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

Bank PO Maths Quiz 16

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

1. Narayan and Amit are studying in DAV and DPS Agra respectively. They appeared in TET Exam and PET exam respectively conducted by Government of UP. Narayan got 80 marks in English out of 100 marks and Amit got 95 marks out of 150 marks. Narayan got 75 marks in Mental Ability and Amit got 70 marks out of 100 marks. In social science Narayan got 50 marks and Amit got 65 marks out of 100 marks. Narayan got 37 marks in Science out of 50 marks but Amit got 17 marks in same subject out of 25 marks. Find the difference between their percentage marks. Also calculate what percentage is this difference between them compared to Amit's percentage score? If passing percentage according to mean aggregate marks in both the exam was 68%, then find who passed and who failed?

A. 3.25%, 4.00%, Narayan failed and Amit passed
B. 4.26%, 3.20%, Narayan failed and Amit passed
C. 3.27%, 4.96%, Narayan passed and Amit failed
D. 5.96%, 5.25%, Narayan passed and Amit failed
E. None of these

2. Anand goes to the market and buys a certain articles at a certain price and sells 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. 50   B. 100   C. 150   D. 200   E. None of these

3. Two inlet pipes X and Y can separately fill a tank in 10 min and 5 min, respectively, and a outlet pipe Z can carry off 12 liters per min. If all the pipes are opened when the tank is full, it is emptied in 1 hour. What is the capacity of the tank?

A. 37.89 liters   B. 42.24 liters   C. 51.00 liters   D. 54.75 liters   E. None of these

4. A civil engineer make a blue print of purposed hotel room of cuboid shape thrice its height, twice its breadth and one and a half times its length are all equal. Further he make some correction, if length was tripled and its other two dimensions were each decreased by 200/3% its total surface area would?

A. Increase by approximately 41%
B. Increase by approximately 22%
C. Decrease by approximately 21%
D. Decrease by approximately 25 %
E. Decrease by approximately 50%

5. Roman lent a sum for a year, Shyam lent for two years and Shruti lent for three years. Each sum was lent at 4% (per annum) p.a compound interest. If each sum amounted to the same value, what is the ratio of the values of the Roman's sum, Shyam's sum and shruti's sum?

A. 676 : 650 : 625   B. 676 : 625 : 650   C. 77 : 27 : 27   D. 24 : 25 : 27   E. None of these
E. None of these

6. 'Jameen' is a rectangle piece of purposed construction site of a Mohalla ground in Patna. The ratio of the square of the perimeter of 'Jameen' and the sum of the squares of the diagonals of 'Jameen' is 98 : 25. Find the ratio of the sum of the adjacent sides of 'Jameen' and difference of adjacent sides of 'Jameen'.

A. 7 : 1   B. 5 : 2   C. 3 : 4   D. 2 : 1   E. None of these

7. In Military Academy 80% officers are vegetarian and 20% are non-vegetarian. In year 2016, 30% of vegetarian conquer gold medal and 20% non-vegetarian conquer gold medal in yearly sports Olympics. One officer is chosen at random has gold medal. What is the probability that the officer is vegetarians?

A. $\frac{2}{3}$ B. $\frac{5}{6}$ C. $\frac{15}{19}$ D. $\frac{12}{19}$ E. None of these

8. In Rajkamalvidyamandir there are 600 student participated in a school level science Olympiad the average score of 600 students is 50. Among them, the average of the top 100 students is 86, while that of the last 200 students is 30. What is the average score of the remaining 300 students?

A. 45.33   B. 58.33   C. 45.33   D. 51.33   E. None of these

9. The average age of P and Q is 20 years. If R replaces P, the average will be 21 years and if R replaces Q, the average would be 22. What are the ages of P, Q and R?

A. 18, 20, 22   B. 21, 19, 23   C. 22, 20, 18   D. 20, 22, 18   E. None of these

10. Rammohan brings milk in two jars, one of capacity 10 L having milk concentration only 50% and another jar of capacity 16 L having milk concentration only 60%. The total liquid of 26 L is poured in a jar of capacity 40 L and the rest part of the jar is filled with water. The new milk is further diluted by 25%. What is the approximate new concentration of milk in the mixture?

A. 15%   B. 27%   C. 30%   D. 36%   E. None of these

Correct Answers:

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

Explanations:

1. Mean aggregate percentage marks of Narayan in TET Exam

$$= \frac{\text{Total marks obtained by Narayan}}{\text{Total marks of TET Exam}} \times 100$$

$$= \frac{80 + 75 + 50 + 37}{100 + 100 + 100 + 50} \times 100$$

$$= \frac{242}{350} \times 100 = 69.14\%$$

Mean aggregate percentage marks of Amit in PET Exam

$$= \frac{\text{Total marks obtained by Amit}}{\text{Total marks of PET Exam}} \times 100$$

$$= \frac{95 + 70 + 65 + 17}{150 + 100 + 100 + 25} \times 100$$

$$= \frac{247}{375} \times 100 = 65.87\%$$

Difference in Mean aggregate percentage marks = (69.14 – 65.87) = 3.27%

Difference between mean aggregate marks of Amit expressed as a % of Amit's score

$$= \frac{3.27}{65.87} \times 100 = 4.96\%$$

Narayan got 69.14% and Amit got 65.87% mean aggregate percentage marks and pass percentage was 68%, so Narayan passed in the TET exam but Amit failed in the PET exam.

Hence option C is correct.

2. Let the cost price of Anand is x

Anand's profit = 10%

⇒ Selling Price of Anand = 110% of x = 1.1x

Now, as Srinath buys 10% less than Anand

⇒ Srinath's cost price = 90% of x = 0.9x

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

⇒ Srinath's selling price = 1.1x + 25

According to question,

Srinath's profit = 50%

$$SP = \frac{100 + P\%}{100} \times CP$$

1.1x + 25 = 1.5 × (0.9x)

25 = 1.35x − 1.1x

25 = 0.25x ⇒ x = 100

Hence cost price of Anand is Rs. 100

Hence, option B is correct.

3. Assume capacity of tank is 'C' liters.

Tank is emptied in one hour, it means that both the inlet pipes and outlet pipe are active for one hour.

Pipe X can file one tank in 10 min.

Hence, water filled by pipe X in one hour = Equivalent to (60/10 = 6) tanks = 6 × C

Also, water filled by pipe Y in one hour = Equivalent to (60/5 = 12) tanks = 12 × C

So, both the pipes together have filled in water = equivalent to (6 + 12 = 18) tanks = 18 × C

Initially tank is full.
So, total water carry out by leakage in one hour= Water filled by pipes X and Y + initially the tank was full = 18 × C + C = 19 × C

According to question,
19 × C = 12 litres/min

So, $C = \dfrac{12 \times 60}{19} = 37.89$ litres

Hence, option A is correct.

4.

Let the length, breadth and height of cuboid be l, b and h respectively

$3h = 2b = 1\frac{1}{2}l$ i.e. $3h = 2b = \frac{3}{2}l$

$L = 2h$ and $b = \frac{3}{2}h$

Total surface area of the cuboid

$$= 2\left((2h)\left(\frac{3}{2}h\right) + (2h)(h) + \left(\frac{3}{2}h\right)(h)\right) = 13h^2$$

If length was tripled and its other two dimensions were decreased by $66\frac{2}{3}\%$ new length = 6h, new

breadth $= \frac{3h}{2}\left(1 - \frac{66\frac{2}{3}}{100}\right)$

$= \frac{3}{2}h\left(1 - \frac{2}{3}\right) = \frac{1}{2}h$ and new height h $= h\left(1 - \frac{2}{3}\right) = \frac{h}{3}$

New total surface area =

$$2\left[(6h)\left(\frac{1}{2}h\right) + (6h)\left(\frac{h}{3}\right) + \left(\frac{1}{2}h\right)\left(\frac{h}{3}\right)\right] = \frac{31}{3}h^2 = 10\frac{1}{3}h^2$$

∴ Total surface area would decreases. Percentage decrease $= \frac{13h^2 - 10\frac{1}{3}h^2}{13h^2}$ x 100 %

$= \frac{800}{39}\% = 20\frac{20}{39}\% \approx 21\%$

Hence, option C is correct.

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5.   Let the Roman's sum, Shyam's sum and Shruti's sums be X, Y and Z respectively.
Each sum amounted to the same value.

$$X\left[1 + \left(\frac{4}{100}\right)\right] = Y\left[1 + \left(\frac{4}{100}\right)\right]^2 = Z\left[1 + \left(\frac{4}{100}\right)\right]^3 = A \text{ (Say)}$$

$X : Y : Z = \frac{A}{(1.04)} : \frac{A}{(1.04)^2} : \frac{A}{(1.04)^3}$

$X : Y : Z = \frac{A}{(26/25)} : \frac{A}{(26/25)^2} : \frac{A}{(26/25)^3}$

$(25/26) : (625/676) : (625/676) \times (25/26) = 676 : 650 : 625$

Hence, option A is correct.

6. Let the length and the breadth of the rectangle be l and b respectively

Then, $\dfrac{4(l + b)^2}{2(l^2 + b^2)} = \dfrac{98}{25}$

Then, $\dfrac{l^2 + b^2 + 2\,lb}{(l^2 + b^2)} = \dfrac{49}{25}$

$\Rightarrow 50 \times l \times b = 24(l^2 + b^2)$

$\Rightarrow 12l^2 - 25 \times l \times b + 12b^2 = 0$

$\dfrac{l}{b} = \dfrac{3}{4} \text{ or } \dfrac{4}{3}$

But l can't be less than b

$\therefore \dfrac{l}{b} = \dfrac{4}{3}$

Reqd. ratio $= \dfrac{(l + b)}{(l - b)} = \dfrac{\left(\dfrac{4}{3}b + b\right)}{\left(\dfrac{4}{3}b - b\right)} = 7:1$

Hence, option A is correct.

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7. Let V: Vegetarian officers, P(V) = 80% = 4/5

Let N: Non-vegetarian officers P(N) = 20% = 1/5

30% vegetarians conquer gold, P(G/V) = 30 % = 3/10

20% non-vegetarians conquer gold, P(G/N) = 20% = 1/5

We need to find the probability that an officer who is chosen from random that has gold is vegetarian

Using Baye's theorem $P\left(\dfrac{V}{G}\right)$

$= \dfrac{\dfrac{4}{5} \times \dfrac{3}{10}}{\dfrac{4}{5} \times \dfrac{3}{10} + \dfrac{1}{5} \times \dfrac{1}{5}} = \dfrac{6}{7}$

Hence, option E is correct.

8. Given average score of 600 student = 50

⇒ total score of 600 student = 50 × 600 = 30000

Total score of top 100 students = 86 × 100 = 8600

Total score of last 200 students = 30 × 200= 6000

Average score of remaining 300 students

$$= \frac{30000 - 8600 - 6000}{300} = 51.33$$

Hence, option (D) is correct.

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9. Let's assume that the ages of P, Q and R are p, q and r years respectively.
We know that,

$$\text{Average} = \frac{\text{Sum of all quantities}}{\text{Number of quantities}}$$

$$\text{Average of age of people} = \frac{\text{Sum of age of people}}{\text{Number of people}}$$

∵ Average of P and Q is 20 years,
⇒ p + q = 20 × 2 = 40   ….(i)

∵ Average of R and Q is 21 years,
⇒ q + r = 21 × 2 = 42
⇒ q = (42 – r)   ….(ii)

∵ Average of P and R is 22 years,
⇒ p + r = 22 × 2 = 44
⇒ p = (44 – r)   ….(iii)

Now, substituting the values of p and q from Equations (ii) and (iii) in Equation (i),

∴ (44 – r) + (42 – r) = 40
⇒ 86 – 2r = 40
⇒ 2r = 46 ⇒ r = **23**
∴ p = 44 – r
⇒ p = 44 – 23 = **21**

Also, q = 42 – r
⇒ q = 42 – 23 = **19**
Hence, option B is correct.

10. Amount of milk in first jar = 0.50 × 10 = 5 L

Amount of milk in second jar = 0.60 × 16 = 9.6 L

Total amount of milk out of 40 L = (5 + 9.6) = 14.6 L

Concentration of mixture = $\dfrac{14.6}{40}$ × 100% = 36.5%

Now this mixture is further diluted by 25%

So required concentration = 36.5 − (36.5 × 0.25) = 27.375% ≈ 27%

Hence, option B is correct.