MBA PATHSHALA WITH UDIT SAINI

For CAT, XAT, NMAT, GMAT, SNAP, IIFT, MAHCET and OMETs.

CAT

Previous Year Questions

ON

AVERAGES, MIXTURES & ALLIGATIONS

CAT & OMETs Content by Udit Saini

1. A solution, of volume 40 litres, has dye and water in the proportion 2 : 3. Water is added to the solution to change this proportion to 2 : 5. If one fourths of this diluted solution is taken out, how many litres of dye must be added to the remaining solution to bring the proportion back to 2 : 3?   [TITA]   **[CAT-2020-Slot 1]**

Click on the link to watch the video solution :- https://youtu.be/vfmvBIuMJU0?t=1377

2. Let A, B and C be three positive integers such that the sum of A and the mean of B and C is 5. In addition, the sum of B and the mean of A and C is 7. Then the sum of A and B is

[CAT-2020-Slot 1]

(A) 5

(B) 4

(C) 6

(D) 7

Click on the link to watch the video solution :- https://youtu.be/iWFQZGWJuiU?t=958

3. Two alcohol solutions, A and B, are mixed in the proportion 1:3 by volume. The volume of the mixture is then doubled by adding solution A such that the resulting mixture has 72% alcohol. If solution A has 60% alcohol, then the percentage of alcohol in solution B is **[CAT-2020 Slot 3]**

(A) 90%

(B) 94%

(C) 92%

(D) 89%

Click on the link to watch the video solution :- https://youtu.be/eGvGGNPtrJ8?t=1665

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4. A batsman played n + 2 innings and got out on all occasions. His average score in these n + 2 innings was 29 runs and he scored 38 and 15 runs in the last two innings. The batsman scored less than 38 runs in each of the first n innings. In these n innings, his average score was 30 runs and lowest score was x runs. The smallest possible value of x is? **[CAT-2020]**

   a) 1

   b) 2

   c) 3

   d) 4

Click on the link to watch the video solution :- https://youtu.be/IiZdfw4b-TQ?t=2086

5. In a group of 10 students, the mean of the lowest 9 scores is 42 while the mean of the highest 9 scores is 47. For the entire group of 10 students, the maximum possible mean exceeds the minimum possible mean by **[CAT-2020]**

   A) 5

   B) 4

   C) 3

   D) 6

Click on the link to watch the video solution :- https://youtu.be/IiZdfw4b-TQ?t=2552

6. The average of 30 integers is 5. Among these 30 integers, there are exactly 20 which do not exceed 5. What is the highest possible value of the average of these 20 integers? **[CAT-2019]**

   a) 4

   b) 5

   c) 4.5

   d) 3.5

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=237

7. The strength of a salt solution is p% if 100 ml of the solution contains p grams of salt. Each of three vessels A, B, C contains 500 ml of salt solution of strengths 10%, 22%, and 32%, respectively. Now, 100 ml of the solution in vessel A is transferred to vessel B. Then, 100 ml of the solution in vessel B is transferred to vessel C. Finally, 100 ml of the solution in vessel C is transferred to vessel A. The strength, in percentage, of the resulting solution in vessel A is   **[CAT-2019]**

   a) 15

   b) 12

   c) 13

   d) 14

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=510

8. Ramesh and Gautam are among 22 students who write an examination. Ramesh scores 82.5. The average score of the 21 students other than Gautam is 62. The average score of all the 22 students is one more than the average score of the 21 students other than Ramesh. The score of Gautam is   **[CAT-2019]**

   a) 51

   b) 53

   c) 49

   d) 48

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=809

9. A jar contains a mixture of 175 ml water and 700 ml alcohol. Gopal takes out 10% of the mixture and substitutes it by water of the same amount. The process is repeated once again. The percentage of water in the mixture is now   **[CAT-2018]**

(A) 25.4   (B) 20.5

(C) 30.3   (D) 35.2

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=1960

10. A 20% ethanol solution is mixed with another ethanol solution, say, S. of unknown concentration in the proportion 1:3 by volume. This mixture is then mixed with an equal volume of 20% ethanol solution. If the resultant mixture is a 31.25% ethanol solution, then the unknown concentration of S is   **[CAT-2018]**

(a) 50%

(b) 55%

(c) 48%

(d) 52%

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=2117

11. There are two drums, each containing a mixture of paints A and B. In drum 1, A and B are in the ratio 18 : 7. The mixtures from drums 1 and 2 are mixed in the ratio 3: 4 and in this final mixture, A and B are in the ratio 13: 7. In drum 2, then A and B were in the ratio

[CAT-2018]

(A) 251 : 163

(B) 239 : 161

(C) 220 : 149

(D) 229 : 141

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=2340

12. A CAT aspirant appears for a certain number of tests. His average score increases by 1 if the first 10 tests are not considered, and decreases by 1 if the last 10 tests are not considered. If his average scores for the first 10 and the last 10 tests are 20 and 30, respectively, then the total number of tests taken by him is   [TITA]
[CAT-2018]

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=2769

13. A trader sells 10 litres of a mixture of paints A and B, where the amount of B in the mixture does not exceed that of A. The cost of paint A per litre is Rs. 8 more than that of paint B. If the trader sells the entire mixture for Rs. 264 and makes a profit of 10%, then the highest possible cost of paint B, in Rs. per litre, is   **[CAT 2018]**

(A) 20

(B) 16

(C) 22

(D) 26

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=3081

14. Consider three mixtures - the first having water and liquid A in the ratio 1:2, the second having water and liquid B in the ratio 1: 3, and the third having water and liquid C in the ratio 1:4. These three mixtures of A, B, and C, respectively, are further mixed in the proportion 4: 3:2. Then the resulting mixture has   **[CAT 2017]**

a) The same amount of water and liquid B

b) The same amount of liquids B and C

c) More water than liquid B

d) More water than liquid A

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=3326

15. The average height of 22 toddlers increases by 2 inches when two of them leave this group. If the average height of these two toddlers is one-third the average height of the original 22, then the average height, in inches, of the remaining 20 toddlers is

[CAT-2017]

(A) 30

(B) 28

(C) 32

(D) 26

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=3669

16. Bottle 1 contains a mixture of milk and water in 7: 2 ratio and Bottle 2 contains a mixture of milk and water in 9:4 ratio. In what ratio of volumes should the liquids in Bottle 1 and Bottle 2 be combined to obtain a mixture of milk and water in 3:1 ratio?

[CAT-2017]

a) 27:14

b) 27:13

c) 27:16

d) 27:18

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=3836

17. A class consists of 20 boys and 30 girls. In the mid-semester examination, the average score of the girls was 5 higher than that of the boys. In the final exam, however, the average score of the girls dropped by 3 while the average score of the entire class increased by 2. The increase in the average score of the boys is: **[CAT-2017]**

a) 9.5   b) 10   c) 4.5   d) 6

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=4073

18. An elevator has a weight limit of 630 kg. It is carrying a group of people of whom the heaviest weighs 57 kg and the lightest weighs 53 kg. What is the maximum possible number of people in the group?   (TITA)   **[CAT-2017]**

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=4629

19. A 100 ml flask contains 30% acid solution. What quantity of the solution should be replaced with 12% acid solution so that the resultant solution contains 21% acid?

[CAT 2016]

(a) 50 ml   (b) 44.44 ml

(c) 33.33 ml   (d) 64 ml

Click on the link to watch the video solution :- https://youtu.be/TA8lHar4yVQ?t=1679

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20. During a fundraiser event for the elderly people, apart from all the members of the organising committee, a huge number of volunteers also donated some amount for the noble cause. The members of the organising committee made an average contribution of Rs.1,100 and this sum comprised 88% of the total amount raised through the event. The number of members in the organising committee was 40% more than the number of volunteers. Find the average contribution (in Rs.) made by the volunteers.   [TITA] **[CAT-2016]**

Click on the link to watch the video solution :- https://youtu.be/FahofpWmZ8c?t=1049

21. A chemist mixes two liquids 1 and 2. One litre of liquid 1 weighs 1 kg and one litre of liquid 2 weighs 800 gm. If half litre of the mixture weighs 480 gm, then the percentage of liquid 1 in the mixture, in terms of volume, is   **[CAT 2016]**

(A) 70

(B) 85

(C) 80

(D) 75

Click on the link to watch the video solution :- https://youtu.be/bXz_VMzl7lw?t=1844

22. A college has raised 75% of the amount it needs for a new building by receiving an average donation of Rs. 600 from the people already solicited. The people already solicited represent 60% of the people the college will ask for donations. If the college is to raise exactly the amount needed for the new building, what should be the average donation from the remaining people to be solicited?   **[CAT-2001]**

a) Rs. 300

b) Rs. 350

c) Rs. 400

d) Rs. 500

Click on the link to watch the video solution :- https://youtu.be/lkWPrlITDB0?t=1292

ANSWER KEY

1. 8ltr
2. C
3. C
4. B
5. B
6. C
7. D
8. A
9. D
10. A
11. B
12. 60
13. A
14. C
15. C
16. B
17. A
18. 11
19. A
20. Rs.210
21. C
22. A

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