MPhasis Aptitude Questions

1)A train covers a distance in 50 min ,if it runs at a speed of 48 kmph on an average.The speed at which the train must run to reduce the time of journey to 40min will be.

Solution:: Time=50/60 hr=5/6hr

Speed=48mph

distance=S*T=48*5/6=40km

time=40/60hr=2/3hr

New speed = 40* 3/2 kmph= 60kmph

2)Vikas can cover a distance in 1hr 24min by covering 2/3 of the distance at 4 kmph and the rest at 5kmph.the total distance is?

Solution::

Let total distance be S

total time=1hr24min

A to T :: speed=4kmph

distance=2/3S

T to S :: speed=5km

distance=1-2/3S=1/3S

21/15 hr=2/3 S/4 + 1/3s /5

84=14/3S*3

S=84*3/14*3

= 6km

3)walking at ¾ of his usual speed ,a man is late by 2 ½ hr. the usual time is.

Solution::

Usual speed = S

Usual time = T

Distance = D

New Speed is ¾ S

New time is 4/3 T

4/3 T T = 5/2

T=15/2 = 7 ½

4)A man covers a distance on scooter .had he moved 3kmph faster he would have taken 40 min less. If he had moved 2kmph slower he would have taken 40min more.the distance is.

Solution::

Let distance = x m

Usual rate = y kmph

x/y x/y+3 = 40/60 hr

2y(y+3) = 9x 1

x/y-2 x/y = 40/60 hr y(y-2) = 3x 2

divide 1 & 2 equations

by solving we get x = 40

5)Excluding stoppages,the speed of the bus is 54kmph and including stoppages,it is 45 kmph.for how many min does the bus stop per hr.

Solution::

Due to stoppages,it covers 9km less.

time taken to cover 9 km is [9/54 *60] min = 10 min

6)Two boys starting from the same place walk at a rate of 5kmph and 5.5kmph respectively.wht time will they take to be 8.5km apart, if they walk in the same direction

The relative speed of the boys = 5.5kmph 5kmph = 0.5 kmph

Distance between them is 8.5 km

Time= 8.5km / 0.5 kmph = 17 hrs

7)2 trains starting at the same time from 2 stations 200 km apart and going in opposite direction cross each other at a distance of 110 km from one of the stations.what is the ratio of their speeds.

Solution::

In same time ,they cover 110km & 90 km respectively

so ratio of their speed =110:90 = 11:9

8)Two trains start from A & B and travel towards each other at speed of 50kmph and 60kmph resp. At the time of the meeting the second train has traveled 120 km more than the first.the distance between them.

Let the distance traveled by the first train be x km the distance covered by the second train is x + 120 km x/50 = x+120 / 60

x= 600 so the distance between A & B is x + x + 120 = 1320 km

9)A thief steals a car at 2.30pm and drives it at 60 kmph.The theft is discovered at 3pm and the owner sets off in another car at 75 kmph when will he overtake the thief

Solution::

Let the thief is overtaken x hrs after 2.30pm

distance covered by the thief in x hrs = distance covered by

the owner in x-1/2 hr

$60x = 75 (x- ½)$

$x= 5/2$ hr

thief is overtaken at 2.30 pm + 2 ½ hr = 5 pm

10)In covering distance,the speed of A & B are in the ratio of 3:4.A takes 30min more than B to reach the destination.The time taken by A to reach the destination is.

Ratio of speed = 3:4

Ratio of time = 4:3

let A takes 4x hrs,B takes 3x hrs

then 4x-3x = 30/60 hr

x = ½ hr

Time taken by A to reach the destination is 4x = 4 * ½ = 2 hr

11) The average ages of three persons is 27 years. Their ages are in the proportion of 1:3:5.What is the age in years of the youngest one among them.

Let the age of three persons be x, 3x and 5x

-- > 9x/3 = 27 -- > x = 9

12) The average of 11 numbers is 50. If the average of first 6 numbers is 49 and that of last 6 is 52.Find the 6th number.

Sol: The total sum of 11 results = 11 * 50 = 550

The total sum of first 6 results = 6 * 49 = 294

The total sum of last 6 results = 6 * 52 = 312

Sixth result = 294 + 312 550 = 56

13) Find L.C.M of 852 and 1491.

: . L.C.M = 852*1491/213 = 5964

14) The smallest number which when divided by 20, 25, 35, 40 leaves the remainder 6 When divided by 14, 19, 23 and 34 respectively is the difference between divisor and The corresponding remainder is 6.

Required number = (L.C.M of 20, 25, 35, 40) 6

= 1400-6 = 1394

15) The least multiple of 7 which leaves a remainder 4 when divided by 6,9,15 and 18 isL.C.M of 6,9,15 and 18 is 90.

Let x be the least multiple of 7, which when divided by 90 leaves the remainder 4.

Then x is of the form 90k + 4.

Now, minimum value of k for which 90k + 4 is divisible by 4.

: . x = 4 * 90 + 4 = 364

16) Sum of three even consecutive numbers is 48, and then least number is

1) 16

2) 18

3) 20

4) 14

Sol: 4) Let the numbers be 2n, 2n+2 and 2n+4

2n + (2n+2) + (2n+4) = 48

6n = 48-6 = 42, n = 7

Hence the numbers are -- > 14, 16 and 18

The least number is 14.

17) It being given that $\sqrt{15} = 3.88$, the best approximation to $\sqrt{5/3}$ is

1) 0.43

2)1.89

3)1.29

4)1.63

Sol: 3) x = $\sqrt{5/3}$ = $\sqrt{5*3/3*3}$ = $\sqrt{15}$ /$\sqrt{9}$ = $\sqrt{15}/3$ = 3.88/3 = 1.29

18) Of the two-digit numbers (those from 11 to 95, both inclusive) how many have a Second digit greater than the first digit?

1) 37

2) 38

3)36

4) 35

Sol: 3) 12 to 19 -- > 8

23 to 29 -- > 7

34 to 39 -- > 6

45 to 49 -- > 5

56 to 59 -- > 4

67 to 69 -- > 3

78 to 79 -- > 2

89 -- > 1

19) The Value of ?24 + 3?64 + 4?28 is

Sol: 24*1/2 + 43*1/3 + 28*1/4 -- > 4 + 4 + 4 -- > 12

20) 3 ¼ - 4/5 of 5/6 / 4 1/3 / 1/5 (3/10 + 21 1/5) is equal to

13/4 4/5 * 5/6 / 13/3 / 1/5 (3/10 + 106/5) (use BODMASRULE)

-- > 13/4 4/6 / 13/3 / 1/5 215/10 -- > 31/12 / 13/3 * 5 215/10

-- > 31/12 / 65/3 43/2 -- > 31/12 / 130 129/6 -- > 31/12/1/6 = 31/12 * 6/1

-- > 31/2 = 15 1/2

21) 13 sheeps and 9 pigs were bought for Rs. 1291.85.If the average price of a sheep be Rs. 74. What is the average price of a pig.

Sol: Average price of a sheep = Rs. 74

: . Total price of 13 sheeps = (74*13) = Rs. 962

But, total price of 13 sheeps and 9 pigs

= Rs. 1291.85

Total price of 9 pigs

= Rs. (1291.85-962) = Rs. 329.85

Hence, average price of a pig

= (329.85/9) = Rs. 36.65

22) A batsman in his 18th innings makes a score of 150 runs and there by increasing his Average by 6. Find his average after 18th innings.

Sol: Let the average for 17 innings is x runs

Total runs in 17 innings = 17x

Total runs in 18 innings = 17x + 150

Average of 18 innings = 17x + 150/18

: . 17x + 150/18 = x + 6 -- > x = 42

Thus, average after 18 innings = 42

23) . Find the H.C.F of 777 and 1147.

: . H.C.F of 777 and 1147 is 37.

24) The L.C.M of two numbers is 2310 and their H.C.F is 30. If one number is 210 the Other isThe other number

= L.C.M * H.C.F/given number

= 2310*30/210 = 330

25) The average of 50 numbers is 38. If two numbers namely 45 and 55 are discarded, The average of remaining numbers is?

Total of 50 numbers = 50 * 38 = 1900

Average of 48 numbers = 1900-(45+55) / 48

= 1800 / 48 = 37.5

26) Divide 50 in two parts so that the sum of reciprocals is (1/12), the numbers are

1)20,30

2) 24,36

3) 28,22

4)36,14

Sol: 1) Let the numbers be x and y then

X+y = 50. (i)

1/x + 1/y = 12

1/x + 1/50-x = 1/12..From (i) y = 50 x

-- > 50-x+x/x(50-x) = 1/12

-- > x2-50x+600 = 0

-- > (x-30) (x-20) = 0

28) Five years ago the average age of a family of 3 members was 27 years. A child has Been born, due to which the average age of the family is 25 years today. What is the Present age of the child?

Average age of the family of 3 members

5 years ago = 27 years

Sum of the ages of the 3 members now

= (27 + 5) * 3 = 96 years

Average age of the family of 4 members now

= 25 years

Sum of the ages of the 4 numbers now

= 25*4 = 100 years

Age of child = 100 96 = 4 years

29) In a class of 20 students in an examination in Mathematics 2 students scored 100 Marks each, 3 get zero each and the average of the rest was 40. What is the average Of the whole class?

Total marks obtained by a class of 20 students

= 2 * 100 + 3 * 0 + 15 * 40

= 200 + 600 = 800

: Average marks of whole class = 800/20 = 40

30). The greatest number, which can divide 432, 534 and 398 leaving the same remainder 7 in each, is

Required number is the H.C.F of (432-7), (534-7) and (398-7)

i.e., H.C.F. of 425, 527, 391

Required number = 17

Mphasis data sufficiency questions with answers

31.If x is a positive integer, is x > 15?

x > 10

x < 1

A)Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.

B)tatement (2) ALONE is sufficient, but statement (1) alone is not sufficient.

C)BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.

D)EACH statement ALONE is sufficient.

E)Statement (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data are needed.

Answer: B

Try plugging in different values for x and seeing whether the inequality definitively answers the question.

Explanation

In order for a statement to be sufficient, it must definitively answer the question (i.e., it must definitively indicate whether $x > 15$?) For sufficiency to exist, the information in the statement must allow you to answer the question with the same answer every time (either "yes" or "no"). The key is not whether the answer is "yes" or "no", but whether the information allows you to answer the same way each time.

Statement (1) indicates that $x > 10$. So, x could be 11, 12, 13, 14, 15, 16, 17...

Since x could be 11, in which case it would not be greater than 15 and the answer to the origial question would be "no", or x could be 17, in which case it would be greater than 15 and the answer to the original question would be "yes", Statement (1) is NOT SUFFICIENT.

Statement (2) indicates that $x < 14$. So, x could be 13, 12, 11, 10, 9... Since all the possible values of x permissible by Statement (2) allow you to answer "no" to the question, Statement (2) is SUFFICIENT.

32 If x and y are integers, what is the sum of $x2 + y$?

$x = 4$

$y2 = 16$

A)Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.

B)Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.

C)BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.

D)EACH statement ALONE is sufficient.

E)Statement (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data are needed.

Correct Answer: E

Try to substitute all possible values of the variables from the statements and determine whether a unique value for the expression x2 + y can be found.

Explanation

In order for a statement to be sufficient, the data from the statement must ensure that there is one-and-only-one value for the expression x2 + y. If there are multiple possible values for this expression, then the statement is not sufficient.

Evaluating Statement (1), we can substitute and write the equation: $4^2 + y$. However, this is not sufficient because if $y = 0$, $x^2 + y = 4^2 + 0 = 16$ but if $y = 1$, $x^2 + y = 4^2 + 1 = 17$. Since there are two possible legitimate values for the expression given the information from Statement (1), Statement (1) is NOT SUFFICIENT.

Evaluating Statement (2), we know that y is 4 or -4. We know now that the equation is $x^2 + 4$ or $x^2 - 4$. However, this statement is not sufficient because if $x = 0$, the equation could evaluate to $0^2 + 4 = 4$ or $0^2 - 4 = -4$. Since the information from Statement (2) does not allow us to determine one value for the expression, Statement (2) is NOT SUFFICIENT.

When examining Statement (1) and (2) together, we know that the $x = 4$ and $y = 4$ or -4. However, these two statements are not sufficient because the expression could evaluate to $4^2 + 4 = 20$ or $4^2 - 4 = 12$. Statements (1) and (2), even when taken together, are NOT SUFFICIENT.

33. If widowers and divorced males retained their group they had upon marrying which of the following would be permissible (Assume that no previous marriage occurred)

(A) A woman marrying her dead sisters husband

(B) A woman marrying her divorced daughters ex-husband

(c) A widower marrying his brothers daughter

(D) A woman marrying her mothers brother who is a widower.

Ans. D

34. If A ,B and D appear for the interview and D is called for additional interview the following week,which 2 candidates may be asked to appear with D?

I. A

II B

III.C

IV.EA.I and II

B.I and III only

C.II and III only

D.III and IV only

Ans.D

35 If 9x-3y=12 and 3x-5y=7 then 6x-2y = ?

A.-5

B. 4

C. 2

D. 8

Ans. D