

How to use this sheet. The alligation rule gives the mixing ratio directly: (dearer – mean) : (mean – cheaper). Always identify which value is the mean before applying it.

Quick reference — Ratio = (dearer–mean):(mean–cheaper) · Replacement formula: left = initial $\times(1-\text{removed}/\text{total})^n$ · Equal-quantity mixes average the values directly

Section A

1. The alligation rule states that the ratio in which two ingredients must be mixed is given by:
(1) (mean price)/(cheaper price) (2) (dearer price – mean price) : (mean price – cheaper price) (3) (cheaper price) : (dearer price) (4) (mean price) – (dearer price)
2. Tea worth Rs. 40/kg is mixed with tea worth Rs. 60/kg to produce a mixture worth Rs. 45/kg. The ratio of the cheaper to the dearer tea is:
(1) 1:1 (2) 1:2 (3) 3:1 (4) 2:3
3. A mixture contains milk and water in the ratio 4:16. If 4 litres of water is added, the new ratio of milk to water becomes:
(1) 1:5 (2) 1:4 (3) 2:5 (4) 1:6
4. A 60-litre mixture has milk and water in the ratio 2:1. If 20 litres of water is added, the new ratio of milk to water is:
(1) 2:3 (2) 1:2 (3) 1:1 (4) 4:3
5. A 30% alcohol solution is mixed with a 50% alcohol solution to produce a 45% solution. The ratio of the 30% solution to the 50% solution used is:
(1) 1:1 (2) 1:3 (3) 3:1 (4) 2:3
6. A vessel contains 40 litres of pure milk. 8 litres are removed and replaced with water; this process is repeated once more. The amount of milk remaining is:
(1) 32 litres (2) 28.8 litres (3) 24 litres (4) 25.6 litres

Section B

7. 5 kg of rice costing Rs. 20/kg is mixed with 3 kg of rice costing Rs. 30/kg. The average price per kg of the mixture is:
(1) Rs. 22 (2) Rs. 24 (3) Rs. 23.75 (4) Rs. 25
8. Equal quantities of two varieties of sugar costing Rs. 60/kg and Rs. 80/kg are mixed together. The average price of the mixture is:
(1) Rs. 65 (2) Rs. 70 (3) Rs. 72 (4) Rs. 75
9. In an alligation problem, if the mean price equals the cheaper price exactly, the required ratio of cheaper to dearer ingredient is:
(1) All cheaper, none of the dearer (undefined/zero dearer) (2) 1:1 (3) 1:2 (4) 2:1
10. A shopkeeper mixes two types of oil costing Rs. 100/L and Rs. 120/L in the ratio 3:2. The average cost of the mixture is:
(1) Rs. 108 (2) Rs. 106 (3) Rs. 108 (4) Rs. 110

11. A mixture of 40 litres contains milk and water in the ratio 3:1. How much water should be added to make the ratio 3:2?

(1) 5 litres (2) 10 litres (3) 15 litres (4) 20 litres

12. Two solutions of 20% and 60% acid are to be mixed to obtain 10 litres of a 50% acid solution. The quantity of the 60% solution needed is:

(1) 2.5 litres (2) 5 litres (3) 6 litres (4) 7.5 litres

13. In how many parts must water be added to milk to gain 20% by selling the mixture at the cost price of pure milk (assuming water is free)?

(1) 1 part water to 5 parts milk (2) 1 part water to 4 parts milk (3) 1 part water to 6 parts milk (4) 2 parts water to 5 parts milk

Section C

14. A vessel contains a mixture of milk and water in the ratio 5:1. If 6 litres of this mixture is replaced with pure water and the resulting ratio becomes 5:3, the initial quantity of the mixture was:

(1) 18 litres (2) 20 litres (3) 24 litres (4) 30 litres

15. Three glasses of equal volume contain a mixture of milk and water in ratios 2:1, 1:1 and 1:2 respectively. If all three are mixed together, the resulting ratio of milk to water is:

(1) 1:1 (2) 1:1 (equal, since the ratios average out symmetrically) (3) 2:3 (4) 3:2

16. A trader mixes 24 kg of rice at Rs. 20/kg with some rice at Rs. 36/kg, and sells the mixture at Rs. 30/kg, making no profit or loss. The quantity of the Rs. 36/kg rice used is:

(1) 30 kg (2) 35 kg (3) 40 kg (4) 45 kg

17. Milk and water are mixed in a vessel in the ratio 4:1. What fraction of the mixture is water?

(1) $\frac{1}{4}$ (2) $\frac{4}{5}$ (3) $\frac{1}{5}$ (4) $\frac{2}{5}$

18. Two vessels contain milk and water mixed in ratios 3:2 and 2:3 respectively. Equal quantities from each are mixed together. The ratio of milk to water in the new mixture is:

(1) 3:2 (2) 1:1 (3) 2:3 (4) 4:5

19. A sum is divided into two parts such that one part is invested at 10% and the other at 15%, and the overall average return is 12%. The ratio of the amounts invested at 10% and 15% is:

(1) 2:3 (2) 1:1 (3) 1:2 (4) 3:2

20. The alligation method is essentially a shortcut technique used to solve problems involving:

(1) Finding the ratio in which two quantities of different values must be mixed to get a desired average value (2) Finding the square root of large numbers (3) Solving simultaneous linear equations only (4) Calculating compound interest

Answer key: 1. (2) 2. (3) 3. (1) 4. (3) 5. (2) 6. (4) 7. (3) 8. (2) 9. (1) 10. (3) 11. (2) 12. (4) 13. (1) 14. (3) 15. (2) 16. (3) 17. (3) 18. (2) 19. (4) 20. (1)

Stuck on any of these? Bring them to a live class.

Live online batches and 1-on-1 mentoring for AAI ATC Junior Executive — every reasoning, aptitude, maths, physics, English and GK topic taught straight from the real question papers. Fees are kept deliberately low so any serious aspirant can join.

Enquiry form via aviatelearnings.com · Telegram: t.me/aaiatc2026kanishk · YouTube: youtube.com/@AAIATCEXAMPREP