Data Sufficiency

Direction(1-10): Each of the questions below consists of a question and three statements numbered I, II and III given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read all the statements and give answer:

1. What will be the cost of painting the four walls and ceiling of a room with length, width and height of 10 m, 15 m, and 20 m respectively? The room has two windows and one door.

Statement I: Cost of painting is Rs. 7 per square meter.

Statement II: Area of the ground of the room is 150 sq. meter.

Statement III: Area of one window is 15 sq. meter which is 50% of the area of the door.

A. The data in statements I and III together are sufficient to answer the question, while the data in statement II are not sufficient to answer the question.

B. The data in statements I and II together are sufficient to answer the question, while the data in statement III are not sufficient to answer the question.

C. The data in statement I, II and III together are not sufficient to answer the question.

D. The data in statement only I and II together or only statement III are sufficient.

E. The data in all the statements I, II and III together are necessary to answer the question.

Answer : C

In the room two window and one door are there. From the statement III, we can conclude that the area of one window was 15sq. cm but we cannot find the area of the other window so we would not get our answer even by using all the statements.

2. The average of the first four numbers is four times of the fifth number. Find the fifth number.

Statement I: Average of the first two numbers is equal to the average of the next two numbers.

Statement II: Average of the first two numbers is four times of the fifth number.

Statement III: The average of the all the numbers is 3.4

A. The data in statements II and III together are sufficient to answer the question, while the data in statement III are not sufficient to answer the question.

B. The data in statements I and II together are sufficient to answer the question, while the data in statement III are not sufficient to answer the question.

C. The data in statement I, II and III together are not sufficient to answer the question.

D. The data in statement III only are sufficient to answer the question.

E. The data in all the statements I, II and III together are necessary to answer the question.

Answer : D

Let the number is a, b, c, d, and e where a is the first number, b is the second number and so on

According to question

$\frac{a+b+c+d}{4} = 4e$

$a + b + c + d = 16e$..... **(I)**

Statement I: Average of the first two numbers is equal to the average of the next two numbers

It means $a + b = c + d$. .....**(ii)**

Statement II: Average of the first two numbers is four times of the fifth number.

$\frac{a+b}{2} = 4e$, $a + b = 8e$. .....**(iii)**

Statement III: The average of the all the numbers is 3.4

So sum of all the numbers = $3.4 \times 5 = 17$

$a + b + c + d + e = 17$

From the question statement given,

$a + b + c + d = 16e$

Or, $16e + e = 17$

Therefore, $e = 1$

Clearly, only statement (iii) is sufficient to answer the question.

3. What is the rate of the compound interest?

Statement I: A sum of 1000, amounts to 1331 at the rate of compound interest

Statement II: The amount was invested for the period of three years
Statement III: The simple interest received on that amount in one year is equal to the compound interest received on that amount in the first year.

A. The data in statements I and III together are sufficient to answer the question, while the data in statement II are not sufficient to answer the question.

B. The data in statements I and II together are sufficient to answer the question, while the data in statement III are not sufficient to answer the question.

C. The data in statement I, II and III together are not sufficient to answer the question.

D. The data in statement only I and II together or only statement III are sufficient.

E. The data in all the statements I, II and III together are necessary to answer the question.

Answer : E

From the statement I: P = 1000 and A = 1331 so interest will become 1331-1000 = 331

From the statement II: Time = 3 years but we could not conclude that the rate of interest was compounded annually or half-yearly.

From the statement III: we can conclude that the rate of interest was compounded annually because the simple interest of one year will be equal to the compound interest of the first year only if the rate of interest is compounded annually.

Now P = 1000, CI = 331 time =3 years and rate of interest is compounded annually so we can easily find the rate of interest.

So, all the statements are needed to get our answer.

4. Can Ram drive from Bangalore to Chennai in less than 3 hours?

Statement I: The average speed of Ram during the whole journey is less than 70 km/hr

Statement II: The distance from Bangalore to Chennai is greater than 210 km.

Statement III: He is driving a car the maximum speed of that can is 150 km/hr

A. The data in statements I and III together are sufficient to answer the question, while the data in statement II are not sufficient to answer the question.

B. The data in statements I and II together are sufficient to answer the question, while the data in statement III are not sufficient to answer the question.

C. The data in statements I and II together are sufficient to answer the question, while the data in statement III are not sufficient to answer the question.

D. The data in statement only I and II together or only statement III are sufficient.

E. The data in all the statements I, II and III together are necessary to answer the question.

Answer : B

From the Statement I, speed is less than 70 km/hr and from the Statement II, distance is more than 210 km so it is clear that he could not drive from Bangalore to Chennai in less than 3 hours. So Statement I and Statement II are needed to get our answer.

In Statement III he can drive up to the speed of 150 km/hr but he drove at the speed of less than 70 km/hr so this statement is insufficient to get our answer.

5. A certain mixture of paint requires blue, red, and yellow in the ratio of 2 : 3 : 4 respectively and no other ingredients. If there are ample quantity of blue and red paints are available then is there

enough quantity of yellow paint is available to get the desired amount of the mixture?

Statement I: Exactly 180 litres of the mixture is needed.

Statement II: The difference between the quantity of blue paint available and the red paint available is 60 litres

Statement III: Exactly 180 litres of red paint are available.

A. The data in statements I and III together are sufficient to answer the question, while the data in statement II are not sufficient to answer the question.

B. The data in statements I and II together are sufficient to answer the question, while the data in statement III are not sufficient to answer the question.

C. The data in statement I, II and III together are not sufficient to answer the question.

D. The data in statement only I and II together or only statement III are sufficient.

E. The data in all the statements I, II and III together are necessary to answer the question.

Answer : C

From the Statement I, the desired amount of mixture is 180 litres

From the Statement II and Statement III, we can conclude that he had 180 litres of red paint and 120 litres of blue paint but we cannot conclude that how much quantity of yellow paint he has because the given ratio is the ratio to make the mixture. It is not the ratio of quantity he has.

6. What is the sum of the age of Ram and Mohan?

Statement I: The difference between the age of Prakash and Ram is 30 years.

Statement II: The difference between the age of Prakash and Mohan is 30 years.

Statement III: Prakash is older than Ram and Mohan.

A. Either statement III alone or statements I and II together are sufficient.

B. Only statement III is sufficient.

C. Only statement I and II is sufficient.

D. Only statement I, II, and III are sufficient.

E. None of these

Answer : E

Let P = Prakash's age R = Ram's age M = Mohan's age

Statement I:
P – R = 30 ------ (i) (from the statement III it is clear that we can get positive difference only if we take P – R because P is older than R and M

Statement II: P – M = 30 ----- (ii)

Two equation and three variables, therefore it is not possible to get answer even by combining all the statement

7. The respective ratio of the salary of Nita and Sita is 3 : 4. What is the ratio of their saving?

Statement I: Sita saves 25% of her salary.

Statement II: The saving of Sita is Rs. 4500.

Statement III: The respective ratio of the expenditures of Nita and Sita is 4 : 5.

A. Either statement III alone or statements I and II together are sufficient.

B. Only statement III is sufficient.

C. Only statement I and III is sufficient.

D. Only statement I, II, and III are sufficient.

E. None of these

Answer : C

Let the salary of Nita = 3x and the salary of Sita = 4x

From the statement I, Sita saves 25% of her salary then her expenditure = 75% of 4x = 3x

From the statement III, Let the expenditure of Nita is 4y and the expenditure of Sita is 5y

Therefore, $3x = 5y$, $y = \frac{3x}{5}$

Therefore, the expenditure of Nita = 4y

$= \frac{12x}{5}$ and her saving $= 3x - \frac{12x}{5} = 0.6x$

Therefore, from the statement I and III together we can get the ratio.

From the statement II and III, $3X - 4500 = 5Y$

$3X - 5Y = 4500$

Here we could not find the two unknown term from the one equation.

Therefore, only statement I and III is sufficient to get our answer.

8. What is the marked price of an article?

Statement I : The selling price of the article is Rs. 500.

Statement II : Selling price after offering 5% discount on the marked price is Rs. 665.

Statement III : Marked price of the article is 40% above the cost price.

A. Either statement III alone or statements I and II together are sufficient.

B. Only statement II is sufficient.

C. Only statement I and III is sufficient.

D. Only statement I, II, and III are sufficient.

E. None of these

Answer : B

From the statement II alone, we can conclude our answer as MP = Rs. 700

But from the statement I or III, we could not get the marked price because in the statement I, SP is given and, in the statement III, we only can conclude that MP = 140% of CP

9. What is the cost of flooring a rectangular hall?

Statement I: The difference between the length and breadth of the rectangle is 5 cm.

Statement II: The perimeter of the rectangular hall is 50 cm
Statement III: The cost of flooring 100 cm2 area is Rs. 1000

A. Either statement III alone or statements I and II together are sufficient.

B. Only statement III is sufficient.

C. Only statement I and III is sufficient.

D. Statement I, II, and III together are sufficient.

E. None of these

Answer : D

By combining statement I, and Statement II we can conclude that length and breadth of the rectangular hall is 10 cm and 15 cm therefore area will be $10 \times 15 = 150\ cm^2$

Now from the statement III, we can conclude that for, 100 cm^2 cost = 1000 therefore for 150 cm^2 cost will be 1500.

So all the three statements are required to answer.

10. Find the simple interest on the sum after 4 years at the rate of 16% per annum.

Statement I: The sum amounted to Rs.72600 after two years at compound interest.

Statement II: The sum amounted to Rs.87846 after four years at compound interest.

Statement III: The sum amounted to Rs.96000 after 5 years at simple interest rate of 12% per annum.

A. The data in statements I and III together are sufficient to answer the question, while the data in statement II are not sufficient to answer the question.

B. The data in statements I and II together are sufficient to answer the question, while the data in statement III are not sufficient to answer the question.

C. The data in statement I, II and III together are not sufficient to answer the question.

D. The data in statement only I and II together or only statement III are sufficient.

E. The data in all the statements I, II and III together are necessary to answer the question.

Answer : D

From I:

$$P\left(1+\frac{r}{100}\right)^{2} = 72600$$

From II:

$$P\left(1+\frac{r}{100}\right)^{4} = 87846$$

From I and II:

Dividing (II) by (I)

$$(1+\frac{r}{100})^2=\frac{87846}{72600}$$

$$\Rightarrow (1+\frac{r}{100})^2=\frac{121}{100}$$

$$\Rightarrow (1+\frac{r}{100})^2=(\frac{11}{10})^2$$

$$\Rightarrow 1+\frac{r}{100}=\frac{11}{10}$$

$$\Rightarrow \frac{r}{100}=\frac{11}{10}-1$$

$$\Rightarrow \frac{r}{100}=\frac{11-10}{10}$$

$$\Rightarrow \frac{r}{100}=\frac{1}{10}$$

$$\Rightarrow r = 10\%$$

Now,

$$P\,(1+\frac{10}{100})^2 = 72600$$

$$\Rightarrow P\,(1+\frac{1}{10})^2 = 72600$$

$$\Rightarrow P\,(\frac{11}{10})^2 = 72600$$

$$\Rightarrow P = 72600\times\frac{100}{121}$$

$$\Rightarrow P = 60000$$

$$SI=\frac{60000\times 4\times 16}{100}=\text{Rs. } 38400$$

From III:

$$\frac{P\times 12\times 5}{100}+P=96000$$

$$\Rightarrow \frac{3P}{5} + P = 96000$$

$$\Rightarrow 8P = 96000 \times 5$$

$$\Rightarrow P = \frac{480000}{8}$$

$$\Rightarrow P = 60000$$

$$SI = \frac{60000 \times 4 \times 16}{100} = \text{Rs. } 38400$$

Hence, I and II together or only III are sufficient.

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