



MATHS

BOOKS - S CHAND IIT JEE

FOUNDATION

AVERAGE

Solved Examples

1. What is the average of the first nine odd numbers ?



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2. The average of 5 consecutive numbers is 12
.What is the largest number ?



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3. If the average of observations $x, x + 1, x + 2, x + 3$
and $x + 4$ is 12, then what is the average of the
last three observations ?



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4. If the average marks of three batches of 55 , 60 and 45 students respectively is 50 , 55 and 60 , then what are the average marks of all the students ?



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5. The average of 100 numbers is 44 .The average of these 100 numbers and four other new numbers is 50. The average of the four new numbers will be



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6. The average age of 15 students of a class is 15 years .Out of these the average age of 5 students is 14 years and that of the other nine students is 16 years . What is the age of the 15th student ?



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7. The average weight of a class of 24 students is 35 kg. If the weight of the teacher be included, the average rises by 400 g. The weight of the teacher is (a) 45 kg (b) 50 kg (c) 53 kg (d) 55 kg



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8. There are 30 students in a class. The average age of the first 10 students is 12.5 years. The average age of the remaining 20 students is

13.1 years .What is the average age (in years)
of the students of the whole class ?



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9. Marks of a student in four subjects are 90
,85 ,80 and 75 .How much he should score in
the fifth subject to have an average of 80 ?



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10. Of the three numbers , the first is twice the second and the second is thrice the third .If the overage of the three numbers us 10 , find the largest number ?



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11. The average of a collection of 20 measurements was calculated to be 56 cm . But later it was found that a mistake occurred in one of the measurements which recorded

as 64 m but should have been 61 cm ? What is the correct average ?



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12. Average age of 10 students of a class is 18 years. If one more student join them now , the average becomes 19 years .What is the age of new student ?



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Question Bank 16

1. The average of the first five odd prime numbers is

A. 7

B. 7.8

C. 8

D. 8.7

Answer: B



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2. Find the average of all the numbers between 3 and 42 which are divisible by 7

A. 18

B. 21

C. 24

D. 30

Answer: B



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3. A,B,C,D,E are consecutive even numbers . The average of these five numbers is 82. What is the product of C and E ?

A. 6888

B. 6720

C. 7052

D. 7224

Answer: C



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4. If $37a + 37b = 5661$, what is the average of a and b ?

A. 74.5

B. 151

C. 76.5

D. 153

Answer: C



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5. A student got 85,87,91,82, 90 and x marks in all his subjects. His average marks were found to be 85. What should come in place of x ?

A. 83

B. 75

C. 77

D. 73

Answer: B



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6. The average of 2, 7, 6 and x is 5 and the average of 18, 1, 6, x and y is 10. What is the value of y ? (a) 5 (b) 10 (c) 20 (d) 30

A. 10

B. 30

C. 20

D. 5

Answer: C



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7. If x_1, x_2, x_3, x_4, x_5 are five consecutive odd numbers then their average is

A. x_2

B. x_3

C. x_4

D. x_5

Answer: B



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8. The average of eight numbers is 38 . 4 and the average of seven of them is 39 . 2 . What is the eighth number ?

A. 0.8

B. 32. 8

C. 34. 8

D. 33. 8

Answer: B



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9. The average age of 24 boys and a teacher is 15. When the teacher's age is excluded the average decreases by 1 . What is the age of the teacher ?

A. 39 years

B. 38 years

C. 40 years

D. 41 years

Answer: A



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10. If the average weight of 6 students is 50 kg , that of 2 students is 51 kg and that of rest of 2 students is 55 kg , then the average weight of all the students is

A. 61 kg

B. 51 . 5 kg

C. 52 kg

D. 51 . 2 kg

Answer: D



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11. The sum of five numbers is 555 . The average of first two numbers is 75 and the thrid number is 115 . What is the average of the last two numbers ?

A. 145

B. 290

C. 265

D. 150

Answer: A



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12. The average of 20 numbers is 12 . The average of the first 12 numbers is 11 and that of the next 7 numbers is 10 . The last number is

A. 40

B. 38

C. 48

D. 50

Answer: B



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13. The average of a 6 observations is 45.5. If one new observation is added to the previous observations, then the new average becomes 47. The new observation is (a) 46 (b) 50 (c) 56 (d) 58

A. 58

B. 56

C. 50

D. 46

Answer: B



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14. The average age of 3 friends is 23 .Even if the age of the 4th friend is added , the average remains 23 . What is the age of the 4th friend ?

A. 21 years

B. 23 years

C. 32 years

D. 34 years

Answer: B



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15. In a joint family , the average age of grandparents is 67 years , the average age of parents is 35 years and that of three grand

children is 6 years .What is the average age of the family ?

A. $28\frac{4}{7}$ years

B. $31\frac{5}{7}$ years

C. $32\frac{1}{2}$ years

D. $29\frac{4}{7}$ years

Answer: B



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16. For a week , the average daily rainfall was 0.25 cm. There was no rainfall on Saturday .Rainfall on Sunday , Monday ,Tuesday , Wednesday and Thursday was 0.4 cm , 0.03 cm , 0.45 cm , 0.27 cm and 0.5 cm respectively .What was the rainfall on Friday ?

A. 0.2 cm

B. 0.1 cm

C. 0.0 5 cm

D. 0. 15 cm

Answer: B



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17. The average of n numbers is x . When 36 is subtracted from two of the numbers, the new average becomes $(x-8)$. The value of n is

A. 6

B. 8

C. 9

D. 72

Answer: C



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18. Of the four numbers whose average is 60 ,
the first is $\frac{1}{4}$ th of the sum of the last three .

The first number is

A. 15

B. 45

C. 48

D. 60. 25

Answer: C



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19. Four years ago the average age of A ,B and C was 25 years .Five years ago the average age of B and C was 20 years .A's present age is

A. 60 years

B. 37 years

C. 62 years

D. 15 years

Answer: B



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20. Out of three numbers , the first is twice the second and is half of the third .If the average of three numbers is 56 , then the difference of the first and third is

A. 12

B. 20

C. 24

D. 48

Answer: D



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21. The average marks in Mathematics for 5 students was found to be 50 . Later it was discovered that in case of one student , the marks 48 were misread as 84 .The correct average is

A. 40 . 2

B. 40 . 8

C. 42 . 8

D. 48 . 2

Answer: C



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22. If the arithmetic mean of seventy-five numbers is calculated, it is 35. If each number is increased by 5, then mean of new numbers is: (a) 30 (b) 40 (c) 70 (d) 90

A. 30

B. 40

C. 70

D. 80

Answer: B



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23. The average of 6 numbers is 30 . If the average of the first four is 25 and that of the last three is 35 , the fourth number is

A. 25

B. 30

C. 35

D. 40

Answer: A



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24. The average of 11 numbers is 32 .If the average of the first six numbers is 34 and that of the last six is 33 , then the sixth number is

A. 34

B. 25

C. 50

D. 36

Answer: C



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25. The average marks obtained by 22 candidates in an examination are 45. The average marks of the first 10 candidates are 55

and those of the last eleven are 40. The number of marks obtained by the eleventh candidate is:

A. 0

B. 45

C. 50

D. 47.5

Answer: A



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26. Out of 9 persons, 8 persons spent Rs 30 each for their meals. The ninth one spent Rs 20 more than the average expenditure of all the nine. The total money spent by all of them was (a) Rs 260 (b) Rs 290 (c) Rs 292.50 (d) Rs 400.50

A. Rs . 260

B. Rs . 290

C. Rs . 292 .50

D. Rs . 400 . 50

Answer: C



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27. Average age of 6 sons of a family is 8 years.

Average age of sons together with their parents is 22 years. If the father is older than the mother by 8 years, the age of mother (in years) is :

A. 44

B. 52

C. 60

D. 68

Answer: C



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28. The average age of students of a class is 15.8 years. The average age of boys in the class is 16.4 years and that of the girls is 15.4 years. The ratio of the number of boys to the

number of girls in the class is (a) 1 : 2 (b) 2 : 3

(c) 3 : 4 (d) 3 : 5

A. 1 : 2

B. 2 : 3

C. 3 : 4

D. 3 : 5

Answer: B



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29. The average expenditure of a man for the first five months of a year is Rs 5000 and for the next seven months it is Rs 5400. He saves Rs 2300 during the year. His average monthly income is (a) Rs 5425 (b) Rs 5446 (c) Rs 5500 (d) Rs 5600

A. Rs. 5425

B. Rs. 5500

C. Rs. 5446

D. Rs. 5600

Answer: A



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30. The average monthly salary of the workers in a work shop is Rs . 8500 .If the average monthly salary of 7 technicians is Rs. 10,000 and average monthly salary of the rest is Rs. 7800 , the total number of workers in the work shop is

A. 18

B. 20

C. 22

D. 24

Answer: C



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Self Assessment Sheet 16

1. The average height of the students in a class of 10 is 105 cm .If 20 more students with an

average height of 120 cm join the class , what will the new average height be ?

A. 105 cm

B. 110 cm

C. 112 cm

D. 115 cm

Answer: D



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2. The average consumption of petrol for a car for 7 months is 110 litres and for next 5 months it is 86 litres .The average monthly consumption is :

A. 96 L

B. 98 L

C. 100 L

D. 102 L

Answer: C



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3. The average weight of 8 men is increased by 1.5 kg when one of the men who weights 65 kg is replaced by a new man .The weight of the new man is :

A. 70 kg

B. 74 kg

C. 76 kg

D. 77 kg

Answer: D



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4. The average of x_1, x_2, x_3, x_4 is 16 . Half the sum of x_2, x_3, x_4 is 23 .What is the value of x_1 ?

A. 17

B. 18

C. 19

D. 20

Answer: B



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5. If the total monthly income of 16 persons is Rs. 80800 and the income of one of them is 120% of the average income , then his income is :

A. Rs. 5050

B. Rs. 6060

C. Rs. 6160

D. Rs. 6600

Answer: B



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6. The ratio of the arithmetic mean of two numbers to one of the numbers is $3:5$. What is the ratio of the smaller number to the larger one? 1:2 b. 1:3 c. 1:5 d. 1:4

A. 1:5

B. 1 : 4

C. 1 : 3

D. 1 : 2

Answer: A



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7. It rained as much as Wednesday as on all the other days of the week combined .If the average rainfall for the whole week was 3 cm , how much did it rain on Wednesday ?

A. 2.625 cm

B. 3 cm

C. 10.5 cm

D. 15 cm

Answer: C



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8. The average of 50 numbers is 38. If the numbers 45 and 55 are discarded, then the

average of the remaining numbers is (a) 36.5

(b) 37 (c) 37.5 (d) 37.52

A. 38 . 5

B. 37 . 5

C. 37 . 0

D. 36 . 5

Answer: B



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9. The average marks scored by Ravi in English , Science ,Mathematics and History is less than 15 from that scored by him in English , Hsitory , Geography and Mathematics .What is the difference of marks in Science and Geography secured by him ?

A. 40

B. 50

C. 60

D. Data inadequate

Answer: C



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10. Average age seven persons in a group is 30 years .The average age of five person of this group is 31 years .What is the average age of the other two person in the group ?

A. 55 years

B. 26 years

C. 15 years

D. Cannot be determined

Answer: D



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Unit Test 3

1. Sunil gets 10% more marks than Akbar
.What percentage of marks does Akbar get less
than Sunil ?

A. 9 %

B. 10 %

C. $9\frac{1}{11}$ %

D. $11\frac{1}{9}$ %

Answer: C



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2. A discount series of 10 % , 20 % and 40 %
is equal to a single discount of

A. 50 %

B. 56.80 %

C. 60 %

D. 70.28 %

Answer: B



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3. A leak in the bottom of a tank can empty the full tank in 6 hours. An inlet pipe fills water at the rate of 4 litres a minute. When the tank is

full, the inlet is opened and due to the leak the tank is empty in 8 hours. Find the capacity of the tank.

A. 5260 L

B. 57 60 L

C. 5846 L

D. 6970 L

Answer: B



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4. A shokeeper earns a profit of 15% after selling a book at 20% discount on the printed price .the ratio of the cost price and the printed price of the book is

A. 20: 23

B. 23: 20

C. 16: 23

D. 23: 16

Answer: C



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5. A person invested part of ₹45000 at 4% and the rest at 6%. If his annual income from both are equal, then what is the average rate of interest?

A. 4.6%

B. 4.8%

C. 5.0%

D. 5.2%

Answer: B



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6. What would be the printed price of a watch purchased at Rs. 380 , so that after giving 5 % discout , there is 25 % profit ?

A. Rs . 400

B. Rs . 450

C. Rs . 500

D. Rs . 600

Answer: C



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7. There are some coins and rings of either gold or silver in a box, 60% of the objects are coins, 40% of the rings are of gold and 30% of the coins are of silver. The percentage of gold articles is :

A. 16

B. 27

C. 58

D. 70

Answer: C



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8. A person gave 20% of his income to his elder son, 30% of the remaining to the younger son and 10% of the balance, he donated to a trust. He is left with Rs. 10080.

His income was:

A. Rs . 50, 000

B. Rs . 40 , 000

C. Rs . 30 , 000

D. Rs . 20 , 000

Answer: D



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9. Five years ago the average age of A , B , C , D was 45 years. By including X the present average of all the five is 49 years. Then

the present age of X is (a) 40 years (b) 45 years (c) 48 years (d) 64 years

A. 64 years

B. 48 years

C. 45 years

D. 40 years

Answer: C



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10. Two number are in the ratio 3:5. If each number is increased by 10. the ratio becomes 5:7 The sum of the numbers is ?

A. 15 , 25

B. 30 , 45

C. 48 , 60

D. None of these

Answer: A



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11. A person A sells a table costing Rs . 2000 to a person B and earns a profit of 6% .The person B sells it to another person C at a loss of 5% .At what price did B sell the table ?

A. Rs . 2054

B. Rs . 2050

C. Rs . 2024

D. Rs . 2014

Answer: D



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12. A student walks from his house at a speed of $2\frac{1}{2}$ km per hour and reaches his school 6 minutes late. The next day he increases his speed by 1 km per hour and reaches 6 minutes before school time. How far is the school from his house ?

A. 1 km

B. $1\frac{1}{2}$ km

C. $1\frac{3}{4}$ km

D. 2 km

Answer: C



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13. A train passes a telegraph post in 8 seconds and a 264 m long bridge in 20 seconds .What is the length of the train ?

A. 180 m

B. 176 m

C. 164 m

D. 158 m

Answer: B



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14. Two taps can separately fill a cistern in 10 minutes and 15 minutes , respectively and when the waste pipe is open , they can together fill it in 18 mintutes . The waste pipe can empty the full cistern in

A. 7 min

B. 9 min

C. 13 min

D. 23 min

Answer: B



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15. If 72 men can build a wall of 280 m length in 21 days, how many men could take 18 days to build a similar type of wall of length 100 m?

A. 30

B. 10

C. 18

D. 28

Answer: A



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16. A' completes a work in 12 days 'B' completes the same work in 15 days .A started working alone and after 3 days B joined him .How many

days will they now take together to complete the remaining work ?

A. 6

B. 8

C. 5

D. 4

Answer: C



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17. Three candidates in a election received 1136 , 7636 and 11628 votes respectively .what percentage of the total votes did the winning candidate get ?

A. 11.6 %

B. 60 %

C. 76. 4 %

D. None of these

Answer: D



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18. Due to increase of 15 % in the price of milk , a family reduces its consumption of milk by 15 % .what was the effect on expenditure on milk ?

- A. 2.50 % decrease
- B. 2.25 % decrease
- C. 3 % decrease
- D. 3.5 % decrease

Answer: B



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19. X can do a piece of work in 8 days and Y in 12 days . When Z joined them , they completed the work in 3 days .If the total money received for the work was Rs. 400 ,what would be the share of X , based upon his proportionate output ?

A. Rs. 200

B. Rs . 160

C. Rs . 150

D. Rs. 170

Answer: C



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20. A can contains a mixture of two liquids A and B in the ratio $7:5$ when 9 litres 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?

(a) 10 (b) 20 (c) 21 (d) 25

A. 35 L

B. 50 L

C. 45 L

D. 40L

Answer: D



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