

## AVERAGE, ALLIGATIONS AND MIXTURES

- (1) The mean temperature of Monday to Wednesday was  $37^{\circ}\text{C}$  and of Tuesday to Thursday was  $34^{\circ}\text{C}$ . If the temperature on Thursday was  $\frac{4}{5}$ <sup>th</sup> that of Monday, the temperature on Thursday was  
(a)  $38^{\circ}\text{C}$  (b)  $36^{\circ}\text{C}$  (c)  $40^{\circ}\text{C}$  (d)  $39^{\circ}\text{C}$  (e) None of these
- (2) Sujit has a certain average for 9 innings. In the tenth inning, he scores 100 runs thereby increasing his average by 8 runs. His new average is  
(a) 20 (b) 24 (c) 28 (d) 32 (e) 36
- (3) The average of the first five multiples of 7 is  
(a) 20 (b) 21 (c) 28 (d) 30 (e) 31
- (4) The average age of a family of 6 members is 22 years. If the age of the youngest member be 7 years, what was the average age of the family at the birth of the youngest member?  
(a) 15 (b) 18 (c) 21 (d) 12 (e) None of these
- (5) The average age of 8 persons in a committee is increased by 2 years when two men aged 35 years and 45 years are substituted by two women. Find the average age of two women.  
(a) 48 (b) 45 (c) 51 (d) 42 (e) 46
- (6) The average temperature for Wednesday, Thursday and Friday was  $40^{\circ}\text{C}$ . The average for Thursday, Friday and Saturday was  $41^{\circ}\text{C}$ . If the temperature on Saturday was  $42^{\circ}\text{C}$ , what was the temperature on Wednesday?  
(a)  $39^{\circ}\text{C}$  (b)  $44^{\circ}\text{C}$  (c)  $38^{\circ}\text{C}$  (d)  $41^{\circ}\text{C}$  (e) None of these
- (7) The average of 3 numbers is 17 and that of the first two is 16. Find the third number.  
(a) 15 (b) 16 (c) 17 (d) 19 (e) 18
- (8) Find the average of the first 97 natural numbers.  
(a) 47 (b) 37 (c) 48 (d) 49 (e) 49.5
- (9) The average of ten numbers is 7. If each number is multiplied by 12, then the average of the new set of numbers is :  
(a) 7 (b) 19 (c) 82 (d) 83 (e) 84
- (10) The average weight of 5 men is decreased by 3 kg when one of them weighing 150 kg is replaced by another person. Find the weight of the new person?  
(a) 165 kg (b) 135 kg (c) 138 kg (d) 160 kg (e) 162 kg
- (11) The average score of a cricketer in three matches is 22 runs and in other 2 matches, it is 17 runs. Find the average in all 5 matches.  
(a) 20 (b) 19.6 (c) 21 (d) 19.5 (e) 20.5
- (12) The average of 13 papers is 40. The average of the first 7 papers is 42 and of the last seven papers is 35. Find the marks obtained in the 7<sup>th</sup> paper.  
(a) 23 (b) 38 (c) 19 (d) 39 (e) None of these
- (13) The average age of 80 students of IIM Kolkata is 22 years. What will be the new average if we include the 20 faculty members whose average age is 37 years?  
(a) 32 years (b) 24 years (c) 25 years (d) 26 years (e) None of these
- (14) The average age of three boys is 15 years. If their ages are in the ratio 3:5:7, the age of the youngest boy is  
(a) 21 years (b) 18 years (c) 15 years (d) 9 years (e) 12 years
- (15) The average salary of 20 workers in an office is Rs 1900 per month. If the manager's salary is added, the average salary becomes Rs 2000 per month. What is the manager's annual salary?  
(a) 24,000 (b) 25,200 (c) 45,600 (d) 46,000 (e) None of these
- (16) In a test, a student scores 2 marks for every correct answer and loses 0.5 marks for every wrong answer. A student attempts all the 100 questions and scores 120 marks. The number of questions he answered correctly was :  
(a) 50 (b) 45 (c) 60 (d) 68 (e) None of these
- (17) A batsman made an average of 40 runs in 4 innings, but in the fifth innings, he was out on zero. What is the average after his fifth inning?  
(a) 32 (b) 30 (c) 22 (d) 20 (e) 8
- (18) The average age of Ram and Shyam is 20 years. Their average age 5 years hence is  
(a) 25 years (b) 22 years (c) 21 years (d) 20 years (e) None of these
- (19) Pranay's average daily expenditure is Rs 10 during May, Rs 14 during June and Rs 15 during July. His approximate daily expenditure for the 3 months is



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- (a) Rs 13                      (b) Rs 14                      (c) Rs 11                      (d) Rs 12                      (e) Rs 10
- (20) The average of 20 results is 30 out of which the first 10 results are having an average of 10. The average of the rest 10 results is  
(a) 50                      (b) 40                      (c) 20                      (d) 25                      (e) None of these
- (21) The average weight of 5 men is decreased by 3 kg when one of them weighing 150 kg is replaced by another person. This new person is again replaced by another person whose weight is 30 kg lower than the person he replaced. What is the overall change in the average due to this dual change?  
(a) 6 kg                      (b) 9 kg                      (c) 12 kg                      (d) 15 kg                      (e) 18 kg
- (22) A batsman makes a score of 270 runs in the 87<sup>th</sup> inning and thus increases his average by a certain number of runs that is a whole number. Which of the following can be a possible value of the new average?  
(a) 98                      (b) 184                      (c) 12                      (d) All (a),(b),(c)                      (e) None of these
- (23) Two types of oils having the rates of Rs 4/kg and Rs 5/kg respectively are mixed in order to produce a mixture having the rate of Rs 4.60/kg. What should be the amount of the second type of oil if the amount of the first type of oil in the mixture is 40 kg?  
(a) 75 kg                      (b) 50 kg                      (c) 60 kg                      (d) 40 kg                      (e) None of these
- (24) How many kgs of sugar worth Rs 3.60 per kg should be mixed with 8 kg of sugar worth Rs 4.20 per kg such that by selling the mixture at Rs 4.40 per kg there may be a gain of 10%?  
(a) 6 kg                      (b) 3 kg                      (c) 2 kg                      (d) 5 kg                      (e) 4 kg
- (25) A mixture of 125 gallons of wine and water contains 20% water. How much water(in gallons) must be added to the mixture in order to increase the percentage of water to 25% of the new mixture?  
(a) 10                      (b) 8.5                      (c) 8                      (d) 6.66                      (e) 8.33
- (26) Ronit lends Rs 3600 on simple interest to Harsh for a period of 5 years. He lends a part of the amount at 4% interest and the rest at 6% and receives Rs 960 as the amount of interest. How much money did he lend on 4% interest rate?  
(a) Rs 2800                      (b) Rs 2100                      (c) Rs 2400                      (d) Rs 1200                      (e) Rs 1000
- (27) The average salary per head of all the employees of a company is Rs 600. The average salary of 120 officers is Rs 4000. If the average salary per head of the rest of the employees is Rs 560, find the total number of workers in the company.  
(a) 10200                      (b) 10320                      (c) 10500                      (d) 10680                      (e) 10800
- (28) A dishonest milkman purchased milk at Rs 10 per litre and mixed 5 litres of water in it. By selling the mixture at the rate of Rs 10 per litre he earns a profit of 25%. The quantity of amount of the mixture that he had was?  
(a) 15 litres                      (b) 20 litres                      (c) 25 litres                      (d) 30 litres                      (e) None of these
- (29) A cistern contains 50 litres of water. 5 litres of water is taken out of it and replaced by wine. The process is repeated again. Find the proportion of wine and water in the resulting mixture.  
(a) 1:4                      (b) 41:50                      (c) 19:81                      (d) 81:19                      (e) 50:41
- (30) A vessel is full of refined oil.  $\frac{1}{4}$  of the refined oil is taken out and the vessel is filled with mustard oil. If the process is repeated 4 times and 10 litres of refined oil is finally left in the vessel, what is the capacity of the vessel?  
(a) 33 litres                      (b) 820/27 litres                      (c) 2560/81 litres                      (d) 30 litres                      (e) None of these
- (31) In what ratio should water be mixed with soda costing Rs 12 per litre so as to make a profit of 25% by selling the diluted liquid at Rs 13.75 per litre?  
(a) 10:1                      (b) 11:1                      (c) 1:11                      (d) 12:1                      (e) 1:12
- (32) A dishonest grocer professes to sell pure butter at cost price, but he mixes it with adulterated fat and thereby gains 25%. Find the percentage of adulterated fat in the mixture assuming that adulterated fat is freely available.  
(a) 20%                      (b) 25%                      (c) 33.33%                      (d) 40%                      (e) 35%
- (33) A mixture of 20 litres of brandy and water contains 10% water. How much water should be added to it to increase the percentage of water to 25%?  
(a) 2 litres                      (b) 3 litres                      (c) 2.5 litres                      (d) 4 litres                      (e) 5 litres
- (34) There are two mixtures of honey and water, the quantity of honey in them being 25% and 75% of the mixture. If 2 gallons of the first are mixed with three gallons of the second, what will be the ratio of honey to water in the new mixture?  
(a) 11:2                      (b) 11:9                      (c) 9:11                      (d) 2:11                      (e) None of these
- (35) Two containers of equal capacity are full of a mixture of oil and water. In the first, the ratio of oil to water is 4:7 and in the second it is 7:11. Now both the mixtures are mixed in a bigger container. What is the resulting ratio of oil to water.  
(a) 149:247                      (b) 247:149                      (c) 143:241                      (d) 241:143                      (e) None of these



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(36) The price of a pen and pencil is Rs 35. The pen was sold at a 20% profit and the pencil at a 10% loss. If in the transaction a man gains Rs 4, how much is the cost price of the pen?

- (a) Rs 10                      (b) Rs 25                      (c) Rs 20                      (d) Rs 30                      (e) None of these

(37) Two solutions of 90% and 97% purity are mixed resulting in 21 litres of mixture of 94% purity. How much is the quantity of the first solution in the resulting mixture?

- (a) 15 litres                      (b) 12 litres                      (c) 9 litres                      (d) 6 litres                      (e) None of these

(38) In a zoo, there are deer and ducks. If the headcount is 180 and the leg-count is 448. How many deer are there in the zoo?

- (a) 136                      (b) 68                      (c) 44                      (d) 22                      (e) None of these

(39) A gain percent of 20 is made by selling the mixture of two types of ghee at Rs 480 per kg. If the type costing 610 per kg was mixed with 126 kg of the other, how many kilograms of the former was mixed?

- (a) 138 kg                      (b) 34.5 kg                      (c) 69 kg                      (d) 103.5 kg                      (e) Cannot determine

(40) Two vessels contain a mixture of spirit and water. In the first vessel the ratio of spirit to water is 8:3 and in the second vessel the ratio is 5:1. A 35 litre cask is filled from these vessels so as to contain a mixture of spirit and water in the ratio of 4:1. How many litres are taken from the first vessel?

- (a) 11 litres                      (b) 22 litres                      (c) 16.5 litres                      (d) 17.5 litres                      (e) None of these

### Answer Key

Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer
1	B	11	A	21	A	31	C
2	C	12	C	22	D	32	A
3	B	13	C	23	C	33	D
4	B	14	D	24	E	34	B
5	A	15	E	25	E	35	A
6	A	16	D	26	D	36	B
7	D	17	A	27	B	37	C
8	D	18	A	28	C	38	C
9	E	19	A	29	C	39	D
10	B	20	A	30	C	40	A

