Practice Questions for Allegation & Mixture

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| Question | A container contains 40 litres of milk. From this container 4 litres of milk was taken out and replaced by water. This process was repeated further two times. How much milk is now contained by the container. |
| Option A | 26.26 liters |
| Option B | 27.36 liters |
| Option C | 28 liters |
| Option D | 29.16 liters |
| Answer | Option D |
| Explanation | |  | | --- | | Amount of milk left after 3 operations | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-quiz-1.gif | |

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| Question | A merchant has 100 [lbs](http://www.beatthegmat.com/mba/school/london-business-school/a/comments) of sugar, part of which he sells at 7% profit and the rest at 17% profit. He gains 10 % on the whole. Find how much is sold at 7% profit? |
| Option A | 70 [lbs](http://www.beatthegmat.com/mba/school/london-business-school/a/comments) |
| Option B | 40 [lbs](http://www.beatthegmat.com/mba/school/london-business-school/a/comments) |
| Option C | 80 lbs |
| Option D | 95 lbs |
| Answer | Option A |
| Explanation | Let's say price per [lbs](http://www.beatthegmat.com/mba/school/london-business-school/a/comments) is $10   7% profit over $10 is 10.7  A merchant bought x [lbs](http://www.beatthegmat.com/mba/school/london-business-school/a/comments) at $10.7   17% profit over $10 is 11.7  A merchant bought y [lbs](http://www.beatthegmat.com/mba/school/london-business-school/a/comments) at $11.7   10% profit over $10 is 11  A merchant bought (x+y) [lbs](http://www.beatthegmat.com/mba/school/london-business-school/a/comments) at $11   10.7(X) + 11.7(y) = 11(x+y)   10.7(X) + 11.7(y) = 11x + 11y  0.7(y) = 0.3 x   Only possible values here would be x = 70 and y = 30   So, the answer is A |

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| Question | Two vessels A and B contain spirit and water in the ratio 5 : 2 and 7 : 6 respectively. Find the ratio in which these mixture be mixed to obtain a new mixture in vessel C containing spirit and water in the ration 8 : 5? |
| Option A | 4 : 3 |
| Option B | 6 : 9 |
| Option C | 7 : 9 |
| Option D | 5 : 6 |
| Answer | Option C |
| Explanation | |  |  | | --- | --- | | Let the C.P. of spirit be Re. 1 litre. | | | Spirit in 1 litre mix. of A = 5/7 litre, C.P. of 1 litre mix. in A = Re. 5/7 | | | Spirit in 1 litre mix. of B = 7/13 litre, C.P. of 1 litre mix. in B = Re. 7/13 | | | Spirit in 1 litre mix. of C = 8/13 litre, Mean price = Re. 8/13. | | | By the rule of alligation, we have: | | | Cost of 1 litre mixture in A | Cost of 1 litre mixture in B | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-4.gif | | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Required ratio = 1/13 : 9/91 = 7 : 9. | | |

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| Question | A can contains a mixture of two liquids A and B in the ratio 7 : 5. When 9 liters of mixture are drawn off and the can is filled with B, the ratio of A and B becomes  7 : 9. How many litres of liquid A was contained by the can initially? |
| Option A | 21 |
| Option B | 25 |
| Option C | 10 |
| Option D | 15 |
| Answer | Option A |
| Explanation | |  |  | | --- | --- | | Suppose the can initially contains 7x and 5x litres of mixtures A and B respectively | | | Quantity of A in mixture left  = (7x - 7/12 x 9) litres = (7x - 21/4) litres. | | | Quantity of B in mixture left  = (5x - 5/12 x 9) litres = (5x - 15/4) litres. | | | (7x - 21/4) / [(5x - 15/4)+9] = 7/9 = › 28x - 21/20x + 21 = 7/9 =› 252x - 189 = 140x + 147 | | |  | =› 112x = 336 =’ x = 3. | | So, the can contained 21 litres of A. | | |

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| Question | 8 litres are drawn from a cask full of wine and is then filled with water. This operation is performed three more times. The ratio of the quantity of wine now left in cask to that of the water is 16 : 65. How much wine the cask hold originally ? |
| Option A | 18 liters |
| Option B | 24 liters |
| Option C | 32 liters |
| Option D | 41 liters |
| Answer | Option B |
| Explanation | |  | | --- | | Let the quantity of the wine in the cask originally be *x* litres | | then, quantity of wine left in cask after 4 operations = [*x*(1- 8/*x*)**4**] litres. | | Therefore *x*(1- 8/*x*)**4** / *x* = 16/81 =› (1- 8/*x*)**4** = (2/3)**2**  =› (*x* - 8 / *x*) = 2/3 =› 3*x* - 24 = 2**x** =› **x** = 24. | |

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| Question | How many kilograms of sugar costing $9 per kg must be mixed with 27 kg of sugar costing $7 per Kg so that there may be a gain of 10% by selling the mixture at $9.24 per Kg? |
| Option A | 36 kg |
| Option B | 63 kg |
| Option C | 42 kg |
| Option D | 60 kg |
| Answer | Option B |
| Explanation | |  |  | | --- | --- | | By the rule of alligation: | | | C.P. of 1 kg sugar of 1st kind | C.P. of 1 kg sugar of 2nd kind | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-15.gif | | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Ratio of quantities of 1st and 2nd kind = 14 : 6 = 7 : 3. | | | Let *x* kg of sugar of 1st kind be mixed with 27 kg of 2nd kind. Then, 7 : 3 = *x* : 27 or *x* = (7 x 27 / 3) = 63 kg. | | |

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| Question | In what ratio must rice at $9.30 per Kg be mixed with rice at $10.80 per Kg so that the mixture be worth $10 per Kg? |
| Option A | 8 : 7 |
| Option B | 7 : 8 |
| Option C | 8 : 9 |
| Option D | 9 : 8 |
| Answer | Option A |
| Explanation | |  |  | | --- | --- | | By the rule of alligation: | | | C.P. of 1 kg rice of 1st kind (in paise) | C.P. of 1 kg rice of 2nd kind (in paise) | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-16.gif | | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Required ratio = 80 : 70 = 8 : 7. | | |

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| Question | In what ratio must be a grocer mix two varities of tea worth $60 a kg and $65 a Kg so that by selling the mixture at $68.20 a Kg he may gain 10%? |
| Option A | 3 : 4 |
| Option B | 3 : 2 |
| Option C | 3 : 5 |
| Option D | 4 : 5 |
| Answer | Option B |
| Explanation | |  |  | | --- | --- | | S.P. of 1 kg of the mixture = $ 68.20, Gain = 10 % | | | C.P. of 1 kg of the mixture = $ (100 / 110 x 68.20) = $ 62. | | | By the rule of alligation: | | | C.P. of 1 kg tea of 1st kind | C.P. of 1 kg tea of 2nd kind | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-17.gif | | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Required ratio = 3 : 2. | | |

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| Question | The cost of Type 1 rice is $15 per kg and Type 2 rice is $20 per kg. If both Type 1 and Type 2 are mixed in the ratio of 2 : 3, then the price per kg of the mixed variety of rice is |
| Option A | $ 19.50 |
| Option B | $ 19 |
| Option C | $ 18 |
| Option D | $ 18.50 |
| Answer | Option C |
| Explanation | |  |  | | --- | --- | | Let the price of the mixed variety be $ x per kg. By the rule of alligation, we have : | | | Cost of 1 kg of type 1 rice | Cost of 1 kg of type 2 rice | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-7.gif | | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png (20-x)/(x-15) = 2/3 =› 60 - 3x = 2x - 30 =› 5x = 90 =› x = 18. | | | **so, price of the mixture is $ 18 per kg.** | | |

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| Question | In what ratio must water be mixed with milk costing $12 per litre to obtain a mixture worth of $8 per litre? |
| Option A | 1 : 2 |
| Option B | 2 : 1 |
| Option C | 4 : 3 |
| Option D | 5 : 3 |
| Answer | Option A |
| Explanation | |  |  | | --- | --- | | By the rule of alligation: | | | C.P. of 1 litre of water | C.P. of 1 litre of milk | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-8.gif | | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Ratio of water to milk = 4 : 8 = 1 : 2 | | |

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| Question | Find the ratio in which rice at $7.20 a kg be mixed with rice at $5.70 a kg to produce a mixture worth $6.30 a kg? |
| Option A | 1 : 3 |
| Option B | 2 : 3 |
| Option C | 3 : 4 |
| Option D | 4 : 5 |
| Answer | Option B |
| Explanation | |  |  | | --- | --- | | By the rule of alligation: | | | Cost of 1 kg rice of 1st kind | Cost of 1 kg rice of 2nd kind | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-10.gif | | | http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Required ratio = 60 : 90 = 2 : 3 | | |

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| Question | One quantity of wheat at Rs 9.30 per Kg is mixed with another quality at a certain rate in the ratio 8:7. If the mixture so formed be worth Rs 10 per Kg, what is the rate per Kg of the second quality of wheat? |
| Option A | $ 12.47 |
| Option B | $ 10.80 |
| Option C | $ 15.17 |
| Option D | $ 47.66 |
| Answer | Option B |
| Explanation | Let the rate of second quality be Rs x per Kg. C.P of 1Kg wheat of 1st kind = 930p  C.P of 1 Kg wheat of 2nd kind = 100x p  Mean price = 1000p By rule of alligation we have required ratio 8 : 7     930                         x             \                  /          (Mean Price)                 (10)           /                  \       x-10        :          0.7     ::       8        :          7  So we get required ratio,  (x-10) : 0.7 :: 8 : 7 ⇒ x = **10.80 per Kg** |

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| Question | A man travelled a distance of 90Km in 9 hours partly on foot at 8 kmph and partly on bicycle at 17 kmph. Find the distance travelled on foot. |
| Option A | 46 km |
| Option B | 56 km |
| Option C | 62 km |
| Option D | 52 km |
| Answer | Option B |
| Explanation | Distance covered in 1 hour on foot = 8 km  Distance covered in 1 hour on bicycle = 17 km Average distance covered in 1 hour = 90/9 km   = 10km (mean distance)  Distance covered in        Distance covered in  1 hour on foot                  1 hour on bicycle        (8 km)                                  (17 km)                         \                       /                      Mean Distance                             (10 km)                      /                        \         (17 – 10)          :           (10 – 8)              7                                   2  Thus out of 9 hours, he took 7 hours on foot Distance covered on foot  = (8 × 7) Km  = **56 km** |

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| Question | In what ratio must wheat at $3.20 per kg be mixed with wheat at $2.90 per kg so that the mixture be worth $3.08 per kg? |
| Option A | 6 : 5 |
| Option B | 8 : 7 |
| Option C | 3 : 7 |
| Option D | 6 : 1 |
| Answer | Option B |
| Explanation | C.P of 1 Kg                   C.P of 1 Kg  rice of 1st                   rice of 2nd  kind (930p)                kind (1080p)                 \                        /                 Mean Price                    (1000p)               /                       \                  (1080 – 1000)  :        (1000 -  930)                        80                             70  Thus, required ratio = 80 : 70 = **8 : 7** |

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| Question | In what proportion must rice at $ 3.10 per kg be mixed with rice at $ 3.60 per kg so that the mixture be worth $ 3.25 per kg? |
| Option A | 3 : 7 |
| Option B | 5 : 3 |
| Option C | 3 : 5 |
| Option D | 7 : 3 |
| Answer | Option D |
| Explanation | C.P of a unit quantity of 1st kind  = 310p (in paise) C.P of a unit quantity of 2nd kind  = 360p Mean price = 325p  C.P of unit quantity         C.P of unit quantity  of 1st kind                         of 2nd kind      (310p)                         (360p)                         \                       /                         Mean Price                           (325p)                      /                        \     (360 – 325)          :           (325 – 310)         35                                       15  Required ratio = 35 : 15 =7 : 3 They must be mixed in the ratio**7 : 3** |

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