

Capgemini Test 5

1

SECTION A

The average of 5 quantities is 6. The average of 3 of them is 8. What is the average of the remaining two numbers?

- 6.5
- 4
- 3
- 3.5

Explanation:

The average of 5 quantities is 6.

Therefore, the sum of the 5 quantities is $5 * 6 = 30$.

The average of three of these 5 quantities is 8.

Therefore, the sum of these three quantities = $3 * 8 = 24$

The sum of the remaining two quantities = $30 - 24 = 6$.

Average of these two quantities = $6/2 = 3$.

2

The function $f(x) = |x - 2| + |2.5 - x| + |3.6 - x|$, where x is a real number, attains a minimum at

- $x = 2.3$
- $x = 2.5$
- $x = 2.7$
- none of the above.

Explanation:

Case 1: If $x < 2$, then $y = 2 - x + 2.5 - x + 3.6 - x = 8.1 - 3x$.

This will be least if x is highest i.e. just less than 2.

In this case y will be just more than 2.1

Case 2: If $2 < x < 2.5$, then $y = x - 2 + 2.5 - x + 3.6 - x = 4.1 - x$

Again, this will be least if x is the highest case y will be just more than 1.6.

Case 3: If $2.5 < x < 3.6$, then $y = x - 2 + x - 2.5 + 3.6 - x = x - 0.9$

This will be least if x is least i.e. $X = 2.5$.

Case 4: If In this case $y = 1.6 X < 3.6$, then

$y = x - 2 + x - 2.5 + x - 3.6 = 3x - 8.1$

The minimum value of this will be at $x = 3.6 = 2.7$

Hence the minimum value of y is attained at $x = 2.5$

3

A picture was bought at a certain sum, which was the price paid for its frame. Had the frame cost Rs 100 less and the picture Rs 75 more the price for the frame would have been only half of that of the picture. What is the price of the frame?

- 75
- 100
- 175
- 275

Explanation:

$$P + 75 = (F - 100)2$$

$$\text{Therefore } P + 75 = 2P - 200$$

$$\text{i.e. } P = \text{Rs. } 275.$$

4

What is the closest time between 7 and 8 when the hands of your watch are exactly opposite each other?

- 7 Hr - 5 Min
- 7 Hr - 5.5 Min
- 7 Hr - 6 Min
- 7 Hr - 6.5 Min

Explanation:

The hands will be at a straight line sometime after 7:05. Exact time is given by $5 * (60/55) = 5 \frac{5}{11}$ minutes.

5

There are 6 tickets to the theater, four of which are for seats in the front row. 3 tickets are selected at random. What is the probability that two of them are for the front row?

- 0.6
- 0.7
- 0.9
- 1/3

Explanation:

Probability of selecting one seat behind and two seats in the front row

$$= \frac{{}^2C_1 \times {}^4C_2}{{}^6C_3} = \frac{12}{20}$$

= 0.6

6

When 75% of a number is added to 75, the result is the same number. The number is

- 150
- 300
- 100
- 450

Explanation:

Here, clearly 75 is 25% of that number,

So required number = $75 \times 4 = 300$

7

In a watch, the minute hand crosses the hour hand for the third time exactly after every 3 hrs 18 min 15 seconds of watch time. What is the time gained or lost by this watch in one day?

- 14 min 10 seconds lost
- 13 min 50 seconds lost
- 13 min 20 second gained
- 14 min 40 second gained.

Explanation:

In a correctly running watch, the crossing of hands should take place exactly after every $(720/11) = 655/11$ minutes. In this watch, it takes place after $[(3 \text{ hours}, 18 \text{ minutes}, 15 \text{ seconds})/3] = 3] = (1 \text{ hour}, 6 \text{ minutes}, 5 \text{ second})$, i.e. $665/60$ minutes of watch time. Thus the watch takes longer time to accomplish the task as compared to a correctly running watch. So this watch loses time = $[(665/60) - (655/11)] = (83/132)$ minutes in $655/11$ minutes of correct time. So in 1 day, i.e. $(24 / 60)$ minutes of correct time, it will lose $(83/6)$ minutes, i.e. 13 minutes 50 seconds.

8

A man travels from A to B at a speed of x kmph. He then rests at B for x hours. He then travels from B to C at a speed of $2x$ kmph and rests at C for $2x$ hours. He moves further to D at a speed twice as that between B and C. He thus reaches D in 16 hours. If distances A-B, B-C, C-D are all equal to 12 km, the time for which he rested at B could be:

- 3 hours b. c. d.
- 6 hours
- 2 hours
- 4 hours

Explanation:

We are given that $AB + BC = 12$ km. time taken to travel AB at a speed of x kmph is $(12/x)$ hours. This is followed by a break of x hours. His speed from C to D is $2(2x) = 4x$ kmph. Continuing on these lines, we get, $[(12/x) + x + (12/2x) + 2x + (12/4x)] = 16$ hours. Solving we get $x = 3$ or $x = 7/3$. Only $x = 3$ is among

the options given, so that is the answer.

9

You are given 50 white marbles, 50 black marbles and two jars. You need to put 100 marbles in any of these two jars. The jars will then be shaken and you will be asked to pick one marble from either jar. How would you distribute the marbles in two jars to maximize the possibility of picking a white marble blind folded?

- 25 white and 25 black in each.
- White in one and till 99 in the other.
- 50 white in one and 50 black in the other.
- All hundred in one

Explanation:

Probability of getting white is $\frac{1}{2}$ in each of the given choices except (b), where the probability is $\frac{1}{2} * 1 + \frac{1}{2} * (\frac{49}{99})$ which is greater than $\frac{1}{2}$

10

The number plate of a bus had peculiarity. The bus number was a perfect square. It was also a perfect square when the plate was turned upside down. The bus company had only five hundred buses numbered from 1 to 500. What was the number?

- 169
- 36
- 196
- cannot be determined

Explanation:

Work from the choices: only 169 when reversed becomes 961 and both numbers are squares

11

Recently my brother and I played chess for chocolates. Who ever lost the game gave the other a chocolate. After the last game we counted the chocolates. I had 20 more chocolates than I started with, although he won 7 games. There is no draw. How many games did we play?

- 27
- 34
- 37
- 54

Explanation:

I must have got $20 + 7$ chocolates. So that even after giving 7 chocolates I have left with 20 additional chocolates. Thus, I won 27 games and my brother won 7 games. Total games = 34.

12

In a batch of 120 postgraduate History students each student has to select at least one subject out of American History, Ancient Indian History. Modern Indian History and

History of Modern Europe. 90 students selected History of Modern Europe and an equal number. American History. 105 students selected Ancient Indian History and an equal

number. Modern Indian History. AT least how many students selected all the four subjects?

- 75
- 45
- 30
- Insufficient data

Explanation:

History of Modern Europe (HME) + American History (AH) = 90 + 90 = 180, but there are only 120 students. Thus, at least 60 students selected both of the above subjects. HME and AM + Ancient Indian History (AIH) = 60 + 105 = 165. Thus, again, as there are only 120 students, at least 45 would have taken all three of above. Using the same logic, (45 + 105) - 120 = 30 students at least would select all the four subjects.

13

The value of $5^{1/4} \times (125)^{0.25}$

- 5
- 25
- 50
- 10

Explanation:

$$5^{1/4} * 5^{3/4} = 5^{(1/4 + 3/4)} = 5^1 = 5$$

14

Anand, Binoy, Chetan and Dharma together have Rs 47 with them. Anand and Binoy together have Rs 27; Chetan and Anand have Rs 25 and Dharma and Anand have Rs 23. How much money does Binoy have?

- Rs 9
- Rs 11
- Rs 13
- Rs 28

Explanation: $A + B + C + D = 47$ $A + B = 27$ $C + A = 25$ $D + A = 23$ $3A + B + C + D = 75$ [By adding above three equations] $A + B + C + D = 47$ ————— $2A = 28$ And $B = 13$

15

If radius of cylinder and sphere are same and volume of sphere and cylinder are same what is the ratio between the radius and height of the cylinder?

- $R = H$
- $R = (3/4)H$
- $R = (4/3)H$
- $R = 2/3H$

Explanation: volume of sphere = $(4/3) \pi * R^3$

Volume of Cylinder = $\pi R^2 * H$

$$(4/3) \pi * R^3 = \pi R^2 * H$$

$$R = (3/4)H$$

16

David gets on the elevator at the 11th floor of a building and rides up at the rate of 57 floors per minute. At the same time Albert gets on an elevator at the 51st floor of the same building and rides down at the rate of 63 floors per minute. If they continue traveling at these rates, then at which floor will their elevators meet?

- 19
- 30
- 28
- 37

Explanation:

Relative velocity = $57 + 63 = 120$ fl/min.

Distance to be covered = 50 floors

Time required = $40 / 120$

No. of floors travelled by David = $(40/120) * 57 = 19$

Required answer = $11 + 19 = 30$

17

The average of 5 consecutive numbers is n . If the next two numbers are also included the average will

- remain the same
- increase by 1
- increase by 1.4
- increase by 2

Explanation:

$$\text{Let } (1 + 2 + 3 + 4 + 5) / 5 = 3$$

$$(1 + 2 + 3 + 4 + 5 + 6 + 7) / 7 = 4$$

18

Which is the wrong term in the following sequence?

52, 51, 48, 43, 34, 27, 16

- 27
- 34
- 43
- 48

Explanation:

This is a compound series. Decrease in numbers is made by a series of consecutive odd numbers $52 - 1, 51 - 3, 48 - 5, 43 - 7, 36 - 9, 27 - 11$. Hence, 34 do not fit in this series

19

If $N = 82^3 - 62^3 - 20^3$ then N is divisible by

- 41 and 31
- 13 and 67
- 17 and 7
- none of these

Explanation:

Using the identity $a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - ac - bc)$. We find that if $a + b + c = 0$. Then $a^3 + b^3 + c^3 = 3abc$. Therefore $a^3 + b^3 + c^3$ is divisible by a, b, c and 3. Now $a = 82, b = -62$ and $c = -20$. Therefore N is divisible by 3, 82, 62 and 20. But 82 are divisible by 41 and 31.

20

There are 6 boxes numbered 1, 2 ...6. Each box is to be filled up either with a red or a green ball in such a way that at least 1 box contains a green ball and the boxes containing green balls are consecutively numbered. The total number of ways in which this can be done is

- 5
- 21
- 33
- 60

Explanation:

GRRRRR, RGRRRR, RRGRRR, RRRGRR, RRRRGR, RRRRRG

GGRRRR, RGGRRR, RRGGRR, RRRGGR, RRRRGG

GGGRRR, RGGGRR, RRGGGR, RRRGGG

GGGGRR, RGGGGR, RRGGGG

GGGGGR, RGGGGG

GGGGGG

Hence 21 ways.

21

Which one of the following conditions must p, q and r satisfy so that the following system of linear simultaneous equations has at least one solution, such that $p + q + r = 0$?

$$x + 2y - 3z = p$$

$$2x + 6y - 11z = q$$

$$x - 2y + 7z = r$$

- $5p - 2q - r = 0$
- $5p + 2q + r = 0$
- $5p + 2q - r = 0$
- $5p - 2q + r = 0$

Explanation:

It is given that $p + q + r = 0$, if we consider the first option, and multiply the first equation by 5, second by -2 and third by -1, we see that the coefficients of x, y and z all add up to zero.

Thus, $5p - 2q - r = 0$

No other option satisfies this.

22

A closed wooden box of thickness 0.5 cm and length 21 cm, width 11 cm, and height 6 cm, is panted on the inside. The cost of painting is Rs 70. What is the rate of painting in rupees per sq. cm?

0.7

0.5

0.1

0.2

Explanation:

Since the box is a closed box, and the thickness of wood is 0.5 cm, its inner dimensions will be 20 cm, 10 cm, and 5 cm. The inner painted area will be

$2[(20 * 10) + (10 * 5)] = 700$ sq.cm. Painting 700 sq. cm. costs Rs. 70, so the

rate of painting is Rs. $(70/700) =$ Rs. 0.1 per sq.cm.

23

128 players start in the men's singles at a tennis tournament, where this number reduces to half on every succeeding round. How many matches are played totally in the event?

63

48

127

144

Explanation:

1st round 64 matches

2nd round 32 matches

3rd round 16 matches

4th round 8 matches

5th round 4 matches

6th round 2 matches

7th round 1 match

Total 127 matches. Number of matches will be more than 64, so option A and B are eliminated. It will always be an odd number hence, C will be the answer.

24

The cost of a diamond varies directly as the square of its weight. Once, this diamond broke into four pieces with weights in the ratio 1: 2: 3: 4. When the pieces were sold, the merchant got Rs. 70,000 less. Find the original price of the diamond.

- Rs. 1.4 lac
- Rs. 2.0 lac
- Rs. 1.0 lac
- Rs. 2.1 lac

Explanation:

Let the original cost of the diamond be Rs. X, and let the weight of the diamond be $(1 + 2 + 3 + 4) = 10$ units. So its original cost varies as 10^2 , i.e. cost = $100x$, say. After the diamond has broken, its cost becomes $(1^2 + 2^2 + 3^2 + 4^2) x$, i.e. $30x$. Thus the loss in cost is $70x$. If $70x$ corresponds to Rs. 70,000, then the original cost $100x$ is

Rs. 1, 00,000.

25

A cube of side 12 cm is painted red on all the faces and then cut into smaller cubes, each of side 3 cm. What is the total number of smaller cubes having none of their faces painted?

- 16
- 8
- 12
- 24

Explanation:

The smaller cubes have a side $\frac{1}{4}$ th the length of the original side. Thus there are 64 small cubes, with 4 cubes along one side of the original cube. The cubes which do not have even a single side painted are the ones not exposed to the exterior at all. There are 8 cubes which do not have even a single side painted are the ones not

exposed to the exterior at all. There are 8 such cubes in the centre.

26

SECTION B

DIRECTIONS for Questions 26 and 28: Answer the questions on the basis of the information given below:

A group of three or four has to be selected from seven persons. Among the seven are two women, Fiza and Kavita, and five men: Ram, Shyam, David, Peter and Rahim. Ram would not like to be in the group if Shyam is also selected. Shyam and Rahim want to be selected together in the group. Kavita would like to be in the group only if David is also there. David, if selected, would not like Peter in the group. Ram would like to be in the group only if Peter is also there. David insists that Fiza be selected in case he is there in the group.

Which of the following statements is true?

- Kavita and Ram can be part of a group of four.
- A group of four can have two women.
- A group of four can have all four men.
- None of the above.

Explanation:

The group of 4 cannot be made with the conditions, except
 $S + R + F + D$.

27

Which of the following is a feasible group of four?

- Ram, Peter, Fiza, Rahim
- Shyam, Rahim, Kavita, David
- Shyam, Rahim, Fiza, David
- Fiza, David, Ram, Peter

Explanation:

From the above explanation

28

Which of the following is a feasible group of three?

- David, Ram, Rahim
- Peter, Shyam, Rahim
- Kavita, David, Shyam

Fiza, David, Ram

Explanation:

In all the other choices we have D, who insists that F be with him.

29

DIRECTIONS for Questions 29 and 34: Answer the questions on the basis of the information given below

It is a game based on the position you take in a clock. You are at the 1 O'clock position. You can move one step clockwise, 1 step anti clockwise or to a place that is diametrically opposite yours. For example, from 1 O'clock if you move clockwise you will be at 2 O'clock. As you start the game, you are at 1 O'clock position and your score is 1. If you move a step clockwise, add the value of the time in that position to your score to give you the new score. If you move a step anticlockwise, add the value of the time in that position and subtract 2 from your score. If you move a step diametrically opposite, add the value of the time in that position to your score and subtract 4 from your score to get the new score. You cannot get back to a position that you have already visited

What will be your minimum score after the third move?

10

7

11

None of these

Explanation:

Drawing the table from given information:

Move	Minimum	Score	Maximum Score	Reaching 5 O'clock
0th		$1 = 1$	$1 = 1$	1
1st		$7 - 4 = 3$	$12 - 2 = 10$	12
2nd		$1 - 4 = 3$	$11 - 2 = 9$	11 / 6
3rd		$2 = 2$	-	5
4th		-	-	-
Total		3	20	-

30

What will be your maximum score after the second move?

16

18

20

24

Explanation:

referring above table

31

If you had moved a step anticlockwise in the first move, you could not have reached one of the following positions in the third move.

- 10 O'clock
- 5 O'clock
- 7 O'clock
- 6 O'clock

Explanation:

By moving a step anticlockwise in the first move, you reach at 12 O'clock. From here you can reach

a 10'O Clock through 12 - 11 - 10

b 5 'O clock through 12 - 6 - 5

c 7 'O Clock through 12 - 6 - 7.

But you cannot reach 6 'O Clock. Hence D

32

What is the shortest number of moves that you require to reach the 5 O'clock position.

When you start from 1 O'clock position?

- 4
- 3
- 5
- 2

Explanation:

referring above explanation.

33

A man said to a lady, "Your mother's husband's sister is my aunt." How is the lady related to the man?

- Mother
- Aunt
- Sister
- Grandmother

Explanation:

Your mother's husband - Your father. Your father's sister - Your aunt. So, the lady's aunt is the man's aunt
 - The man and the lady are brother and sister.

34

If $P + Q$ means P is the brother of Q ; $P - Q$ means P is the mother of Q and $P * Q$ means P is the sister of Q . Which of the following means M is the maternal uncle of R , if you can assume a third person K to be involved in establishing the relationship?

- $M-K*P$
- $M+K*R$
- $M+K-R$
- $M+K+R$

Explanation:

M is the maternal uncle of R means m is the brother of R 's mother (say K) i.e., $M + K - R$.

35

DIRECTIONS for Questions 35 and 36: Answer the questions on the basis of the information given below

In a city state, government officials never tell the truth and those who are not government officials always tell the truth. A visitor meets three residents of the city state and asks one of them, "Are you a government official?" The first resident answers the question. The second native then reports that the first resident denied being a government official. The third resident says that the first resident is a government official.

How many of these three residents are not government officials?

- 1
- 3
- 2
- insufficient data

Explanation:

The second resident always speaks truth (so, not a govt. official) First speaker may speak truth (IS not & denies being a govt. official) or may tell a lie (is a govt. official but denies being one) - in either case denying being a govt. official. If first resident speaks truth the third one tells a lie and vice-versa.

36

What is the order in which the three resident's statements are true/false

- True, True, False
- False, False, True
- True, True, True
- insufficient data

Explanation:

The second resident always speaks truth (so, not a govt. official) First speaker may speak truth (IS not & denies being a govt. official) or may tell a lie (is a govt. official but denies being one) - in either case denying being a govt. official. If first resident speaks truth the third one tells a lie and vice-versa. But unable to find the order

37

Study the series carefully 'B 8 4 C R M 9 P D K W F A 2 E J 7 X U Q H L T Y 6 G S'. If it is possible to make a meaningful word with the ninth, the sixteenth, the twenty-fourth and the twenty-seventh letters from the left in the above series, which of the following will be the first letter of that word? If no such word can be made, give 'X' as the answer. If more than one such word can be made, give 'M' as the answer.

- () X
- () M
- () J
- () Y

Explanation:

We get DJSY. As there is no vowel, no word is possible

38

DIRECTIONS for Questions 38 and 42: Answer the questions on the basis of the information given below

All the roads of city Z are either perpendicular or parallel to one another. The roads are all straight. Road, A, B, C, D and E are parallel to one another. Roads G, H, I, H, J, K, L and M are parallel to one another.

- i. Road A is 1 mile east of road B
- ii. Road B is 1/2 mile west of C.
- iii. Road D is 1 mile west of E.
- iv. Road G is 1/2 mile south of H.
- v. Road I is 1 mile north of J
- vi. Road K is 1/2 mile north of L.
- vii. Road K is 1 mile south of M

Which of the following statements is necessarily true?

- () I is 1 mile north of L
- () D is 2 miles west of B

- E and B intersect
- M is 1.5 miles north of L

Explanation:

By conditions (vi) and (vii) together, D is necessarily true.

39

If E is midway between B and C, then which of the following statement is false?

- D is less than 1 mile from B.
- C is less than 1.5 miles from D.
- Distance from E to B added to distance of E to C is 1/2 mile.
- D is 2 miles west of A

Explanation:

If E is midway between B and C, then the distance between B and E is $\frac{1}{4}$ mile and between E and C is $\frac{1}{4}$ mile. Then: (a) is true by condition (iii); (b) is true by conditions (ii) and (iii); (c) is true by condition (ii); (d) is false, as the distance from D to E is 1 mile, E to C is $\frac{1}{4}$ mile and C to A is $\frac{1}{2}$ mile, which is less than 2 miles.

40

Which of the following possibilities would make two roads coincide?

- L is $\frac{1}{2}$ mile north of I
- D is $\frac{1}{2}$ mile east of A
- I is $\frac{1}{2}$ mile north of K
- C is 1 mile west of D

Explanation: By conditions (vi) and (vii), option (b) will make two roads coincide

41

If X is parallel to I & X is $\frac{1}{2}$ mile south of J & I north of G, then which road would be $\frac{1}{2}$ mile apart?

- I and X
- X and H
- J and G
- J and H

Explanation:

From conditions (iv) and (v), J and H will be $\frac{1}{2}$ mile apart.

42

If road E is midway between B and C, then the distance between A and D is

- $\frac{1}{2}$ mile
- 1 mile

- 1.75 mile
 2.5 mile

Explanation:

as the distance from D to E is 1 mile, E to C is $\frac{1}{4}$ mile and C to A is $\frac{1}{2}$ mile, Therefore distance A and D is 1.75 miles

43

What is the value of K?

Statement 1: $9x^2 + kx + 25$ is the perfect square.

Statement 2: $|k| = -k$

- using 1st Statement only
 using 2nd statement only
 using both 1st and 2nd statement
 using 1st or 2nd statement
 Cannot be answered even by using both the statement

Explanation:

k is negative from second statement hence both statements are required

44

Is the area of triangle ABC equal to that of triangle DEF? The triangles are inscribed in the same circle.

Statement 1: Their perimeters are equal.

Statement 2: The angles of triangles ABC are respectively equal to the angles of triangle DEF.

- using 1st Statement only
 using 2nd statement only
 using both 1st and 2nd statement
 using 1st or 2nd statement
 Cannot be answered even by using both the statement

Explanation:

Direct statement

45

How much time is required for downloading the software?

Statement 1. The Data transfer rate is 6 kbps

Statement 2. The size of the software is 4.5 megabytes

- using 1st Statement only
- using 2nd statement only
- using both 1st and 2nd statement
- using 1st or 2nd statement
- Cannot be answered even by using both the statement

Explanation:

Required time = (4.5 megabytes) / (6 kilobytes per sec).

46

How much is the weight of 20 mangoes and 30 oranges?

Statement 1. 1 orange weighs twice that of 1 mango

Statement 2. 2 mangoes and 3 oranges weigh 2 kg

- using 1st Statement only
- using 2nd statement only
- using both 1st and 2nd statement
- using 1st or 2nd statement
- Cannot be answered even by using both the statement

Explanation:

$$2m + 3o = 2 \dots\dots 1$$

$$O = 2m \dots\dots 2$$

$$2m + 3*(2m) = 2; m = (2/8) \text{ and } o = (4/8)$$

47

What is the radius of the inscribed circle of triangle ABC?

Statement 1: The area of the triangle is 20 cm².

Statement 2: The perimeter of the triangle is 20 cm.

- using 1st Statement only
- using 2nd statement only
- using both 1st and 2nd statement
- using 1st or 2nd statement
- Cannot be answered even by using both the statement

Explanation: Use $rs = 20$ and s is given by the second statement.

48

Which has the greater area: rhombus ABCD or square PQRS?

Statement 1: Perimeter of rhombus = 8 and one angle measures 30°.

Statement 2: Perimeter of square = 4.

- using 1st Statement only
- using 2nd statement only
- using both 1st and 2nd statement
- using 1st or 2nd statement
- Cannot be answered even by using both the statement

Explanation:

Both statements are required.

49

ABC is a right triangle; with the right angle at B. BD is the bisector of angle B. Is $AD > DC$?

Statement 1: $C = 40^\circ$

Statement 2: Hypotenuse $AC = 15$ cm.

- using 1st Statement only
- using 2nd statement only
- using both 1st and 2nd statement
- using 1st or 2nd statement
- Cannot be answered even by using both the statement

Explanation:

We get the answer from the first statement.

50

Is n odd ?

A. $an - bn$ is divisible by $a - b$

B. $an + bn$ is not divisible by $a + b$

- using 1st Statement only
- using 2nd statement only
- using both 1st and 2nd statement
- using 1st or 2nd statement
- Cannot be answered even by using both the statement

Explanation: $an - bn$ is divisible by $a - b$ for all values of n .

$an + bn$ is divisible by $a + b$ only for the odd values of n .