Problems on Ages for TISSNET PDF

Instructions
For the following questions answer them individually

Question 1

Ten years ago, the ages of the members of a joint family of eight people added up to 231 years. Three years later, one member died at the age of 60 years and a child was born during the same year. After another three years, one more member died, again at 60, and a child was born during the same year. The current average age of this eight-member joint family is nearest to

[CAT 2007]

A 23 years

B 22 years

C 21 years

D 25 years

E 24 years

Answer: E

Explanation:
Ten years ago, the total age of the family is 231 years.

Seven years ago, (Just before the death of the first person), the total age of the family would have been 231+8*3 = 231+24 = 255.
After the death of one member and the birth of a child, the total age is 195 years.

Four years ago, after the death of one member and birth of another child, the total age of the family is 195+24-60 = 159 years.

The current total age of the family is = 8x4 + 159 = 191 years

The average age is 191/8 = 23.875 years = 24 years (approx)

Question 2

In a B-School there are three levels of faculty positions i.e. Professor, Associate Professor and Assistant Professor. It is found that the sum of the ages of all faculty present is 2160, their average age is 36; the average age of the Professor and Associate Professor is 39; of the Associate Professor and Assistant Professor is $32\frac{8}{11}$; of the Professor and Assistant Professor is $36\frac{2}{3}$; Had each professor been 1 year older, each Associate Professor 6 years older, and each Assistant Professor 7 years older, then their average age would increase by 5 years. What will be the number of faculty at each level and their average ages?

A (16, 24, 20 : 45, 35, 30 years)

B (18, 24, 20 : 42, 38, 30 years)

C (16, 20, 24 : 50, 30, 30 years)

D None of these

Answer: A

Explanation:
Let the number of professors, associate professors and assistant professors be x, y and z respectively and their average ages be a, b and c respectively.
xa + yb + zc = 2160 ----------(1)

Average age =36

$\therefore$ x+y+z=60

xa + yb = 39 (x + y)

11(yb + zc) = 360(y + z)
3(xa + zc) = 110(x + z)
x(a + 1) + y(b + 6) + z(c + 7) = 2160 + 5*(60) -------(2) [∵ Average increases by 5]

Eq 2- Eq 1

We get x+6y+7z=300

Lets solve the options one by one
Option A: x = 16 , y = 24, z = 20

16+6*24+7*20=300 which satisfies the equations.

So either A or C can be the answer.

Now check for the values of a, b, c

a=45, b=35, c=30

ax+by+cz = 45*16+35*24+30*20

=2160

Hence, option A is the correct answer.

Question 3

Mr. and Mrs. Gupta have three children - Pratik, Writtik and Kajol, all of whom were born in different cities. Pratik is 2 years elder to Writtik. Mr. Gupta was 30 years of age when Kajol was born in Hyderabad, while Mrs. Gupta was 28 years of age when Writtik was born in Bangalore. If Kajol was 5 years of age when Pratik was born in Mumbai, then what were the ages of Mr. and Mrs. Gupta respectively at the time of Pratik's birth?

A 35 years, 26 years

B 30 years, 21 years

C 37 years, 28 years

D None of the above

Answer: A

Explanation:
Mr. and Mrs. Gupta have three children - Pratik, Writtik and Kajol, all of whom were born in different cities. Pratik is 2 years elder to Writtik. Mr. Gupta was 30 years of age when Kajol was born in Hyderabad, while Mrs. Gupta was 28 years of age when Writtik was born in Bangalore. If Kajol was 5 years of age when Pratik was born in Mumbai, then what were the ages of Mr. and Mrs. Gupta respectively at the time of Pratik's birth.

It is given that Pratik is 2 years elder to Writtik and Kajol was 5 years of age when Pratik was born in Mumbai. Hence, we can say that Kajol is the eldest and Writtik is the youngest.

Mrs. Gupta was 28 years of age when Writtik was born in Bangalore. Hence, at the time of Pratik's birth Mrs. Gupta would have been two years younger i.e. 28 - 2 = 26 years old.

Mr. Gupta was 30 years of age when Kajol was born. Hence, at the time of Pratik's birth Mr. Gupta would have been 5 years older i.e. 30 + 5 = 35 years old.

Hence, option A is the correct answer.

XAT Previous Papers

Question 4

Ravindra and Rekha got married 10 years ago, their ages were in the ratio of 5 : 4. Today Ravindra's age is one sixth more than Rekha's age. After marriage, they had 6 children including a triplet and twins. The age of the triplets, twins and the sixth child is in the ratio of 3 : 2 : 1. What is the largest possible value of the present total age of the family?

A 79

B 93

C 101

D 107

Answer: D

Explanation:
10 years ago, Let age of Ravindra be 5x and Rekha be 4x

At present, Ravindra is 7/6 times of Rekha's age.

$5x + 10 = \frac{7}{6}(4x + 10)$

Solving, x =5

Ravindra was 25 years (10 years ago) and Rekha was 20 years (10 years ago)

Now, ages of their children is 3:2:1

Maximum possible ages of children is 9,6,3 years.

Total age of family is: 35 + 30 + 9*3 + 6*2 + 3 = 107 years.

Question 5

Hari’s family consisted of his younger brother (Chari), younger sister (Gouri), and their father and mother. When Chari was born, the sum of the ages of Hari, his father and mother was 70 years. The sum of the ages of four family members, at the time of Gouri’s birth, was twice the sum of ages of Hari’s father and mother at the time of Hari’s birth. If Chari is 4 years older than Gouri, then find the difference in age between Hari and Chari.

A 5 years

B 6 years

C 7 years

D 8 years

E 9 years

Answer: E

Explanation:
Let the age of the father be 'f', mother be 'm', Hari be 'h', Chari be 'c'. It has been given that Chari is 4 years older than Gouri. Therefore, the age of Gouri is c-4.

When Chari was born, the sum of the ages of Hari, his father and mother was 70 years.
If Chari's age is 'c' now, then Chari's father's age when Chari was born would have been 'f-c' (i.e, Current age - the number of years that has passed after Chari's birth). The same holds true for all the family members.

=> f - c + m - c + h - c = 70
f+m+h-3c = 70 ----------(1)

The sum of the ages of the 4 family members when Gouri was born was twice the sum of the ages of the father and mother at the time of Hari's birth.

=> f-(c-4) + m -(c-4) + h -(c-4) + c - (c-4) = 2(f-h+m-h)
=> f + m + h + c - 4(c-4) = 2f + 2m - 4h
f+m+h-3c + 16 = 2f+2m-4h
Substituting (1), we get,
70 +16 = 2f+2m-4h

43 + 2h= f+m ----------(2)
Substituting (2) in (1), we get,
43 + 2h + h - 3c = 70
3h - 3c = 27
=> h-c = 9
Therefore, the difference between the age of Hari and Chari is 9 years. Therefore, option E is the right answer.

Question 6

In an apartment complex, the number of people aged 51 years and above is 30 and there are at most 39 people whose ages are below 51 years. The average age of all the people in the apartment complex is 38 years. What is the largest possible average age, in years, of the people whose ages are below 51 years?

A 27

B 25

C 26

D 28

Answer: D

Explanation:
In an apartment complex, the number of people aged 51 years and above is 30 and there are at most 39 people whose ages are below 51 years. The average age of all the people in the apartment complex is 38 years. What is the largest possible average age, in years, of the people whose ages are below 51 years?

The possible average age of people whose ages are below 51 years will be maximum if the average age of the number of people aged 51 years and above is minimum. Hence, we can say that that there are 30 people having same age 51 years.

Let 'x' be the maximum average age of people whose ages are below 51.

Then we can say that,

$$\frac{51 * 30 + 39 * x}{30 + 39} = 38$$

$\Rightarrow 1530 + 39x = 2622$

$\Rightarrow x = 1092/39 = 28$

Hence, we can say that option D is the correct answer.

Question 7

At present Sofia is 1.5 times Shalu's age and twice Saloni's age. After six years Sofia will be 1.4 times Shalu's age and Satoni will be 0.8 times Shalu's age then. What is Salonfs present age

A 30 years

B 36 years

C 24 years

D 18 years

E None of these

Answer: D

Explanation:

Let Sofia's present age be x

Let Shalu's present age be y

Let Saloni's present age be z

From given conditions,

x = 1.5y = 2z

x+6 = 1.4(y+6)

z+6 = 0.8(y+6)

x= 2z and y =4z/3

Substituting these conditions, we get z = 18

Question 8

12 years ago, the ages of A and B were in the ratio 15 : 13 respectively. 19 years from now the respective ratio of their ages will be 23 : 22. What is the sum of their ages at present ?

A 57 years

B 54 years

C 52 years

D 59 years

E None of these

Answer: C

Explanation:
REASONING

Question 9

The ages of Shirish and Kunder are in the ratio of 5 : 6 respectively. After 8 years the ratio of their ages will be 7 : 8. What is the difference in their ages

A 4 years

B 8 years

C 10 years

D 12 years

E None of these

Answer: A

Explanation:
Let present ages of Shirish and Kunder be $5x$ and $6x$ years respectively.

Acc. to ques, ratio of their ages after 8 years

$\Rightarrow \frac{5x+8}{6x+8} = \frac{7}{8}$

$\Rightarrow 40x + 64 = 42x + 56$

$\Rightarrow 42x - 40x = 64 - 56$

=> $2x = 8$

=> $x = \frac{8}{2} = 4$

$\therefore$ Difference in their ages = $6x - 5x = x$

= 4 years

Question 10

Jayesh is twice as old as Vijay and half as old as Suresh .If sum of Suresh's and Vijay's age is 85 years what is the Jayesh's age in years?

A 34

B 36

C 68

D Cannot determined

E None of these

Answer: A

Explanation:

Let Vijay's age = x years

=> Jayesh's age = $2x$ years and Suresh's age = $4x$ years

Sum of Suresh's and Vijay's ages = $(4x + x) = 85$

=> $x = \frac{85}{5} = 17$

$\therefore$ Jayesh's age = $2x = 2 \times 17 = 34$ years

=> Ans - (A)