Average

Question 1: 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:

Answer: **60 years**

Explanation: Sum of ages of 6 sons of a family

$= 8 \times 6$

$= 48$ years

Sum of ages of 6 sons and their Parents $= 8 \times 22$

$= 176$ years

So we have, Parents age $= 176 - 48$

$= 128$ years

As given in question Father is older than mother by 8 years –

So, Father's age – Mother's age $= 8$

Now, let Father's age is x and mother's age is y

$x - y = 8$

So, $x + y = 128$ (Parent's present age)

$2x = 36$

$x = \dfrac{136}{2}$

$x = 68$

so, $x + y = 128$

$68 + y = 128$

$y = 128 - 68$

$y = 60$

Father's age $= 68$ years, Mother's age

Hence the age of mother is 60 years.

Question 2: The average age of A and B is 20 years. If A is to be replaced by C, the average would be 19 years. The average age of C and A is 21 years. The ages of A, B and C in order (in years) are:

Answer: <u>22 years, 18 years and 20 years</u>

<u>Explanation</u>:

Sum of ages of A and B = 2 × 20 = 40 **---- equation 1**

Sum of ages of B and C = 2 × 19 = 38 **---- equation 2**

Sum of ages of C and A = 2 × 21 = 42 **---- equation 3**

On adding all equations

(A + B) + (B + C) + (C + A) = 40 + 38 + 42

2A + 2B + 2C = 120

2(A + B + C) = 120

A + B + C = 60

We can say A = (A + B + C) − (B + C)

= 60 − 38

= 22 years

Similarly B = (A + B + C) − (A + C)

= 60 − 42

= 18 years

Similar C = (A + B + C) − (A + B)

= 60 − 40

= 20 years

The ages of A, B and C in order (in years) are 22 years, 18 years and 20 years respectively.

Question 3: The average (arithmetic mean) amount of savings of ten students is Rs. 600. Three of the students have no savings at all and each of the others has at least Rs. 250 including Nihar, who has exactly Rs. 1300. The largest amount in Rs. that any one student could have is?

Answer: **Rs. 3450**

Explanation:

Average amount of saving of 10 students is = Rs 600

∴ Sum of average savings of 10 students = 10×600

= Rs.6000

Therefore, Nihar has Rs. 1300 and 3 has no saving

So, remaining students is = 10−(3+1) (Nihar and 3 others)

= 10 − 4

= 6 students

So, these 6 students total amount = 6 × 250

= Rs. 1500

Amount after including Nihar is = 1500 + 1300

= Rs. 2800

Remaining saving = 6000 − 2800

= Rs. 3200

So, this Rs. 3200 amount any one could have, and Rs. 250 initially has,

So, greatest amount is = 3200 + 250

= Rs. 3450

Hence the Ans is Rs. 3450 which is the greatest amount.

Question 4: The arithmetic mean of the following numbers

1, 2, 2, 3, 3, 4, 4, 4, 4, 5, 5, 5, 5, 5, 6, 6, 6, 6, 6, 6 and 7, 7, 7, 7, 7, 7, 7, is
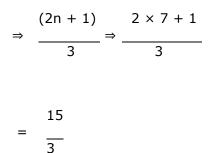
(a) 4

(b) 5

(c) 14

(d) 20

Answer: **(b) 5**

Explanation:

Required mean $= \dfrac{1 \times 1 + 2 \times 2 + 3 \times 3 + 4 \times 4 + 5 \times 5 + 6 \times 6 + 7 \times 7}{1 + 2 + 3 + 4 + 5 + 6 + 7}$

$\Rightarrow \dfrac{1^2 + 2^2 + 3^2 + \ldots\ldots + 7^2}{1 + 2 + 3 + \ldots\ldots + 7}$

$\Rightarrow \dfrac{\dfrac{n(n+1)(2n+1)}{6}}{\dfrac{n(n+1)}{2}}$ [∵ sum of squares of n natural numbers]

[∵ sum of n natural numbers]

$\Rightarrow \dfrac{(2n+1)}{3} \Rightarrow \dfrac{2 \times 7 + 1}{3}$

$= \dfrac{15}{3}$

$= 5$

Hence, option B is correct.

Question 5: If average weight of a family is 'y' kg. If a guest weighing 30 kg arrives then the average weight is increases by 1 kg. If the weight of this guest had been 18 kg then the average weight of the family would have decreased by 1 kg. Find 'y'.

(a) 28

(b) 24

(c) 30

(d) 22

Answer: **(b) 24**

Explanation:

Let the number of family members be x.

Therefore, the total weight = xy

Equation in the 1st scenario:

(x + 1) (y + 1) = xy + 30

xy + x + y + 1 = xy + 30

x + y = 29   **.....(i)**

Equation in the 2nd scenario:

(x + 1) (y - 1) = xy + 18

xy + y - x - 1 = xy + 18

y - x = 19   **....(ii)**

Solving equations (i) and (ii), we get

2y = 48,

Therefore, y = 24.

Hence, option B is correct.

Question 6: months of the year, his average monthly income was Rs. 3160 and for the last five months, it was Rs. 4,120. His income in the eighth month of the year was:

(a) Rs. 3160

(b) Rs. 5080

(c) Rs. 15520

(d) Rs. 5520

Answer: **(b) Rs. 5080**

Explanation:

As per the given information, we get

Average of 12 months = 3400.

So, total salary of all 12 months = 3400 × 12

$$= Rs. 40800 \quad .... \quad \textbf{(eq. 1)}$$

Average of first 8 months = 3160.

So, total salary of first 8 months = 3160 × 8

$$= Rs. 25280 \quad .... \quad \textbf{(eq. 2)}$$

Average of last 5 months = 4120.

So, total salary of first 5 months = 4120 × 5

$$= Rs. 20,600 \quad .... \quad \textbf{(eq. 3)}$$

Person's income in the eighth month = (25280 + 20600) − 40800

$$= 45880 - 40800$$

$$= Rs. 5080.$$

Note: In such questions, when we calculate total of two different sets (for instance, first 8 months + last 5 months), one particular value (8th month in this case) is calculated twice.

On subtracting the total of eq. 1 from the total of eq. 2 and 3 we are left with the value of the month that's been calculated twice in the question.

Hence, option B is correct.

Question 7: In a school with 600 students, the average age of the boys is 12 years and that of the girls is 11 years. If the average age of the school is 11 years and 9 months, then the number of girls in the school is –

(a) 450

(b) 150

(c) 250

(d) 350

Answer: **(b) 150**

Explanation:

Let, the number of girls = x   &

The number of boys = (600 − x)

Given, the average age of the boys = 12 years

∴ Total age of the boys = 12(600 − x) years

And,

The average age of the girls = 11 years

∴ Total age of the boys = 11x years

Now, average age of the school = $\dfrac{\text{Total age of the boys + Total age of the girls}}{600}$

$$11\dfrac{3}{4} = \dfrac{12(600 - x) + 11x}{600}$$

$$\Rightarrow \dfrac{47/4}{600} = \dfrac{7200 - x}{}$$

⇒ 7200 − x = 7050

⇒ x = 7200 − 7050

⇒ x = 150

Hence, option B is correct

Questing 8: The average age of 100 nurses in a nursing home in 1982 was 50 years. In 1984, 20 nurses retired from their job, whose average age was 60 years. After a huge gap in 1987, 40 nurses were employed whose average age was 38 years. The average age of all the nurses in 1990 was:

(a) 53 years

(b) 48.5 years

(c) 51 years

(d) Data insufficient

Answer: **(c) 51 years**

Explanation:

As per given information = 1982 = Average Age = 50

Total age = 50 x 100

= 5000

1984 = Average age before retirement = 52

Total = 5200

Average age of 20 nurses who retired = 60

Total age = 5200 – 60 x 20 = 4000

Average age of 80 nurses = 4000 / 80 = 50

1987 = average of 80 nurses before recruitment = 50 + 3 – 53

Total = 53 x 80= 4240

Average age of 40 new nurses = 38

Total = 38x40 = 1520

Total age of 120 nurses = 1520 + 4240 = 5760

Total age of 120 nurses = 5760/ 120 = 48

Average age in 1990 = 48 + 3

= 51

Hence the Ans is 51 years.

Question 9: On a school's Annual day sweets were to be equally distributed amongst 112 children. But on that particular day, 32 children were absent. Thus the remaining children got 6 extra sweets. How many sweets was each child originally supposed to get ?

(a) 14

(b) 16

(c) 12

(d) 15

Answer: **(d) 15**

Explanation:

Let 'K' be the total number of sweets.

Given total number of students = 112

If sweets are distributed among 112 children,

Let number of sweets each student gets = 'L'

=> K/112 = L   **....(1)**

But on that day students absent = 32 => remaining = 112 - 32

$$= 80$$

Then, each student gets '6' sweets extra.

=> K/80 = L + 6 **....(2)**

from (1) K = 112L substitute in (2), we get

112L = 80L + 480

32L = 480

L = 15

Therefore, 15 sweets were each student originally supposed to get.

Question 10: Shivam is 4 years younger than Mayank while Divyanshi is 4 years younger than Samrat but one-fifth times as old as Shivam. If Samrat is eight years old, how many times as old is Mayank as Divyanshi?

(a) 6 times

(b) 1/ 2 times

(c) 3 times

(d) 3/2 times

(e) 3 / 4 times

Answer: **(a) 6 times**

Explanation:

Given, the present age of Samrat = 8 years

Then, the **present age of Divyanshi** = present age of Samrat - 4 = 8 - 4

= 4 years

Given, Divyanshi is one-fifth times as old as Shivam

---> Present age of Divyanshi = (1/5) * present age of Shivam

---> **Present age of Shivam** = 5 * present age of Divyanshi = 5 * 4

= 20 years

Given, Shivam is 4 years younger than Mayank

Then, Mayank is 4 years older than Shivam.

---> **Present age of Mayank** = present age of Shivam + 4 = 20 + 4

= 24 years

Now, present age of Divyanshi * 6 times = 4 * 6 = 24 which is Mayank's present age.

Thus, Mayank is 6 times older than Divyanshi.

Question 11: A professional institute's total expenditure on students for a particular course is partly fixed and partly varies linearly with the number of students. The average expense per student is Rs. 615 when there are 24 students and Rs. 465 when there are 40 students. What is the average expense when there are 60 students?

(a) Rs. 370

(b) Rs. 450

(c) Rs. 350

(d) Rs. 420

(e) Rs. 390

Answer: **(e) Rs. 390**

Explanation:

Let partially fixed expenditure be x and partially varying expenditure be y.
Given, when there are 24 students, average expense per student = Rs. 615

= Total expense = Rs. 615 * number of students
= Now, Total expense = partially fixed expenditure + expenditure partially varying with the number of students

Then, Total expense = 615 * 24 = x + 24 y
= x + 24y = 14760   **---> eqn. (1)**

Similarly, when there are 40 students,
Total expense = 465 * 40 = x + 40 y
= x + 40y = 18600 ---> **eqn (2)**

Now, eqn (2) - eqn (1) [ie., subtraction], we get,
40y - 24y = 18600 - 14760
= 16y = 3840
= **y = 240**

Then, From eqn (1), x = 14760 - 24 * 240
= x = 14760 - 5760
= **x = 9000**

When there are 60 students, Total expense = x + 60 y
= 9000 + 60 * 240
= 23400
Average expense when there are 60 students = 23400/60
= **390**

Question 12: The average salary of the whole employees in a company is Rs. 300 per day. The average salary of officers is Rs. 800 per day and that of clerks is Rs. 240 per day. If the number of officers is 30, then find the number of clerks in the company?

(a) 180

(b) 160

(c) 220

(d) 250

(e) None of these

Answer: **(d) 250**

Explanation:

Let the number of clerks in the company be x.
Given, average salary of officers = Rs. 800 per day
Number of officers = 30

= **Total salary of officers** = Average salary * Number of officers
= 800 * 30
= Rs. 24,000

Given, average salary of clerks = Rs. 240 per day
Then, **Total salary of clerks** = 240 * x
= 240x

Given, average salary of whole employees = Rs. 300 per day
= **Total salary of whole employees** = Average salary * [Number of officers + Number of clerks]
= 300 * [30 + x]

Now, **Total salary of whole employees = Total salary of officers + Total salary of clerks**
= 300 * [30 + x] = 24000 + 240x
= 9000 + 300x = 24000 + 240x
= 300x - 240x = 24000 - 9000
= 60x = 15000
= x = 250

Thus, the **number of clerks in the company** = x = **250 members.**

Question 13: In the afternoon, a student read 100 pages at the rate of 60 pages per hour. In the evening, when she was tired, she read next 100 pages at the rate of 40 pages per hour. What was her average rate of reading, in pages per hour?

(a) 60

(b) 70

(c) 48

(d) 50

(e) 65

Answer: **(c) 48**

Explanation:

Number of hours the student read in the afternoon = Number of pages/ rate

= 100 / 60

= 5/3

Number of hours the student read in the evening = Number of pages/ rate

= 100 / 40

= 5/2

Total hours of reading = (5/3) + (5/2)

= (10 + 15) / 6

= 25/6

Total pages read = 100 + 100 = 200

Average rate of reading = Total pages read / Total hours of reading

= 200 / (25/6)

= (200 * 6)/25

= 8 * 6

= **48 pages per hour**

Question 14: The average weight of a group of boys and girls is 38 kg. The average weight of boys is 42 kg and that of girls is 33 kg. If the number of boys is 25, then find the number of girls.

(a) 20

(b) 33

(c) 38

(d) 22

Answer: **(a) 20**

Explanation: Let number of girls = x

Given, Average weight of boys = 42 kg

Number of boys = 25

Then, Total weight of boys = Average weight of boys * Number of boys

= 42 * 25 = 1050

Given, Average weight of girls = 33 kg

Then, Total weight of girls = 33 * x = 33x

Now, **Total weight of boys and girls = 1050 + 33x** ---> eqn (1)

Given, Average weight of a group of boys and girls = 38 kg

= Total weight of boys and girls = Average weight of a group of boys and girls * (No. of boys + No. of girls)

= **Total weight of boys and girls = 38 (25 + x)** ---> eqn (2)

From eqn (1) and (2),

1050 + 33x = 38 (25 + x)

1050 + 33x = 950 + 38x

38x - 33x = 1050 – 950

5x = 100

x = 100/5 **x = 20**

Thus, **number of girls = x = 20**

Question 15: A car owner buys petrol at Rs. 7.50, Rs. 8 and Rs. 8.50 per litre for three successive years. What approximately is the average cost per litre of petrol if he spends Rs. 4000 each year?

(a) Rs. 8

(b) Rs. 9

(c) Rs. 7.98

(d) Rs. 8.50

(e) Rs. 10.98

Answer: **(c) Rs. 7.98**

Explanation:

Total quantity of petrol consumed in 3 years = (4000/7.50 + 4000/8 + 4000/8.50) liters

= 4000 (100/750 + 1/8 + 100/850)

= 4000 (2/15 + 1/8 + 2/17)

= 4000 [(272 + 255 + 240)/2040]

= 4000 [767/2040]

= 76700/51 liters

Total amount spent in 3 years = Rs. 4000 * 3 = Rs. 12000.

Average cost per litre of petrol for 3 years = Total amount spent in 3 years / Total quantity of petrol consumed in 3 years

= Rs. (12000*51/76700)

= 120*51 / 767

= 6120/767

= Rs. 7.98

Hence, Rs. 7.98 is the approximately the average cost per litre of petrol if he spends Rs. 4000 each year.

Question 16: The average age of Rinku and Ridipta is 18 years. When Rita replaces Ridipta, the average age is increased by 1 and when Ridipta replaces Rinku the average age becomes 17 years. What is the age of Rita?

(a) 20 years

(b) 18 years

(c) 16 years

(d) 22 years

(e) 28 years

Answer: **(b) 18 years**

Explanation:

Given, average age of Rinku and Ridipta = 18 years
Total age of Rinku and Ridipta = Average * 2
= 18 * 2 = 36

Rinku + Ridipta = 36 **-------eqn(1)**

When Rita replaces Ridipta,
Average age of Rinku and Rita = 19 yearsTotal age of Rinku and Rita = 19 * 2 = 38

Rinku + Rita = 38 **------ eqn(2)**

When Ridipta replaces Rinku,
Average age of Ridipta and Rita = 17 years
Total age of Ridipta and Rita = 17 * 2 = 34

Ridipta + Rita = 34 **------- eqn(3)**

Now, Subtracting eqns (1) and (2) i.e., eqn (2) - eqn (1), we get,
Rita - Ridipta = 38 - 36

Rita - Ridipta = 2 **------- eqn (4)**

Now, eqn (3) + eqn (4), we get

2 Rita = 34 + 2

Rita = 36/2

Rita = 18

Thus, **the age of Rita = 18 years**.

Question 17: The average weight of a group of boys and girls is 38 kg. The average weight of boys is 42 kg and that of girls is 33 kg. If the number of boys is 25, then find the number of girls.

(a) 20

(b) 33

(c) 38

(d) 22

(e) None of These

Answer: **(a) 20**

Explanation:

Let number of girls = x
Given, Average weight of boys = 42 kg
Number of boys = 25
Then, Total weight of boys = Average weight of boys * Number of boys
= 42 * 25
= 1050

Given, Average weight of girls = 33 kg
Then, Total weight of girls = 33 * x = 33x

Now, **Total weight of boys and girls =** 1050 + 33x **----- eqn. (1)**

Given, Average weight of a group of boys and girls = 38 kg

Total weight of boys and girls = Average weight of a group of boys and girls * (No. of boys + No. of girls)

Total weight of boys and girls = 38 (25 + x) **----- eqn. (2)**

From eqn. (1) and (2),

1050 + 33x = 38 (25 + x)
---> 1050 + 33x = 950 + 38x
---> 38x - 33x = 1050 - 950
---> 5x = 100
---> x = 100/5
---> **x = 20**
Thus, **number of girls = x = 20**

Question 18: Shalini's present age is five times of her daughter's present age and the ratio between Shalini's present ages to her father's present age is 2:5. If the average age of all the three 6 years hence will be 43 years, then find the ratio of present ages of her daughter to the difference of the ages of Shalini and her father?

(a) (1 : 12)

(b) (2 : 13)

(c) (1 : 7)

(d) (2 :15)

(e) (1 : 8)

Answer: **(d) (2 :15)**

Explanation:

Let daughter's present age be Z years.

Then, Shalini's present age = 5Z years

Ratio of Shalini daughter's present age to Shalini's present age = Z : 5Z = 1 : 5

Ratio of Shalini's present age to her father's present age = 2 : 5

Then, Ratio of present age of Daughter: Shalini : Father = 2 : 10 : 25

age of Daughter 6 years hence = 2x + 6
age of Shalini 6 years hence = 10x + 6
age of Father 6 years hence = 25x + 6

Given that, average age of all the three 6 years hence = 43 years
(2x + 6 + 10x + 6 + 25x + 6) / 3 = 43
(37x + 18) = 43 * 3
37x = 129 - 18
37x = 111
x = 111/37
x = 3

Then, present age of Daughter = 2x = 2 * 3 = 6 years
present age of Shalini = 10x = 10 * 3 = 30 years
present age of Father = 25x = 25 * 3 = 75 years

Required Ratio = 6:(75 - 30)
= 6 : 45
= **2 : 15**

Question 19: If p, q, r be three positive numbers such that p > q > r when the smallest number is added to the difference of the rest two numbers, then the average of the resultant number and the original numbers except to the smallest number is 21 more than the average of all the three original numbers. The value of (p -q) is –

(a) 14

(b) 63

(c) 42

(d) 54

(e) 28

Answer: (b) 63

Explanation:

From the given statement p > q > r

It is clear that P is the greatest number and r is the smallest number.

When the smallest number "r" is added to the difference of the rest two numbers "p and q", the resultant number becomes = r + (p - q)

Then, average of the resultant number and the original numbers except to the smallest number is 21 more than the average of all the three original numbers

[r + (p - q) + p + q] / 3 = 21 + [(p + q + r) / 3]

[(p - q) + p + q + r] / 3 = [63 + p + q + r] / 3

(p - q) + p + q + r = 63 + p + q + r

(p - q) = 63 + p + q + r - p - q - r

(p - q) = 63

Hence the value of (p -q) is 63.

Question 20: A man takes 10 hours to go to a place and come back by walking both the ways. He could have gained 2 hours by riding both the ways. The distance covered in the whole journey is 18 miles. Find the average speed for the whole journey if he goes by walking and comes back by riding.

Answer and Explanation:

Step 1 :

Given: A man takes 10 hours to go to a place and come back by walking both the ways.

That is,   Walking + Walking = 10 hours

                2 *Walking = 10 hours

                Walking = 5 hours

Given: He could have gained 2 hours by riding both the ways.

That is,   Riding + Riding = 8 hours

                2 * Riding = 8 hours

                Riding = 4 hours

Step 2 :

If he goes by walking and comes back by riding, time taken by him:

                Walking + Riding = 5 + 4

                Walking + Riding = 9 hours

Step 3:

Total time taken = 9 hours

Total distance covered = 18 miles

Step 4 :

So, the average speed is

= Total distance / Total time

= 18 / 9

= 2

Hence, the required average speed is 2 miles per hour.

Question 21:   Distance from A to B = 200 miles,

Distance from B to C = 300 miles,

Distance from C to D = 540 miles

The speed from B to C is 50% more than A to B. The speed from C to D is 50% more than B to C. If the speed from A to B is 40 miles per hour, find the average speed from A to D.

Answer and Explanation:

Step 1 :

Speed (from A to B) = 40 miles/hour

Speed (from B to C) = 60 miles/hour (50% more)

Speed (from C to D) = 90 miles/hour (50% more)

Step 2 :

Formula to find time is

= Distance / Time

Time (A to B) = 200 / 40 = 5 hours

Time (B to C) = 300 / 60 = 5 hours

Time (C to D) = 540 / 90 = 6 hours

Total time taken from A to D is

= 5 + 5 + 6 = 16 hours

Total distance from A to D is

= 200 + 300 + 540

= 1040 miles

Step 3 :

Formula to find average speed is

= Total distance / Total time

= 1040 / 16

= 65

Hence, the average speed from A to D is 65 miles per hour.

Question 22: A plane covered a distance of 630 miles in 6 hours. For the first part of the trip, the average speed was 100 mph and for the second part of the trip, the average speed was 110 mph. what is the time it flew at each speed?

(a) 3

(b) 5

(c) 7

(d) 10

(e) None of Above

Answer: (a) 3

Explanation:

Our table looks like this.

	Distance	Speed	Time
1st part of journey	d	100	t
2nd part of journey	630-d	110	6-t

Assuming the distance covered in the 1st part of journey to be 'd',

So the distance covered in the second half becomes '630-d'.

Assuming the time taken for the first part of the journey to be 't',

Then the time taken for the second half becomes '6-t'.

From the first equation, d=100t **......... 1**

The second equation is 630-d = 110(6-t) **..........2**

Substituting the value of d from the first equation, we get

630-100t = 110(6-t)

Solving this gives t=3.

So the plane flew the first part of the journey in 3 hours and the second part in 3 hours.

Question 23: Mr. A and Mrs. B have two sons P and Q and a daughter R. R is the youngest among the three children. Mrs. B is five years younger than Mr. A. The ages of the children form an Arithmetic Progression whose common difference is 1. The sum of the ages of the male members is 92 while that of the female members of the family is 67. What is the sum of the ages of Mr. A and Mrs. B?

(a) 100

(b) 95

(c) 115

(d) 105

(e) None of above

Answer: (d) 105

Explanation:

Given, ages of the children form an Arithmetic Progression whose common difference is 1.

So, let the age of children be **a-1, a, a+1.**

Here, a-1 is the youngest child who is the daughter R.

B is 5 yrs younger than A,

A = B + 5
Sum of ages of female members = 67.

a-1 + B = 67

a + B = 68 ...(i)

Sum of ages of female members = 91

a + a+1 + A = 91

2a + A = 91

2a + (B + 5) = 91

2a + B = 86 ....(ii)

Solving equations (i) and (ii),

a = 18; B = 50

Therefore, A = B + 5 = 50 + 5 = 55 yrs

Sum of the ages of Mr. A and Mrs. B = 55 + 50 = **105 yrs.**

Question 24: B was born when A was 4 years 7 month and C was born when B was 3 years 4 months old. When C was 5 years 2 months old, then their average age was

(a) 8 years 9 months

(b) 7 years 3 months

(c) 8 years 7 months

(d) 8 years 11 months

(e) None of above

Answer: (d) 8 years 11 months

Explanation:

By question, we should calculate from C's age

Given that,

C = 5 years 2 months

From the age of C, the age of B can be written as

B = (5 + 3) years (2 + 4) months

= 8 years 6 months

From the age of B, the age of A can be written as

A = (8 + 4) years (6 + 7) months

= 12 years 13 months

(12 months become 1 year)

A = 13 years 1 month

Average = (A + B + C)/3

= (8 + 5 + 13) years (6 + 2 + 1) months/3

= (26 years 9 months)/3

(balance 2 years become 24 months

So, 24 + 9 = 33)

= 8 years 11 months

Therefore, average = 8 years 11 months

Question 25: In a cricket match, 6 players had an average X of their runs. Average increases by 10 runs, if seventh player makes a score of 112 runs. What is the average of first 6 players?

(a) 36

(b) 39

(c) 40

(d) 42

Answer: (d) 42

Explanation:

Let, The average of 6 players = X

Average increases by 10, when seventh player makes a score of 112 runs.

Therefore, average of 7 players = X + 10

$$\text{Average} = \frac{\text{Sum of Scores}}{\text{Number of Players}} \text{ ------- (1)}$$

Here, average = X, number of players = 6

Hence, **Sum of scores = 6X**

Score of 7 players = (Score of 6 players + score of 7 player) = (6X + 112) **------- (2)**

Total average = (X + 10) **--------- (3)**

Substitute (2) and (3), in (1)

$$(X + 10) \frac{(6X + 112)}{7}$$

Solving we get,

X = 42

Hence, Average of first 6 players = 42