GENERAL APTITUDE

Trainer : Yogesh Chavan
yogesh.chavan@sunbeaminfo.com

Averages

- **Simple Average** :
- An average of a set of values is the sum of values divided by the total number of values.
- Average of ‘n’ values = (Sum of the ‘n’ values)/n
- This is also called as Arithmetic Mean.
- Average (A) = Sum (S)/ Number(n)
- S = A x n
- **Weighted Average** :
- When all values whose average we want to find do not have uniform occurrences we calculate the weighted average.
- If values y1, y2, y3…occur w1, w2, w3… times then
- Weighted Avg $= \frac{(w1y1+w2y2+w3y3+ ..)}{(w1+w2+w3..)}$

Averages

Q. In a class of 50 students, 24 secured 60 in Physics, 16 secured 70 marks and the rest secured 80. What is the average score for Physics in the class?

A.64.8 B. 65.4 C. 67.2 D. 66.7

Soln :-

Students	24	16	10.
Marks	60	70	80

$$\text{Average} = \frac{24\times60 + 16\times70 + 10\times80}{24 + 16 + 10}$$

$$= 3360/50$$

$$= 67.2$$

Ans : C

Averages

- Only For Consecutive Numbers -
- Whenever, we have consecutive numbers or consecutive odd numbers or consecutive even numbers, then always remember the middle number is the Average.
- Examples-
- A. 5,6,7,8,9 → Avg =7
- B. 5,6,7,8 → Avg =6.5
- C. 1,3,5,7,9 → Avg =5
- D. 21,23,25,27 → Avg =24

Averages

Q. The average age of a class of 49 students is 16 years. A teacher joins the class as a result of which the average increases by 0.5. How old is the teacher?

A.16.5 B. 18 C. 32 D. 41

- **Solution 1:**

Before teacher, Average age of 49 students = 16 yrs

Total age of 49 students = 49 x 16 = 784.

After teacher joins , New total of class = 49+1 = 50

New Average of class = 16 + 0.5 = 16.5

New Total Age of class= 16.5 x 50 = 825

Age of teacher= Difference in total age = 825 – 784 = 41

Ans : D

Averages

Q. The average age of a class of 49 students is 16 years. A teacher joins the class as a result of which the average increases by 0.5. How old is the teacher?

A.16.5 B. 18 C. 32 D. 41

+ if member added
- If member removed

- **Solution 2:-**
- New value = old avg + (n $\pm$ 1)(diff)
- Where, n = total no. of students

difference = |Old avg – new avg|

- New value = 16 + (49+1)(0.5)
  = 16 + 25.0
  = 41 years

Averages

Q. There are 50 students in a class. Their average weight is 45 kg. When one student leaves the class the average weight reduces by 100 g. What is the weight of the student who left the class ?

A. 45 kg. B. 47.9 kg. C. 49.9 kg. D. 50.1 kg.

Soln:

New value = old avg + (n $\overset{+}{-}$ 1)(diff)

= 45 + (50 – 1)(0.1) (as we convert 100g into kg = $\frac{100}{1000}$ = 0.1 kg)

= 45 + 49(0.1)

= 45 + 4.9

= 49.9 kg

Ans: C

Averages

Q. There are 50 students in a class. Their average weight is 45 kg. When one student leaves the class the average weight reduces by 100 g. What is the weight of the student who left the class ?

A. 45 kg. B. 47.9 kg. C. 49.9 kg. D. 50.1 kg.

Soln:

Total weight of 50 students = (45 x 50) kg = 2250 kg

Average weight of 49 students = 45kg -100g = 44.9 kg

So, total weight of 49 students = (44.9 x 49)kg = 2200.1kg

Weight of the students who left the class = 2250 – 2200.1 = 49.9 kg

Ans: C

Averages

Q. The average age of 16 men increases by 3 years when a person 27 years old is replaced by another. How old is the new person?

A.75 B. 30 C. 48 D. 64

Soln:-

Number of men = 16

Let average age be a

→ Total age of 16 men = 16a (Old total)

New average = a+3

→New total age of 16 men = 16 (a+3) = 16a + 48

New Total – Old Total = 48

→ Age of new man = 27 + 48 = 75

Ans : A

Averages

Q. The average age of 16 men increases by 3 years when a person 27 years old is replaced by another. How old is the new person?

A.75 B. 30 C. 48 D. 64

Soln:-

- Average of 16 men increases by 3 years means,
- total age increases by 16 x 3 =48
- If the age of new person same as replaced person then there would have been no change in average.
- But average age of 16 men increased by 3 years
- So, total age of the person replacing another person = 27 + 48 = 75years

Ans : A

Averages

Q. The average age of 8 men is decreased by 2 years when two of them, whose ages are 22 and 28, are replaced by two new men.. What is the average age of two men?

A. 34years B. 30years C. 15years D. 17years

Soln:

- Average of 8 men reduce by 2 years means total age reduces by 16 if two men leave.
- So, the total age of the new men replacing the old men = 22+28–16=34
- => Average = 34/2 = 17 years.

OR

- Total age decreased= (8 * 2) years = 16 years.
- Sum of ages of two new men = (22 + 28 - 16) years = 34 years
- Average age of two new men = (34/2) years = 17 years.
- **Ans: D**

Averages

Q. The average of four consecutive even number is 27. Find the largest of these numbers

A. 50 B. 40 C. 20 D. 30

Soln:

The average of consecutive numbers = (1st no. + last no)/2

= (x + x+6) / 2

27 = 2x+6

x = 24 (smallest no.)

x+6 = 24+6 = 30(largest no)

Ans: D

Averages

Q. The average of 11 numbers is 50. If the average of first six is 49 and of last 6 is 52 then what is the 6^{th} number ?

A.55 B. 56 C. 58 D. 60

Soln:

- Average of 11 nos = 50
- So total of 11 nos = 11 x 50 = 550
- Total of first six nos = 6 x 49 = 294
- Total of last six nos = 6 x 52 = 312
- So the sixth number = 294 + 312 – 550
  = 56

Ans B

Averages(Assignment)

Q. Find average of all the numbers between 6 and 34 which are divisible by 5.

A. 18

B. 20

C. 34

D. 3

Ans: B

Averages(Assignment)

Q. The average age of students is 7 years and average age of 10 teachers is 50 years. If average age of group of all teachers and students is 8 years. Find the number of students?

A. 420 B. 250 C. 300 D. 270

Soln:

We know, Total = avg x n

	S	T
No.	z	10
Avg	7	50

(student + teacher)x avg = (student) x avg + (teacher) x avg

(z +10) x 8 = (z) x 7 + (10) x 50

8z+80 = 7z + 500

Z= 420 students

Ans :A

Averages(Assignment)

Q. The average age of a class of 22 students is 21 years. The average increased by 1 when the teacher's age also included. What is the age of the teacher?

A. 48 B. 45 C. 43 D. 44

Ans: D

Averages(Assignment)

Q. The average weight of 16 boys in a class is 50.25 kg and that of the remaining 8 boys is 45.15 kg. Find the average weights of all the boys in the class.

A. 47.55 kg B. 48 kg C. 48.55 kg D. 49.25 kg

Ans: C

$$\text{Average} = \frac{50.25 \times 16 + 45.15 \times 8}{16+8}$$

$$= (804+361.2)/24$$

$$= 1165.2 /24$$

$$= 48.55$$

Averages(Assignment)

Q. The average age of a class of 39 students is 15 years. If the age of the teacher be included, then the average increases by 3 months. Find the age of the teacher.

A. 20 years B. 25 years C. 30 years D. 27 years

Ans : B

Averages(Assignment)

Q. The average marks of a class of 87 students is 56. When a new student was added and average becomes 56.5. Find marks of new student.

A. 56 B. 44 C. 100 D. 90

Ans: C

Averages(Assignment)

Q. Find the average of first 97 natural numbers.

A. 47 B. 37 C. 48 D. 49 E. 49.5

Ans: D

Averages(Assignment)

Q. The average age of a class of 30 students is 9years. When teacher's age is also added, the average becomes 10. What is the age of the teacher?

A. 41 years B. 40 years C. 39 years D. 42 years

Ans: B

Averages(Assignment)

Q. The average of 50 numbers is 30. If two numbers, 35 and 40 are discarded, then the average of the remaining numbers is nearly:

A. 28.32 B. 29.68 C. 28.78 D. 29.27

Ans: B

Averages(Assignment)

Q. The average age 8 men is increased by 2 years when two of them whose ages are 21 years and 23 years are replaced by two new men . The average age of the two new men is?

A. 22 years B. 24 years C. 28 years D. 30 years

Ans: D

Averages(Assignment)

Q. The average weight of the students of a class is 60 kg. If eight new students of average weight 64 kg join the class, the average weight of the entire class becomes 62 kg. How many students were there in the class initially ?

A. 8 students B. 16 students C.10 students D. 12 students

Ans: A

Averages(Assignment)

Q. The average of ten numbers is 8. If the average of first nine numbers is 7. Find the 10^{th} number?

A. 17 B. 16 C.15 D. 12

Ans: A

Averages(Assignment)

Q. The average marks obtained by 150 students is 30. If the average marks of passed candidates was 40 and that of failed candidates was 20. Find the number of candidates who passed the exam?

A. 25 B. 85 C.75 D. 45

Ans: C

Averages(Assignment)

Q. The average expenditure of a man for the first five months is Rs. 3600 and for next seven months is Rs. 3900, if he saves Rs.8700 during the year, his average income per month is ?

A. Rs.4500 B. Rs.8500 C. Rs.7500 D. Rs.5400

Ans: A

Averages(Assignment)

Q. The average of first five multiples of 3 is:

A. 9 B. 10 C. 8 D. 11

Ans: A

Averages(Assignment)

Q. Find the average of first 100 positive numbers

A. 49.5 B. 50.5 C. 51 D. 100

Ans: B

Averages(Assignment)

Q. The average expenditure of a man for the first five months of a year is Rs. 5000 and for next seven months is Rs. 5400, if he saves Rs.2300 during the year, his average income per month is ?

A. Rs.5425 B. Rs.5446 C. Rs.5500 D. Rs.5600

Ans: A

Averages(Assignment)

Q. Average age of 40 students in a class is 15 years. When 10 new students are admitted the average increases by 0.2 years. Find the average age of the new students.

A. 17 B. 16 C. 18 D. 19

Ans: B

Averages(Assignment)

Q. In a group of 5 if a man weighing 80 kg is replaced by another man the average weight of the group decreases by 3 kg. The weight of the new man is

A. 77kg. B. 75 kg C. 60 kg D. 65 kg

Ans: D

Averages(Assignment)

Q. In a school there are 15 boys and 10 girls in class nine. The average age of the boys is 16, while the average age of the girls is 15. Find the average age of the students in the class.

A. 15.8 B. 15.6 C. 15.5 D. 15.7

Ans: B

Ages

Ram is at present some age(x) . Age 15 years ago or future age, then

'n' times of Ram's age means ,
= n x age

Ages

Q. Karan's age after 15years will be 5 times his age 5 years back. What is the present age of Karan?

A. 12 years B. 10 years C. 20 years D. 25 years

Soln:

Present age = x

As given,

Future age = x +15

Old age = x-5 5 times is that n times

So , x + 15 = 5(x-5)

x +15 = 5x -25

x = 10 years(Karan's present age)

Ans: B

Ages

Q. Present age of Sam & Ana are in the ratio 5:4 respectively. Three years hence ,their ratio will become 11:9 respectively. What is Ana's present age?

A. 6 years B. 24 years C. 28years D. 32years

Soln:

Present age –

S -> 5x, A -> 4x

3 years hence means (+) as its future ratio given and so its fraction

$\frac{5x+3}{4x+3} = \frac{11}{9}$

45x+27 = 44x + 33

x = 6 years

For A,

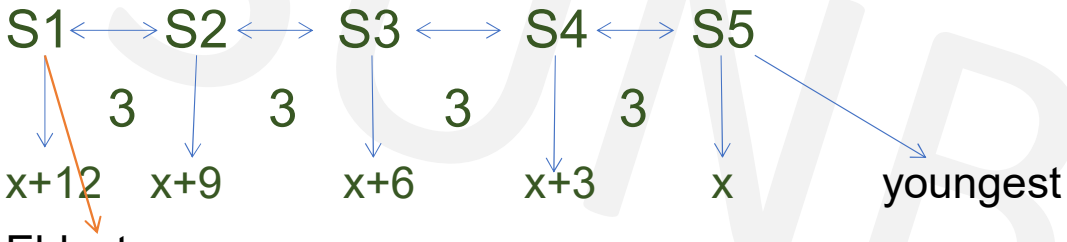
4x = 4 x 6 = 24 years

Ans: B

Ages

Q. Consider 5 siblings born apart by 3 years each. If the sum of the ages of all children is 50years. What is the age of youngest child?

Soln :



Given,

Sum of ages = 50 years

x+12+x+9+x+6+x+3+x = 50

5x + 30 = 50

x = 4 years (age of youngest child)

Ages

Q. A mother said to her daughter " I was as old as you are at the time of your birth". If the mother's age is 38 years now. What was the daughter's age 5 years back?

A. 14years B. 19years C. 38years D. None of these

Soln:

	M	D
Present	38	x
At birth time	38-x	0

I was as old as you are at the time of your birth" shows

M D

38-x = x

38 = 2x

x =19 years(present age of daughter)

5years back, 19-5 = 14 years

Mother's age at time of birth = 38 –x

= 38 – 19

Ans: A = 19 years

Ages

Q. The sum of the ages of a father and son is 45 yr. Five years ago the product of their ages was 4 times the father's age at that time. The present ages of the father and son respectively are:

A. 36yrs,9yrs B. 38yrs,7yrs C. 37yrs,8yrs D. None of these

Ans: A

Ages

Q. A man was asked to state his age in years. His reply was, "Take my age 3 years hence, multiply it by 3 and then subtract 3 times my age 3 years ago and you will know how old I am". What is the age of the man ?

A. 18 years B. 20 years C. 24 years D. 32 years

Soln:

Let the present age of the man be x years

$3(x+3)-3(x-3)=x$

$(3x+9)-(3x-9)=x$

$x=18$

Ans: A

Ages

Q. Ten years ago, a man was seven times as old as his son. Two years hence, twice his age will be equal to five times the age of his son. What is the present age of the son ?

A. 12 years B. 13 years C. 14 years D. 15 years

Ans: C

Ages(Assignment)

Q. A father had 3 sons and they were born at an interval of 3 years. The total age of three sons is 27 years. What is the age of the youngest son ?

A. 8 years B. 6 years C. 11 years D. 5 years

Ans: B

Ages(Assignment)

Q. A is 2 years old than B who is twice as old as C. The total ages of A,B,C be 27. How old is B?

A. 5 years B. 12 years C. 10 years D. None of these

- **Soln**:
- So, we need to first find x here
- A = 2 + B
- B = 2C
- C = x
- So B becomes, B =2x
- So A becomes,
- A = 2 + B
- A = 2 + 2x
- **Ans: C**

Given, the total age = A +B + C =27
Substitute the values here for A,B,C
2 +2x + 2x + x = 27
5x = 25
x=5years
Age of B = 2x = 2 x 5 =10 years

Ages(Assignment)

Q.A man who is 40 years old has three sons, ages 6, 3 and 1. In how many years will the combined age of his three sons equal 80% of his age?

A.5 B. 10 C. 15 D. 20

Soln:

- Let the condition occur after y years.
- After y years
- Man's age = (40+y)
- Son's ages (6+y), (3+y), (1+y)
- Sum of sons' ages = (10+3y)
- (10+3y) = 80/100(40+y)
- 5(10+3y) = 4 (40+y)
- 50 + 15y = 160 + 4y
- 11y = 110
- y = 10

Ans : B

Ages(Assignment)

Q. The ratio of Present age of A and B is 6:7. A is 7 years younger than C. C's age after 8 years will be 51 years. Then what is the difference between the present ages of A and B?

A. 3 Years B. 4 Years C. 5 Years D. 6 Years E. Cannot be determined

Ans : D

Ages(Assignment)

Q. The average age of A, B, C, D and E is 40 years. The average age of A and B is 35 years and the average of C and D is 42 years. Age of E is :

A. 48 years B. 46 years C. 42 years D. 45 years

Ans: B

Ages(Assignment)

Q. 10 years ago, age of father was thrice the age of his son. Ten years hence, father's age will be twice that of his son. The ratio of their present ages is:

A. 5:2 B. 7:3 C. 9:2 D. 13:4

Ans : B

Ages(Assignment)

Q. The average age of A, B and C is 28 years, if average age of B and C is 29 years. What is the age of A in years?

A. 24 years B. 26 years C. 28 years D. 30 years

Ans: B

Ages(Assignment)

Q. Sachin is younger than Rahul by 7 years. If their ages are in the respective ratio of 7 : 9, how old is Sachin?

A. 16 years B. 18 years C. 28 years D. 24.5 years E. None of these

Ans: D

Ages(Assignment)

Q. At present, the ratio between the ages of Arun and Deepak is 4 : 3. After 6 years, Arun's age will be 26 years. What is the age of Deepak at present ?

A. 12 years B. 15 years C. 19.5 years D. 21 years E. None of these

Ans: B

Ages(Assignment)

Q. The present ages of three persons in proportions 4 : 7 : 9. Eight years ago, the sum of their ages was 56. Find their present ages (in years).

A. 8, 20, 28 years

B. 16, 28, 36 years

C. 20, 35, 45 years

D. None of these

Ans: B

Ages(Assignment)

Q. The sum of the ages of two brothers 21 years hence will be twice the sum of their ages today. If the difference in their ages is 12 years, how old is the younger brother?

A. 27 years B. 21 years C. 17 years D. 15 years

Ans : D

Soln-

Present age of elder brother = x

Present age of younger brother = y

After 21 years , elder brother = x+21 and younger brother = y+21

As per given condition,

x+21 + y+21 = 2(x + y) ------ (1)

x – y =12 ------(2)

Solving 1 and 2 , we get ,

x = 27 years and y = 15 years

Ages(Assignment)

Q. The sum of the present ages of the father and his son is 45 years. 5 years ago, the age of the father was 6 times that of son. What is the present age of the son ?

A. 12 years B. 10 years C. 19 years D. 20 years

- **Ans: B**

Ages(Assignment)

Q. The present ratio of Mohan's and Sohan's age is 4 : 5. Twelve years hence this ratio becomes 5 : 6. What will be the age of Mohan (in years) after 6 years?

A. 48 B. 54 C. 60 D. 66

Ans: B

Ages(Assignment)

Q. The ratio of A's and B's ages is 7 : 5. The sum of their ages is 36 years. What will be the ratio of their ages after 9 years?

A. 5 : 6 B. 4 : 3 C. 6 : 5 D. 5 : 4

Ans: D