21- The average weight of 8 persons increases by 2.5 kg when a new person comes in place of one them weighing 65 kg. What might be the weight of the new person?

- **A.**65 kg
- **B.**75 kg
- **C.**85 kg
- **D.**90 kg
- **E.**None of these

Answer & Explanation

Answer - **C** (85 kg)

Explanation - Total weight increased = (8 x 2.5) kg = 20 kg

Weight of new person = (65 + 20) kg = 85 kg

22- The arithmetic mean of the scores of a group of students in a test was 52. The brightest 20% of them secured a mean score of 80 and the dullest 25% a mean score of 31. The mean score of remaining 55% is:

- **A.**51.4
- **B.**53.6
- **C.**54.4
- **D.**55.6
- **E.**None of these

Answer & Explanation

Answer - **A** (51.4)

Explanation - Let the required mean score be *a*

Then, 20 x 80 + 25 x 31 + 55 x a = 52 x 100

1600 + 775 + 55a = 5200

55a = 2825

a = 51.4

23- The average of a non-zero number and its square is 5 times the number. The number is:

- **A.**0 , 9
- **B.**0 , 8
- **C.**5 , 8
- **D.**6 , 0
- **E.**None of these

Answer & Explanation

Answer - **A** (0 , 9)

Explanation - Let the number be x.

Then,

$$\frac{x + x^2}{2} = 5x$$

$$x^2 - 9x = 0$$

$$x(x - 9) = 0$$

$x = 0$ or $x = 9$.

24- If the mean of *a, b, c* is M and *ab* + *bc* + *ca* = 0, then the mean of a^2, b^2, c^2 is:

- **A.**3 M x M
- **B.**3 M
- **C.**9 M
- **D.**9 M x M
- **E.**None of these

Answer & Explanation

Answer - **A** (3 M x M)

Explanation -

We have : $\frac{a + b + c}{3} = M$ or $(a + b + c) = 3M$.

Now, $(a + b + c)M^2 = (3M)M^2 = 9M^2$

$$a^2 + b^2 + c^2 + 2(ab + bc + ca) = 9M^2$$

$$a^2 + b^2 + c^2 = 9M^2$$

Required mean = $\frac{a^2 + b^2 + c^2}{3} = \frac{9M^2}{3} = 3M^2$

25- 3 year ago, the average of a family of 5 members was 17 years. A baby having been born, the average age of the family is the same today. The present age of the baby is:

- **A.**1 year
- **B.**2 years
- **C.**3 years
- **D.**4 years
- **E.**None of these

Answer & Explanation

Answer - **B** (2 years)

Explanation - Total age of 5 members, 3 years ago = (17 x 5) years = 85 years

Total age of 5 members now = (85 + 3 x 5) years = 100 years

Total age of 6 members now = (17 x 6) years = 102 years

Age of the baby = (102 – 100) years = 2 years

26- Of the four numbers, the first is twice the second, the second is one-third of the third and the third is 5 times the fourth. The average of the numbers is 24.75. The largest of these numbers is:

- **A.**9
- **B.**15
- **C.**30
- **D.**45
- **E.**None of these

Answer & Explanation

Answer - **D** (45)

Explanation - Let the fourth number be a

Then, third number = 5a, second number = $\frac{5a}{3}$ And first number = $\frac{10a}{3}$

$x + 5x + \frac{5x}{3} + \frac{10x}{3} = (24.75 \times 4)$ or $11x = 99$ or $x = 9$.

So, the numbers are 9, 45, 15 and 30

Largest number = 45

27- The average of six numbers is 3.95. The average of two of them is 3.4, while the average of the other two is 3.85. What is the average of the remaining two numbers?

- **A.**4
- **B.**4.6
- **C.**5
- **D.**5.6
- **E.**None of these

Answer & Explanation

Answer - **B** (4.6)

Explanation - Sum of the remaining two numbers = (3.95 x 6) – [(3.4 x 2) + (3.85 x 2)]

= 23.70 - (6.8 + 7.7) = 23.70 - 14.5 = 9.20

Average = 9.2/2 = 4.6

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.**4 : 5
- **E.**None of these

Answer & Explanation

Answer - **B** (2 : 3)

Explanation - Let the ratio be *k*:1

Then, *k* x 16.4 + 1 x 15.4 = (*k* + 1) x 15.8

(16.4 - 15.8) k = (15.8 - 15.4)

$$k = \frac{0.4}{0.6} = \frac{2}{3}$$

Required Ratio =2 : 3

29- The average age of the boys in a class is 16 years and that of the girls is 15 years. The average age for the whole class is:

- **A.**15
- **B.**16
- **C.**17
- **D.**Data inadequate
- **E.**None of these

Answer & Explanation

Answer - **D** (Data inadequate)

Explanation - Clearly, to find the average, we ought to know the number of boys, girls or students in the class, neither of which has been given

So, the data provided is inadequate

30- The average price of 10 books is Rs. 12 while the average price of 8 of these books is Rs. 11.75. Of the remaining two books, if the price of one book is 60% more than the price of the other, what is the price of each of these two books?

- **A.**Rs 10 and Rs 16
- **B.**Rs 10 and Rs 24
- **C.**Rs 24 and Rs 16
- **D.**Rs 24 and Rs 12
- **E.**None of these

Answer & Explanation

Answer - **A** (Rs 10 and Rs 16)

Explanation - Total price of the two books = Rs. [(12 x 10) – (11.75 x 8)]

= Rs. (120 - 94) = Rs. 26

Let the price of one book be Rs.x

Then, the price of other book = Rs. (x + 60% of x) $= x + \frac{3}{5}x = \text{Rs. } \frac{8x}{5}$

So, $x + \frac{8x}{5} = 26$ $13x = 130$ $x = 10$.

The prices of the two books are Rs. 10 and Rs. 16