchases 100 pens at a discount of 10%. The net amount of money spent by the person to purchase the pens is Rs. 600. The selling expenses incurred by the person are 15% on the net cost price. What should be the selling price for the 100 pens in order to earn a profit of 25%?

A. Rs. 802.50　　　　B. Rs. 862.50　　　　C. Rs. 825　　　　D. Rs. 875　　　　E. None of these

5. A construction company has 100/3% of its employees as women. 50% of these women are married and 100/3% of married women have children. 75% of the men are married and 200/3% of married men have children. If no two employees are married to each other what fraction of the employees do not have children?

A. $\dfrac{13}{18}$　　　　B. $\dfrac{11}{18}$　　　　C. $\dfrac{17}{18}$　　　　D. $\dfrac{7}{18}$　　　　E. None of these

6. The circumference of a circle is 20 cm more than the perimeter of the square. The ratio of the side of the square to the radius of the circle is 4 : 3. Find the ratio of the area of the square to the area of the circle.

A. 23 : 29   B. 45 : 51   C. 56 : 99   D. 51 : 61   E. None of these

7. Praveen, Ramu and Shashi entered into a partnership with capitals of Rs. 62000, Rs. 93000 and Rs. 124000 respectively. Praveen manages the business for a certain number of months while Ramu manages the business for the rest of the year. The person who manages the business get the total commission equal to 10% of the profits. If the total income of Praveen at the end of the year is Rs. 2900 and the total profit is Rs. 12000, for how many months did Praveen manage the business?

A. 3 months   B. 5 months   C. 8 months   D. 2 months   E. None of these

8. Anand goes to the market and buys a certain article at a certain price and sells it at 10% profit. Had his brother Srinath gone to the market, being a much better businessman, he would have purchased the article for 10% less and sold it for Rs 25 more than Anand sold at, thereby making a profit of 50% in the deal. What is Anand's cost price?

A. Rs. 120   B. Rs. 110   C. Rs. 100   D. Rs. 90   E. None of these

9. A and B are two types of acid solutions containing water and acid in the ratios of 5 : 4 and 3 : 2 respectively, both by weight. What quantity of solution A, by weight, has to be mixed with 25 kg of acid solution B and 32 kg of acid so that the resultant mixture has 200/3% of acid content by weight in it?

A. 18 kg   B. 20 kg   C. 16 kg   D. 17 kg   E. None of these

10. Pintu in USA earns an annual income of $688.25 out of $10000 that he invested partly at 5% per annum and partly at 8% per annum simple interest. Ratio of money invested at 5% and 8%:

A. 149 : 251   B. 225 : 575   C. 545 : 105   D. 275 : 725   E. None of these

Correct Answers:

1	2	3	4	5	6	7	8	9	10
B	B	A	B	B	C	B	C	A	A

Explanations:

1. Let W, R, G, Y represents no. of white, red, green and yellow coloured marbles contained in the selection of 12 marbles.

No. of ways of selecting 12 marbles is equal to the no. of non-negative integral solutions of

W + R + G + Y = 12

Total no. of ways = C (12 + 4 − 1, 4 − 1) = C (15 , 3)

The no. of selections that contain at least one marble of each colour is equal to the number of positive integral solutions of W + R + G + Y = 12

= C (12 − 1, 4 − 1) = C (11 , 3)

Reqd. Probability = $\dfrac{C\,(11\,,\,3)}{C\,(15\,,\,3)} = \dfrac{33}{91}$

Hence, option B is correct.

2. Let the amount invested by Amar be x

Amount invested by Akbar = x + 5000

Amount invested by Anthony = x + 7000

Now, According to the question,

Rate = 12%, Total Interest = Rs 3240

$\Rightarrow$ {x + (x + 5000) + (x + 7000)} $\times \dfrac{12}{100}$ = 3240

$\Rightarrow$ 3x + 12000 = $\dfrac{324000}{12}$

$\Rightarrow$ 3x = 15000 $\Rightarrow$ x = 5000

Hence amount invested by Akbar = 5000 + 5000 = Rs 10000

Hence, option B is correct.

3. Given the distance between Lucknow and Bhadohi = 162 km

Let the speed of train starting from Bhadohi be x km/hour

Then speed of train starting from Lucknow = x + 8 km/hour

Distances travelled for 6 hours by trains starting from Lucknow and Bhadohi are 6(x + 8) and 6x km respectively.

So, 162 = 6(x+8) + 6x

$\Rightarrow$ 12x = 162 – 48

$\Rightarrow$ 12x = 114

$\Rightarrow$ x = $9\dfrac{1}{2}$ km/hr

Hence, option A is correct.

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4. Net Cost Price = CP + selling expenses = 1.15 × 600 = Rs 690 .
SP = Net CP + 25% of Net CP = 1.25 × 690 = Rs. 862.5
Hence, option (B) is correct.

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5. Let 90 be the no. employees in the company

Therefore, total women employees = $\dfrac{90}{3}$ = 30

$\left\{ \text{as } \dfrac{100}{3}\% = \dfrac{1}{3} \right\}$

As no. of women married = 50% of 30 = 15

No. of married women having children = $\dfrac{100}{3}$% of 15 = 5

No. of married women not having children = 15 – 5 = 10
Now, total male employees = total – no. of women = 90 – 30 = 60
75% of men are married = 75% of 60 = 45

No. of married men having children = $\dfrac{200}{3}$% of 45 = 30

No. of married men not having children = 45 – 30 = 15
Now total married employees not having children in the company = no. of unmarried men and women + men and women not having children = 15 + 15 + 10 + 15 = 55

Required fraction = $\dfrac{55}{90} = \dfrac{11}{18}$
Hence, option (B) is correct.

6. Let radius of the circle = 3x, side of the square = 4x
According to the question,
$2\pi r = 4 \times \text{Side} + 20$

$2 \times \dfrac{22}{7} \times 3x = 4 \times 4x + 20$

$\dfrac{132\,x}{7} - 16x = 20$

$\dfrac{132\,x - 112\,x}{7} = 20$

$20\,x = 140$

$x = 7$

Radius = 21cm, Side of the square = 28cm

Ratio of the area, $= 28^2 : \dfrac{22}{7} \times 21 \times 21$

$= 56 : 99$

Hence, option C is correct.

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7. Suppose Praveen manages the business for x months
So Ramu manages the business for (12 − x) months
Total profit = Rs. 12000
10% of 12000 is the total commission for those who manage the business = Rs.1200
Remaining profit = 12000 − 1200 = Rs. 10800
Remaining amount is divided among the three in the ratio equivalent to their investment which is given by,

Praveen : Ramu : Shashi = 62000 : 93000 : 124000 = 62 : 93 : 124

Praveen's share in 10800 $= \left\{\dfrac{62}{(62+93+124)}\right\} \times 10800 = $ Rs. 2400

But, Praveen's total share = Rs. 2900
⇒ Commission for Praveen for managing the business = 2900 − 2400 = 500 Rs

$X = \dfrac{500 \times 12}{1200} = $ 5 months

Hence Praveen manages business for 5 months.

Hence, option B is correct.

8. Let the cost price be x Rs.

Anand's profit = 10%

$\Rightarrow$ Selling Price of Anand = $\dfrac{(100 + 10)}{100 \times X}$ = 1.1x

Now, as Srinath buys 10 % less than Anand

$\Rightarrow$ Srinath's cost price = $\dfrac{(100 - 10)}{100 \times X}$ = 0.9x

Selling Price of Srinath is Rs 25 more than that of Anand

$\Rightarrow$ Srinath's selling price = 1.1x + 25

Accotding to question,

Srinath's profit = 50%

Profit % = $\dfrac{\text{Profit}}{\text{CP}}$ × 100

Profit = $\dfrac{\text{Profit \% × CP}}{100}$

SP − CP = $\dfrac{\text{Profit \% × CP}}{100}$

1.1x + 25 - 0.9x = 50 × $\dfrac{0.9\ x}{100}$

0.4x + 50 = 0.9x

0.5x = 50

x = 100

Hence cost price of Anand is Rs 100

Hence, option (C) is correct.

9.   Let the quantity of solution A be 9x

⇒ Water : Acid in solution A = 5x : 4x

Acid = 4x kg

Weight of solution B = 25 kg ⇒ Water : Acid = 3 : 2

Acid in solution B = 10 kg

Additional 32 kg acid is also added

Now,

Total acid = $\dfrac{200}{3}$% of total solution $\left\{ \dfrac{200}{3}\% = \dfrac{2}{3} \right\}$

4x + 10 + 32 = $\dfrac{2}{3}$ (9x + 25 + 32)

4x + 42 = 2(3x + 19)

2x = 4

x = 2

Hence, quantity of solution A = 9 × 2 = 18 kg

Hence, option A is correct.

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10.   Let money invested at 5% be $ x then money invested at 8% will be $ (10000 - x)

$\dfrac{(x \times 1 \times 5)}{100} + \dfrac{(10000 - x) \times 1 \times 8)}{100}$ = $ 688.25

⇒ 5x – 8x + 80000 = 68825

⇒ 3x = 11175

⇒ x = $3725

And money invested at 8% = $(10000 - 3725) = $6275

⇒ ratio of money invested = $3725 : $6275 = 149 : 251

Hence, option A is correct.