



SSC CHSL 9 July 2019 Shift-2

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Reasoning

Instructions

For the following questions answer them individually

Question 1

Which letter-pair will replace the question mark (?) in the following series ?

BE, DG, FK, HQ, ?

A JY

B JX

C JS

D YJ

Answer: A

Explanation:

B	E,	D	G,	F	K,	H	Q,	J	Y
		+2		+4		+6		+8	
	+2		+2		+2		+2		

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Question 2

Select the number-pair in which the two numbers are related in the same way as are the two numbers of the following number-pair.

7 : 56

A 13 : 173

B 11 : 121

C 9 : 90

D 6 : 36

Answer: C

Explanation:

(7 : 56) Pattern is $7 \times 8 = 56$

In the same way (9 : 90) = $9 \times 10 = 90$

Question 3

Dev is the brother of Sneha and son of Mayank. Swati is the sister of Sneha. How is Mayank related to Swati?

A Son

B Brother

C Father

D Sister

Answer: C

Question 4

The age of a father is twice the age of his son. Five years ago, the father's age was thrice the age of the son then. What is the age of the son now?

- A 15 years
- B 20 years
- C 10 years
- D 12 years

Answer: C

Explanation:

Let the age of son's be x years then the age of father's be $2x$ years

According to the question,

$$3(x - 5) = (2x - 5)$$

$$3x - 15 = 2x - 5$$

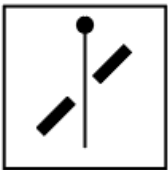
$$x = 10$$

So, age of son now is 10 years.

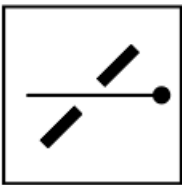
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Question 5

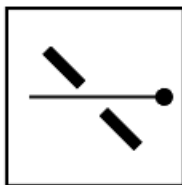
Select the correct mirror image of the given figure when the mirror is placed to the right of the figure.



A

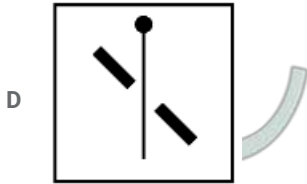


B



C





Answer: D

Explanation:

If we place mirror in right of the figure then right will becomes left and left will becomes right. Top and bottom will remain same.

Instructions

Select the set in which the numbers are related in the same way as are the numbers of the following set.

Question 6

(5, 8, 89)

A (7, 10, 149)

B (2, 5, 19)

C (3, 4, 7)

D (6, 9, 60)

Answer: A

Explanation:

(5, 8, 89) pattern is $(5 \times 8) \times 2 + 9 = 89$

(7, 10, 149) in the same way $(7 \times 10) \times 2 + 9 = 149$

Question 7

(16, 64, 8)

A (15, 60, 8)

B (18, 90, 6)

C (10, 80, 8)

D (14, 62, 4)

Answer: A

Explanation:

(16, 64, 8) pattern is $64 \div 16 = 4 \times 2 = 8$

In the same way (15, 60, 8) = $60 \div 15 = 4 \times 2 = 8$

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Instructions

For the following questions answer them individually

Question 8

Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.

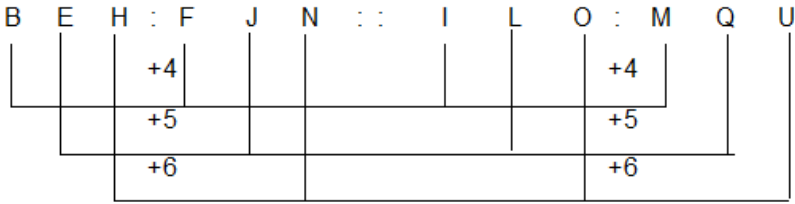
BEH : FJN :: ILO : ?

A MQU

- B MQV
- C MOU
- D MOV

Answer: A

Explanation:



Question 9

Two statements are given, followed by three conclusions numbered I, II and III. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

Statements:

- All cocks are bears.
- All bears are horses .

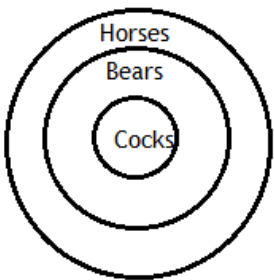
Conclusions:

- I. Some bears are cocks.
- II. Some horses are cock s.
- III. All cocks are horses.

- A Only conclusions I and II follow.
- B Only conclusions II and III follow.
- C Only conclusions I follow.
- D All the conclusions follow.

Answer: D

Explanation:



- I. Some bears are cocks follows because all cocks are bear.
- II. Some horses are cocks follows because all cocks are bears and all bear are horses.
- III. All cocks are horses follows because all cocks are bears and all bear are horses.

Question 10

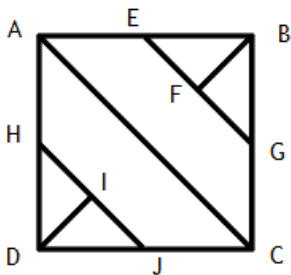
How many triangles are present in the following figure ?



- A 8
- B 7
- C 10
- D 5

Answer: A

Explanation:



Total number of triangles = ABC, BEG, BEF, BFG, ACD, DHJ, DHI, DIJ = 8.

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Question 11

Three of the following four words are alike in a certain way and one is different. Pick the odd word out.

- A Bark
- B Bleat
- C Frog
- D Moo

Answer: C

Explanation:

Except frog all are sound of animals.

Question 12

Select the word-pair in which the two words are related in the same way as are the two words in the following word-pair.

Tortoise : Reptile

- A Snake : Amphibian
- B Shark : Mammal
- C Spider : Reptile

D Snail : Mollusca

Answer: D

Explanation:

Tortoise is a reptile in the same way snail is mollusca

Question 13

Which two signs should be interchanged in the following equation to make it correct?

$$15 + 8 - 20 \times 10 \div 5 = 13$$

A + and -

B \times and -

C \times and \div

D + and \div

Answer: C

Explanation:

$$15 + 8 - 20 \times 10 \div 5 = 13$$

After interchanging \times and \div :

$$15 + 8 - 20 \div 10 \times 5 = 13$$

$$15 + 8 - 10 = 13$$

$$13 = 13$$

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Question 14

Three of the following four letter-clusters are alike in a certain way and one is different. Pick the odd one out.

A PRKI

B LNOM

C STHI

D CEXV

Answer: C

Explanation:

P	R	K	I
+2			-2

All option except option C are in this pattern.

Question 15

In a code language, GLUCOSE is written as DJTCPUH. How will SUCROSE be written as in that language?

A PSBRPUH

B PSBSPUH

C PSBRPVH

D PSBTPUH

Answer: A

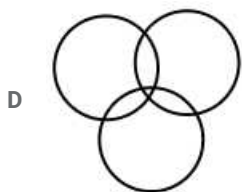
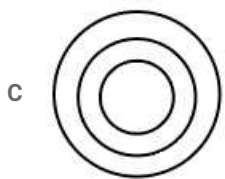
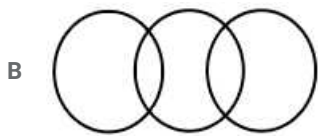
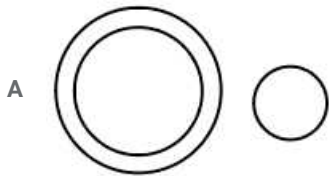
Explanation:

G	L	U	C	O	S	E
-3	-2	-1	0	+1	+2	+3
D	J	T	C	P	U	H

S	U	C	R	O	S	E
-3	-2	-1	0	+1	+2	+3
P	S	B	R	P	U	H

Question 16

Select the Venn diagram that best illustrates the relationship between the following classes.
Heart, Body, House



Answer: A

Explanation:

Heart is a body part and house is different from body and heart.

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Question 17

If BOOK is coded as 24411 and EQUATION is coded as 21751203414, then how will FOOTBALL be coded as ?

A 64420212212

B 64420221212

C 61520211212

D 64420211212

Answer: D

Question 18

Arrange the following words in a logical and meaningful order.

1. Pupa
2. Death
3. Larva
4. Butter fly
5. Egg

- A 5, 3, 1, 2, 4
B 5, 3, 1, 4, 2
C 3, 1, 2, 4, 5
D 3, 1, 4, 2, 5

Answer: B

Explanation:

The given words are the name of butterfly life cycle so according to the meaningful order Option B is correct.

Question 19

Which number will replace the question mark (?) in the following series?

6, 7, 11, 20, ?

- A 29
B 32
C 35
D 36

Answer: D

Explanation:

6,	7,	11,	20,	36
+1	+4	+9	+16	
1^2	2^2	3^2	4^2	

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Question 20

'Sunflower' is related to 'Yellow' in the same way as 'Blood' is related to '_____'.

- A Animal
B Human
C Red
D Iron

Answer: C

Explanation:

Colour of sunflower is yellow in the same way colour of blood is red.

Question 21

Select the option in which the given figure (X) is embedded.



X

A



B



C



D



Answer: A

Explanation:

Figure X is embedded in option A figure.



Question 22

A paper is folded and cut as shown in the following figures (X, Y and Z). Select the option that depicts how this paper will appear when unfolded ?



X

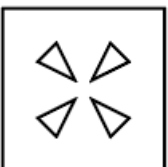


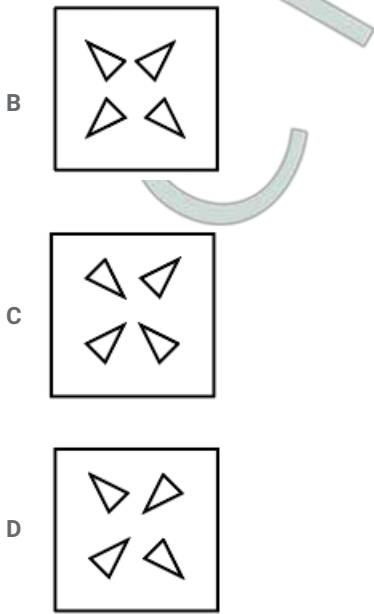
Y



Z

A





Answer: A

Explanation:

If we see the figure from last then we observe that figure of option A will appear when unfolded.

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Question 23

Three of the following four numbers are alike in a certain way and one is different. Pick the number that is different from the rest.

- A 47
- B 57
- C 67
- D 37

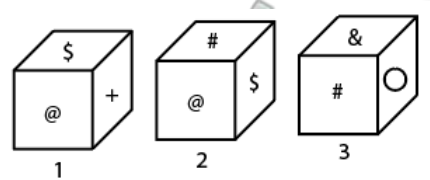
Answer: B

Explanation:

Except 57 all are prime numbers.

Question 24

Three different positions of the same dice are shown. Select the pattern that will be on the face opposite to the one having '+'.
 1 2 3



- A #
- B \$
- C &
- D O

Answer: A

Explanation:

Take two dice which contain common symbols . ex.we take last two dice # is same in both dice .

now start with common symbol and write in clockwise direction

\$ @

& O..now we see

\$ is opposite of &

@ is opposite to O and

remaining + is opposite to #. so our ans is #.

Question 25

Select the Answer Fig. that will come next in the following Problem Fig.series.

Problem Fig.



A B C D E



Answer: C

Explanation:

Figure is moving 90 degree anti clock wise.

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General knowledge

Instructions

For the following questions answer them individually

Question 26

The term 'Jamming' is associated with which of the following sports?

- A Boxing
- B Swimming
- C Lawn Tennis
- D Cricket

Answer: C

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Question 27

_____ created history and became the first Indian medalist at the 2003 World Athletics Championships in Paris when she won a bronze medal in women's the long jump (6.70 m).

- A Dutee Chand
- B Anju Bobby George
- C KM Beenamol
- D Jyotirmoyee Sikdar

Answer: B

Question 28

The _____ is the longest river in Sri Lanka.

- A Kelani
- B Maha
- C Mahaweli
- D Kalu

Answer: C

Question 29

Which city in Pakistan is called the 'Gardens of the Mughals or City of Gardens'?

- A Peshawar
- B Multan
- C Karachi
- D Lahore

Answer: D

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Question 30

Jhijhia dance originated in the Indian state of _____.

- A Bihar
- B West Bengal
- C Rajasthan
- D Gujarat

Answer: A

Question 31

Who was the first Indian to cross the English Channel ?

- A Mihir Sen
- B Sachin Nag
- C Virbhawal Khade
- D Sufyun Shaikh

Answer: A

Question 32

Pandit Budhaditya Mukherjee is associated with which of the following musical instruments?

- A Tabla
- B Sitar
- C Veena
- D Flute

Answer: B

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Question 33

As of April 2019, who is the Chairman of the joint working group of IRDA and NHA, formed to curb fraud in the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)?

- A Dinesh Arora
- B Indu Bhushan
- C Subhash C. Khuntia
- D Nilesh Sathe

Answer: A

Question 34

The first defence minister of independent India was:

- A C Rajagopalachari

- B Baldev Singh
- C Shri Jagjivan Ram
- D Sardar Vallabhbhai Patel

Answer: B

Question 35

Dogri language is mainly spoken in which of the following states/union territories ?

- A Jammu and Kashmir
- B Dadra and Nagar Haveli
- C Mizoram
- D Tripura

Answer: A

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Question 36

In computing, _____ is a network security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules.

- A cookie
- B spyware
- C spam
- D firewall

Answer: D

Question 37

In which year the administration of India was transferred into the hands of the British Monarch by the Proclamation of Queen Victoria?

- A 1887
- B 1842
- C 1864
- D 1858

Answer: D

Question 38

As of June 2019, _____ in Madhya Pradesh recorded the highest temperature, at $46.6^{\circ}C$, in the world.

- A Burhanpur
- B Satna

C Khargone

D Rewa

Answer: C

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Question 39

'Aapka bhala, sabki bhalai' is the tag line of _____ bank.

A HDFC Bank

B Canara Bank

C Bandhan Bank

D State Bank of India

Answer: C

Question 40

Who among the following invented the World Wide Web (www) in 1989?

A Bill Gates

B Steve Wozniak

C Tim Berners-Lee

D Charles Babbage

Answer: C

Question 41

The book titled 'Social Harmony' is written by:

A Lal Krishna Advani

B Narendra Modi

C Shyama Prasad Mukherjee

D Atal Bihari Vajpayee

Answer: B

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Question 42

The thin layer of living cells just inside the bark of a tree is called _____.

A Pith

B Crown

- C Xylem
- D Cambium

Answer: D

Question 43

Japan's second highest national award called 'The Order of the Rising Sun, Gold and Silver Star' was conferred on _____ in 2019.

- A Shyam Saran
- B Rajeshwar Dayal
- C JS Mehta
- D Kewal Singh

Answer: A

Question 44

Which of the following Indian rulers was defeated by Mahmud Ghazni in his first attack in the year 1001 AD ?

- A Anandpal
- B Chandrapal
- C Jaipal
- D Sukhpal

Answer: C

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Question 45

What is the solid crust or the hard top layer of the earth called ?

- A Mantle
- B Lithosphere
- C Biosphere
- D Hydrosphere

Answer: B

Question 46

The SI unit of radioactivity is _____.

- A ampere
- B becquerel
- C decibel
- D cobolt

Answer: B

Question 47

In 2019, the Indian Space Research Organisation's (ISRO) new commercial arm called NewSpace India Limited (NSIL) was officially inaugurated in the city of _____.

- A Mumbai
- B Bengaluru
- C Chennai
- D Ranchi

Answer: B

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Question 48

The _____ shows all the combinations of two commodities that a consumer can afford at given market prices and within the particular income level.

- A Utility line
- B Supply line
- C Demand line
- D Budget line

Answer: D

Question 49

Tears in the eyes are produced by which of the following glands?

- A Lacrimal gland
- B Thyroid gland
- C Pituitary gland
- D Hypothalamus gland

Answer: A

Question 50

Who among the following is the longest serving President of India?

- A Neelam Sanjiva Reddy
- B Shankar Dayal Sharma
- C Rajendra Prasad
- D R Venkatraman

Answer: C

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Quant

Instructions

For the following questions answer them individually

Question 51

A earns ₹100 per hour and works for 8 hours per day. B earns ₹120 per hour and works for 6 hours per day. The ratio of per day wages of B to that of A is:

- A 10 : 9
- B 4 : 5
- C 5 : 4
- D 9 : 10

Answer: D

Explanation:

According to question :

A earns in 1 hour = ₹100

A works for 8 hours in a day

∴ Wages of A per day = $8 * 100 = ₹800$

B earns in 1 hour = ₹120

B works for 6 hours in a day

∴ Wages of B per day = $6 * 120 = ₹720$

Ratio of B : A = 720:800

⇒ 9:10

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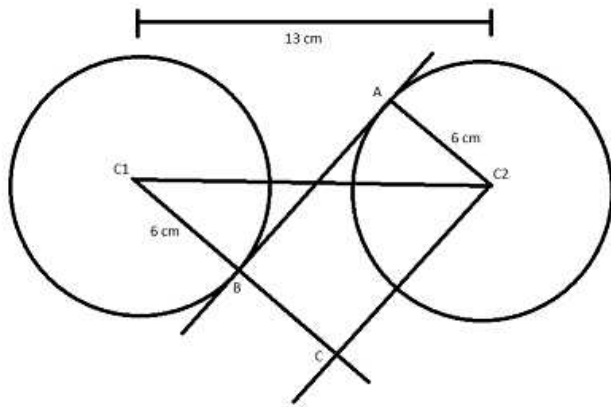
Question 52

The distance between the centres of two circles of radius 6 cm each is 13 cm. The length (in cm) of a transverse common tangent is:

- A 10
- B 12
- C 5
- D 6

Answer: C

Explanation:



According to Given Question :

We have to find out the length of AB (Transverse common tangent) which is equal to CC_2 .

As we can see, C_1CC_2 is a Right angle triangle and $C_1C_2 = 13\text{cm}$, $C_1C = 12\text{cm}$ (as $BC = C_2A$)

By Pythagoras theorem :

$$\Rightarrow (C_1C)^2 + (CC_2)^2 = (C_1C_2)^2$$

$$\Rightarrow 12^2 + (CC_2)^2 = 13^2$$

$$\Rightarrow (CC_2)^2 = 13^2 - 12^2$$

$$\Rightarrow (CC_2)^2 = 169 - 144 = 25$$

$$\therefore (CC_2) = \sqrt{25} = 5$$

$$\therefore AB = 5\text{cm}$$

Question 53

The simplified value of $46 + \frac{3}{4}$ of $32 - 6$ $11 + \frac{3}{4}$ of $(34 - 6)$ is:

A 1

B $\frac{1}{4}$

C 2

D $\frac{1}{2}$

Answer: C

Explanation:

By using BODMAS rule :

$$\Rightarrow 46 + \frac{3}{4} \text{ of } 32 - 6$$

$$\Rightarrow 11 + \frac{3}{4} \text{ of } (34 - 6)$$

$$\Rightarrow 46 + \frac{3}{4} \times 32 - 6$$

$$\Rightarrow 11 + \frac{3}{4} \times 28$$

$$\Rightarrow 46 + 24 - 6$$

$$\Rightarrow 11 + 3 \times 7$$

$$\Rightarrow 11 + 21$$

$$\Rightarrow \frac{64}{32} = 2$$

Question 54

If $\cos x = \frac{-\sqrt{3}}{2}$ and $\pi < x < \frac{3\pi}{2}$, then the value of $4 \cot^2 x - 3 \operatorname{cosec}^2 x$ is:

- A 8
- B 0
- C 2
- D 1

Answer: B

Explanation:

As Given in Question :

$$\cos x = \frac{-\sqrt{3}}{2}$$

$$\Rightarrow \cos x = -\cos 30^\circ$$

$$\Rightarrow \cos x = -\cos 30^\circ = \cos(180 + 30)^\circ \quad [\because -\cos \theta = \cos(180 + \theta)]$$

$$\therefore \cos x = \cos 210^\circ$$

$$\Rightarrow x = 210^\circ$$

Now $4 \cot^2 x - 3 \operatorname{cosec}^2 x$

$$\Rightarrow 4 \cot^2 210^\circ - 3 \operatorname{cosec}^2 210^\circ$$

$$\Rightarrow 4(\sqrt{3})^2 - 3(-2)^2 \quad [\because \cot(180 + \theta) = \cot \theta, \operatorname{cosec}(180 + \theta) = -\operatorname{cosec} \theta]$$

$$\Rightarrow 4 \times 3 - 3 \times 4$$

$$\Rightarrow 12 - 12 = 0$$

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Question 55

If $(\operatorname{cosec}^2 57^\circ - \tan^2 33^\circ) + 2 \sin 90^\circ - 4 \tan^2 52^\circ y \tan^2 38^\circ = \frac{y}{2}$, then the value of y is:

- A $\frac{2}{3}$
- B $\frac{4}{3}$
- C $\frac{1}{3}$
- D 1

Answer: A

Explanation:

$$(\operatorname{cosec}^2 57^\circ - \tan^2 33^\circ) + 2 \sin 90^\circ - 4 \tan^2 52^\circ y \tan^2 38^\circ = \frac{y}{2}$$

$$\Rightarrow (\operatorname{cosec}^2 57^\circ - \tan^2 (90 - 57)^\circ) + 2(1) - 4 \tan^2 52^\circ y \tan^2 (90 - 52)^\circ = \frac{y}{2}$$

$$\Rightarrow (\operatorname{cosec}^2 57^\circ - \cot^2 57)^\circ + 2 - 4 \tan^2 52^\circ y \cot^2 52^\circ = \frac{y}{2}$$

$$\Rightarrow (1) + 2 - 4y = \frac{y}{2}$$

$$\Rightarrow \frac{y}{2} + 4y = 3$$

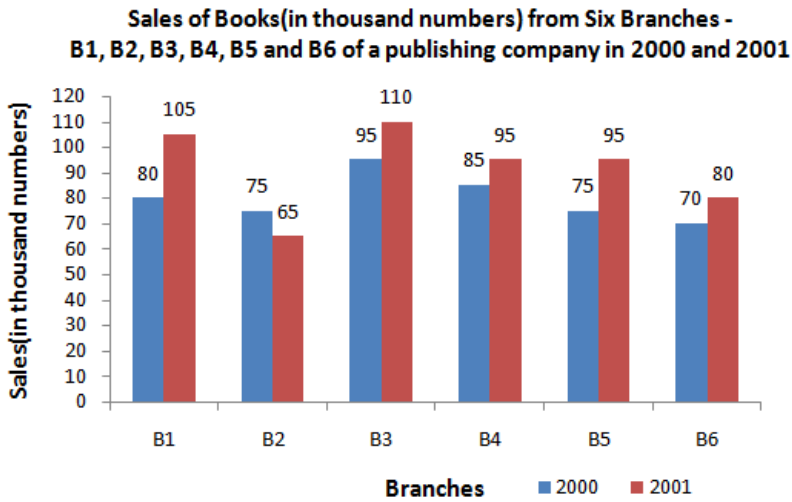
$$\Rightarrow \frac{9y}{2} = 3$$

$$\Rightarrow y = \frac{2}{3}$$

Hence, the correct answer is Option A

Instructions

The given Bar Graph presents the sales of the number of books (in thousands) by six branches of a publishing company during two consecutive years 2000 and 2001.



Question 56

The ratio of total sales by all branches for the year 2001 to total sales by all branches for the year 2000 is:

- A 48 : 55
- B 25 : 23
- C 55 : 48
- D 23 : 25

Answer: C

Explanation:

As Given in above Bar Graph

Total sales in 2001 = sum of sales of all companies in 2001

$$\Rightarrow \text{Total sales in 2001} = 105 + 65 + 110 + 95 + 95 + 80$$

$$\Rightarrow \text{Total sales in 2001} = 550$$

Total sales in 2000 = sum of sales of all companies in 2000

$$\Rightarrow \text{Total sales in 2000} = 80 + 75 + 95 + 85 + 75 + 70$$

$$\Rightarrow \text{Total sales in 2000} = 480$$

$$\text{Required Ratio} \Rightarrow 550 : 480 \Rightarrow 55 : 48$$

Question 57

The average of total sales (in thousands and Correct to two decimal places) by all branches for both the years is:

- A 171.37
- B 171.57
- C 171.27
- D 171.67

Answer: D

Explanation:

As per above given Bar graph :

Sales of B1 for both years = $80 + 105 = 185$

Sales of B2 for both years = $75 + 65 = 140$

Sales of B3 for both years = $95 + 110 = 205$

Sales of B4 for both years = $85 + 95 = 180$

Sales of B5 for both years = $75 + 95 = 170$

Sales of B6 for both years = $70 + 80 = 150$

Total sales for both years = $185 + 140 + 205 + 180 + 170 + 150 = 1030$

Avg. sales for both years = $\frac{1030}{6} = 171.666$

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Question 58

The ratio of total sales by branches B1, B3 and B5 for both the years to total sales by branches B2, B4, B6 for both the years is:

A 21 : 23

B 56 : 47

C 23 : 21

D 47 : 56

Answer: B

Explanation:

As per above Bar Graph :

Total sales of B1,B3,B5 for both years = $(80 + 105) + (95 + 110) + (75 + 95)$

$\Rightarrow 560$

Total sales of B2,B4,B6 for both years = $(75+65) + (85+95) + (70 + 80)$

$\Rightarrow 470$

Required Ratio $\Rightarrow 560 : 470 \Rightarrow 56 : 47$

Instructions

For the following questions answer them individually

Question 59

The sum of the salaries of A and B is ₹42,000. A spends 75% of his salary and B spends 90% of his salary. Now their savings are the same. What is A's salary (in ₹) ?

A 18,000

B 12,000

C 30,000

D 15,000

Answer: B

Explanation:

Let the salary of A = ₹ x and that of B = ₹ y

According to question,

$$\therefore x + y = ₹42,000$$

Also, A's savings = 25% (as he spends 75% of his salary)

B's savings = 10% (as he spends 90% of his salary)

$$\Rightarrow \text{A's savings} = x \times \frac{25}{100} = \frac{x}{4}$$

$$\Rightarrow \text{B's savings} = y \times \frac{10}{100} = \frac{y}{10}$$

As Given, $\frac{x}{4} = \frac{y}{10}$, Which Gives

$$\Rightarrow y = \frac{5x}{2}, \text{ Put this value of } y \text{ in above equation}$$

$$x + \frac{5x}{2} = ₹42,000, \text{ which gives}$$

$$\Rightarrow x = ₹12,000$$

Question 60

ABCD is a cyclic quadrilateral such that AB is a diameter of the circle circumscribing it and angle $ADC = 146^\circ$. $\angle BAC$ is equal to:

A 56°

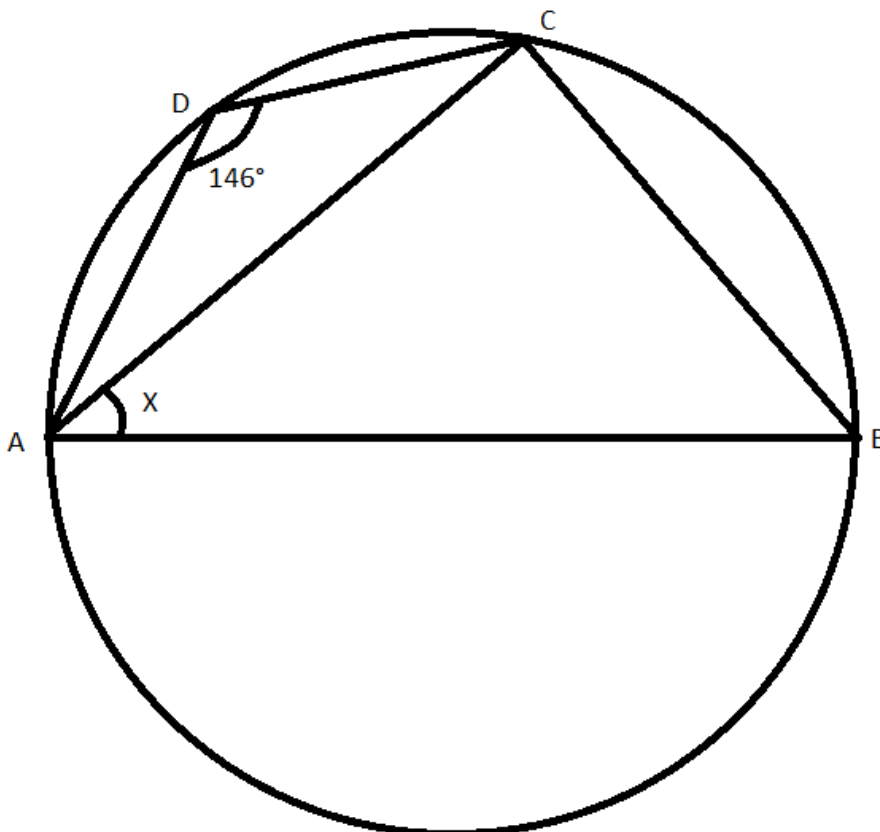
B 24°

C 72°

D 18°

Answer: A

Explanation:



As Given, We have to find $\angle BAC$, $AB = \text{Diameter}$,

According to Property of Cyclic quadrilateral, Opposite angles are supplementary to each other So,

$$\angle D + \angle B = 180^\circ$$

$$\therefore \angle B = 180 - 146 = 34^\circ$$

Now in $\triangle ABC$,

$$\therefore \angle ACB = 90^\circ (\because \text{Angle subtended by a diameter/semicircle on any point of circle is } 90^\circ)$$

$$\therefore \angle B + \angle BAC + \angle ACB = 180^\circ$$

$$\Rightarrow 34^\circ + \angle BAC + 90^\circ = 180^\circ$$

$$\Rightarrow \angle BAC = 180 - 90 - 34 = 56^\circ$$

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Question 61

A dealer buys an article marked at ₹5000 with two successive discounts of 20% and 5%. He spends ₹200 on repairs and sells it for ₹5000, what is his profit/loss percent ?

- A 25% profit
- B 25% loss
- C 20% profit
- D 20% loss

Answer: A

Explanation:

Given, MP = ₹5000, Successive Discount rate, 20% and 5%

$$\therefore \text{Price at which he purchased after Discount} = 5000 \times \frac{80}{100} \times \frac{95}{100} = ₹3800$$

Now, Before selling it, He spends ₹200 on repairing

$$\therefore \text{Total Cost} = 3800 + 200 = ₹4000 \text{ and As given, Selling price} = ₹5000$$

$$\text{Net Profit} = 5000 - 4000 = 1000$$

$$\therefore \text{Profit \%} = \frac{1000}{4000} \times 100 = 25\%$$

Question 62

If the length of a rectangle is decreased by 11% and the breadth is increased by 11%, its area will undergo:

- A 13.13% increase
- B 1.21% increase
- C 1.21% decrease
- D 13.13% decrease

Answer: C

Explanation:

Let the Length and Breadth are x, y respectively.

$$\therefore \text{Initial Area} = xy$$

As Given, Length is decreased by 11% and breadth is increased by 11% So,

$$\text{New Length} = x \times \frac{89}{100} = \frac{89x}{100}$$

$$\text{New Breadth} = y \times \frac{111}{100} = \frac{111y}{100}$$

$$\text{New Area} = \frac{89x}{100} \times \frac{111y}{100} = \frac{9879xy}{10000} = 0.9879xy$$

$$\text{Change in Area} = 0.9879xy - xy = -0.0121xy$$

$$\% \text{ Change} = \frac{-0.0121xy}{xy} \times 100 = -1.21$$

Question 63

If $x - \frac{1}{x} = 7$, then $x^3 - \frac{1}{x^3}$ is equal to:

- A 480
- B 364
- C 376
- D 500

Answer: B

Explanation:

As we know the identity

$$\therefore (a - b)^3 = a^3 - b^3 - 3ab(a - b)$$

$$\text{Given, } x - \frac{1}{x} = 7$$

$$\Rightarrow \left(x - \frac{1}{x}\right)^3 = 7^3$$

$$\Rightarrow x^3 - \left(\frac{1}{x}\right)^3 - 3\left(x\right)\left(\frac{1}{x}\right)\left(x - \frac{1}{x}\right) = 343$$

$$\Rightarrow x^3 - \frac{1}{x^3} - 3\left(x - \frac{1}{x}\right) = 343$$

$$\Rightarrow x^3 - \frac{1}{x^3} = 343 + 3\left(x - \frac{1}{x}\right)$$

$$\Rightarrow x^3 - \frac{1}{x^3} = 343 + 3 \times 7$$

$$\Rightarrow x^3 - \frac{1}{x^3} = 343 + 21 = 364$$

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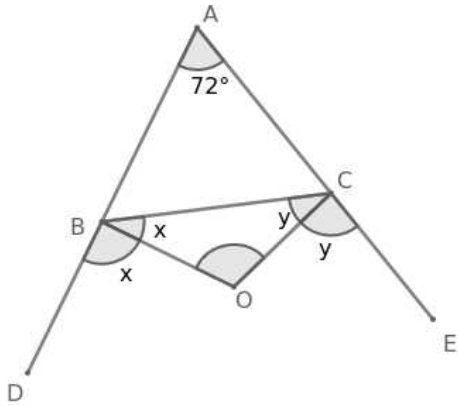
Question 64

In $\triangle ABC$, $\angle A = 72^\circ$. Its sides AB and AC are produced to the points D and E respectively. If the bisectors of the $\angle CBD$ and $\angle BCE$ meet at point O, then $\angle BOC$ is equal to:

- A 16°
- B 54°
- C 32°
- D 106°

Answer: B

Explanation:



Given,

In $\triangle ABC$, $\angle A = 72^\circ$

OB is the angular bisector of $\angle CBD$

$$\Rightarrow \angle OBD = \angle OBC$$

$$\text{Let } \angle OBD = \angle OBC = x$$

OC is the angular bisector of $\angle BCE$

$$\Rightarrow \angle OCE = \angle OCB$$

$$\text{Let } \angle OCE = \angle OCB = y$$

From the figure,

$$\angle ABC + \angle CBD = 180^\circ$$

$$\Rightarrow \angle ABC + x + x = 180^\circ$$

$$\Rightarrow \angle ABC = 180^\circ - 2x$$

$$\angle ACB + \angle BCE = 180^\circ$$

$$\Rightarrow \angle ACB + y + y = 180^\circ$$

$$\Rightarrow \angle ACB = 180^\circ - 2y$$

In $\triangle ABC$,

$$\angle ABC + \angle ACB + \angle BAC = 180^\circ$$

$$\Rightarrow 180^\circ - 2x + 180^\circ - 2y + 72^\circ = 180^\circ$$

$$\Rightarrow 2x + 2y = 180^\circ + 72^\circ$$

$$\Rightarrow 2(x + y) = 252^\circ$$

$$\Rightarrow x + y = 126^\circ \dots\dots\dots(1)$$

In $\triangle OBC$,

$$\angle OBC + \angle OCB + \angle BOC = 180^\circ$$

$$\Rightarrow x + y + \angle BOC = 180^\circ$$

$$\Rightarrow 126^\circ + \angle BOC = 180^\circ$$

$$\Rightarrow \angle BOC = 180^\circ - 126^\circ$$

$$\Rightarrow \angle BOC = 54^\circ$$

Hence, the correct answer is Option B

Question 65

A and B can complete a piece of work in 15 days and 20 days respectively. They got a contract to complete the work for ₹77000. The share of A (in ₹) in the contracted money will be:

- A 45,000
- B 40,000
- C 44,000
- D 42,000

Answer: C

Explanation:

According to question,

$$\text{Work done by A in 1 day} = \frac{1}{15}$$

$$\text{Work done by B in 1 day} = \frac{1}{20}$$

Let total time taken to complete the work = x days

$$\therefore x\left(\frac{1}{15}\right) + x\left(\frac{1}{20}\right) = 1$$

$$\Rightarrow \frac{1}{15} + \frac{1}{20} = \frac{1}{x}$$

$$\Rightarrow \frac{4+3}{60} = \frac{1}{x}$$

$$\Rightarrow x = \frac{60}{7} \text{ days}$$

So, it will take $\frac{60}{7}$ days to complete the work.

$$\therefore \text{Part of work done by A} = x\left(\frac{1}{15}\right) = \frac{60}{7} \times \frac{1}{15} = \frac{4}{7} \text{ of the work.}$$

$$\therefore \text{Share of A} = 77000 \times \frac{4}{7} = \text{₹}44000$$

Question 66

Let $\triangle ABC \sim \triangle PQR$ and $\frac{\text{ar}(\triangle ABC)}{\text{ar}(\triangle PQR)} = \frac{4}{25}$. If $AB = 12$ cm, $BC = 8$ cm and $AC = 10$ cm, then QP is equal to:

- A 20
- B 18
- C 15
- D 30

Answer: D

Explanation:

As Given, $\triangle ABC \sim \triangle PQR$ So,

$$\frac{AB}{QP} = \frac{BC}{PR} = \frac{AC}{QR}$$

and also we know,

$$\frac{\text{ar}(\triangle ABC)}{\text{ar}(\triangle PQR)} = \frac{AB^2}{QP^2} = \frac{BC^2}{PR^2} = \frac{AC^2}{QR^2},$$

$$\text{So here we Get, } \frac{AB}{QP} = \frac{BC}{PR} = \frac{AC}{QR} = \frac{\sqrt{\text{ar}(\triangle ABC)}}{\sqrt{\text{ar}(\triangle PQR)}} = \frac{\sqrt{4}}{\sqrt{25}}$$

$$\therefore \frac{AB}{QP} = \frac{BC}{PR} = \frac{AC}{QR} = \frac{2}{5}$$

$$\Rightarrow \frac{AB}{QP} = \frac{2}{5}$$

$$\Rightarrow QP = \frac{5AB}{2} = \frac{5 \times 12}{2} = \frac{60}{2} = 30 \text{ cm}$$

Question 67

A man bought three articles for ₹6,000 each. He sold the articles respectively at 15% profit, 12% profit and 15% loss. The total percentage profit/loss he earned is:

- A 4% profit
- B 3% loss
- C 4% loss
- D No profit no loss

Answer: A

Explanation:

According to questions

CP of 1st article = ₹6000

SP of 1st article = $6000 \times \frac{115}{100} = ₹6900$

CP of 2nd article = ₹6000

SP of 2nd article = $6000 \times \frac{112}{100} = ₹6720$

CP of 3rd article = ₹6000

SP of 3rd article = $6000 \times \frac{85}{100} = ₹5100$

Total CP = 6000+6000+6000 = ₹18,000

Total SP = 6900 + 6720 + 5100 = ₹18,720

So Net profit = SP - CP = 18,720 - 18,000 = ₹720

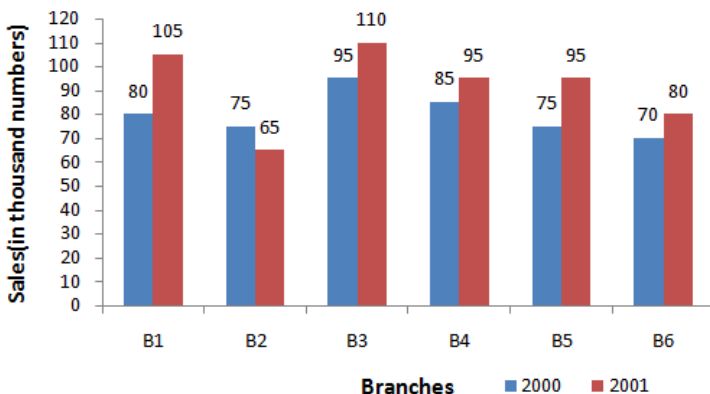
Profit % = $\frac{720}{18000} \times 100$

⇒ 4%

Question 68

The given Bar Graph presents the sales of the number of books (in thousands) by six branches of a publishing company during two consecutive years 2000 and 2001.

Sales of Books (in thousand numbers) from Six Branches - B1, B2, B3, B4, B5 and B6 of a publishing company in 2000 and 2001



The total sales (in thousands) by all branches for both the years is:

- A 470
- B 560

C 1100

D 1030

Answer: D

Explanation:

Total sales = $(80 + 105) + (75 + 65) + (95 + 110) + (85 + 95) + (75 + 95) + (70 + 80)$

$$= 185 + 140 + 205 + 180 + 170 + 150$$

$$\Rightarrow 1030$$

Question 69

If $\sec \theta = 8x$ and $\tan \theta = \frac{8}{x}$ ($x \neq 0$), then the value of $16(x^2 - \frac{1}{x^2})$ is:

A $\frac{1}{4}$

B $\frac{1}{16}$

C $\frac{1}{3}$

D $\frac{1}{2}$

Answer: A

Explanation:

As We know the trigonometry identity :

$$\sec^2 \theta - \tan^2 \theta = 1$$

By putting value of $\sec \theta$ and $\tan \theta$, we get

$$\Rightarrow (8x)^2 - \left(\frac{8}{x}\right)^2 = 1$$

$$\Rightarrow 64x^2 - \frac{64}{x^2} = 1$$

$$\Rightarrow 64\left(x^2 - \frac{1}{x^2}\right) = 1$$

$$\therefore 16\left(x^2 - \frac{1}{x^2}\right) = \frac{1}{4}$$

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Question 70

The compound interest on a certain sum of money at 21% for 2 years is ₹11,602.5. Its simple interest (in ₹) at the same rate and for the same period is:

A 10,750

B 16,000

C 12,500

D 10,500

Answer: D

Explanation:

Given CI = ₹ 11,602.5, T = 2 yrs, R = 21%

As we know

$$CI = P\left(1 + \frac{R}{100}\right)^T - P$$

$$\Rightarrow CI = P\left(1 + \frac{21}{100}\right)^2 - P$$

$$\Rightarrow CI = P\left(\frac{121}{100}\right)^2 - P$$

$$\Rightarrow CI = P\left(\frac{14641}{10000} - 1\right)$$

$$\Rightarrow CI = P \times \frac{4641}{10000}$$

$$\Rightarrow P = CI \times \frac{10000}{4641}$$

$$\Rightarrow P = 11,602.5 \times \frac{10000}{4641}$$

$$\Rightarrow P = ₹25000$$

$$\text{Simple Interest} = \frac{P \times R \times T}{100}$$

$$\Rightarrow SI = \frac{25000 \times 2 \times 21}{100}$$

$$\Rightarrow SI = ₹10,500$$

Question 71

The ratio between the speeds of two trains is 2 : 5. If the first train runs 250 km in 5 h, then the sum of the speeds (in km/h) of both the trains is:

- A 175
- B 150
- C 180
- D 165

Answer: A

Explanation:

As given in Question,

First train covers 250 km in 5 h then speed of first train = $\frac{250}{5} = 50$ km/h

Ratio of speeds of First train to second train = 2 : 5, So

Speed of second train = $\frac{50}{2} \times 5 = 125$ km/h

Sum of speeds of Both trains = $50 + 125 = 175$ km/h

Question 72

If $x^4 + x^{-4} = 1154$, ($x > 0$), then the value of $2(x - 3)^2$ is:

- A 16
- B 12
- C 20
- D 15

Answer: A

Explanation:

Given $x^4 + \frac{1}{x^4} = 1154$

$$\Rightarrow x^4 + \frac{1}{x^4} + 2 = 1154 + 2$$

$$\Rightarrow \left(x^2 + \frac{1}{x^2}\right)^2 = 1156$$

$$\begin{aligned} \Rightarrow (x^2 + \frac{1}{x^2}) &= 34 \\ \Rightarrow x^2 + \frac{1}{x^2} + 2 &= 34 + 2 \\ \Rightarrow (x + \frac{1}{x})^2 &= 36 \\ \Rightarrow x + \frac{1}{x} &= 6 \\ \Rightarrow \frac{x^2+1}{x} &= 6 \\ \Rightarrow x^2 + 1 &= 6x \\ \Rightarrow x^2 - 6x &= -1 \\ \Rightarrow x^2 - 6x + 9 &= -1 + 9 \\ \Rightarrow (x - 3)^2 &= 8 \\ \Rightarrow 2(x - 3)^2 &= 2 * 8 \Rightarrow 16 \end{aligned}$$

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Question 73

If the seven digit number $64x29y6$ ($x > y$) is divisible by 72, what is the value of $(2x - y)$?

- A 3
- B 13
- C 7
- D 9

Answer: D

Explanation:

Here we know the divisibility test of 72 that is the no. must be divisible by both 8 and 9.

\Rightarrow Divisibility test of 8 says that last 3 digits should be divisible by 8

So here it is $9y6$

$\therefore 9y6$ should be divisible by 8 which gives $y = 3$ and $y = 7$

\Rightarrow Divisibility of 9 is sum of all the digits in the no. should be divisible by 9

$\therefore (6 + 4 + x + 2 + 9 + y + 6) \div 9 = 0(\text{Remainder})$

Which gives $x + y = 9$

\therefore If $y = 3$ then $x = 6$ and if $y = 7$ and $x = 2$

As the given condition $x > y$, we use $x = 6$ and $y = 3$

$\therefore (2x - y) = (2 \times 6 - 3) \Rightarrow 9$

Question 74

The average age of fifteen persons is 32 years. If two more persons are added then the average is increased by 3 years. The new persons have an age difference of 11 years between them. The age (in years) of the younger among the new persons is:

- A 63
- B 52
- C 50
- D 58

Answer: B

Explanation:

let the age of younger person is x and older person is y

According to Question

$$\therefore y - x = 11$$

Given that,

initially 15 people are there and their avg. age is 32 yrs .

when x and y get included then avg. becomes 35 yrs, So

$$\therefore \frac{15 \times 32 + x + y}{17} = 35$$

$$\Rightarrow 15 \times 32 + x + y = 17 \times 35$$

$$\Rightarrow 480 + x + y = 595$$

$$\Rightarrow x + y = 595 - 480 = 115$$

By solving Both Equations, we get

$$\Rightarrow x = 52 \text{ yrs}$$

Question 75

If $a^3 - b^3 = 899$ and $a - b = 29$, then $(a - b)^2 + 3ab$ is equal to:

A 35

B 29

C 16

D 31

Answer: D

Explanation:

As we know the identity :

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

$$\therefore 899 = 29 * (a^2 + ab + b^2)$$

$$\therefore (a^2 + ab + b^2) = 899 \div 29$$

$$\text{So } (a^2 + ab + b^2) = 31$$

$$\Rightarrow (a^2 + ab + b^2 - 2ab + 2ab) = 31$$

$$\Rightarrow (a - b)^2 + 3ab = 31$$

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English

Instructions

For the following questions answer them individually

Question 76

Select the most appropriate antonym of the given word.

TACIT

A inaudible

- B silent
- C mute
- D explicit

Answer: D

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Question 77

Select the most appropriate synonym of the given word.

Meddle

- A manage
- B interfere
- C repair
- D elaborate

Answer: B

Instructions

In the following passage some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each blank.

Comprehension:

Long before the dawn of modern environmental awareness and the stress on recycling, our forefathers developed the practice of eating off banana leaves. It is a timeless practice (1) _____ in every Vedic ritual. The Vedas refer to (2) _____ sacred properties of the banana plant, (3) _____ uniquely bears fruit without pollination, the fruits containing no (4) _____. The plant thus (5) _____ fertility and plenty.

Question 78

Select the most appropriate option to fill in blank No.1.

- A brought
- B read
- C found
- D said

Answer: C

Question 79

Select the most appropriate option to fill in blank No.2.

- A an
- B one
- C the
- D a

Answer: C

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Question 80

Select the most appropriate option to fill in blank No.3.

- A which
- B where
- C whom
- D who

Answer: A

Question 81

Select the most appropriate option to fill in blank No.4.

- A branches
- B seeds
- C leaves
- D roots

Answer: B

Question 82

Select the most appropriate option to fill in blank No.5.

- A refers
- B explains
- C symbolises
- D means

Answer: C

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Instructions

For the following questions answer them individually

Question 83

Select the most appropriate antonym of the given word.

PROCEED

- A ahead
- B recede
- C forward
- D continue

Answer: B

Question 84

Select the correct passive form of the given sentence.
They are going to open the shops at eleven o'clock.

- A The shops must be opened at eleven o'clock.
- B The shops were opened at eleven o'clock.
- C The shops are going to be opened at eleven o'clock.
- D The shops have been opened at eleven o'clock.

Answer: C

Question 85

Identify the segment in the sentence which contains the grammatical error.
The young girl was helping her father to look after shop.

- A her father
- B The young girl
- C was helping
- D to look after shop

Answer: D

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Question 86

Select the most appropriate meaning of the given idiom
dark horse

- A someone who is fond of horse racing
- B someone who has a wheatish complexion
- C someone who breeds race horses
- D someone who unexpectedly succeeds

Answer: D

Question 87

Identify the segment in the sentence which contains the grammatical error.
When we went to Ramgarh we see the snow-capped mountains in the distance.

- A in the distance
- B to Ramgarh we see
- C the snow-capped mountains
- D When we went

Answer: B

Question 88

Select the most appropriate meaning of the given idiom
hand in glove

- A working together in the same office
- B wearing gloves while working
- C in partnership for something dishonest
- D doing work in the garden

Answer: C

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Question 89

Select the wrongly spelt word

- A presidential
- B preferential
- C profesional
- D proverbial

Answer: C

Question 90

Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order.

- A. His affectionate greeting was surprising.
- B. Although we were from the same village o ur relationship was confined to a polite hello whenever our paths crossed.
- C. As I stepped into the shack , Dorababu beckoned to me, making a little space for me on the bench on which he was sitting.
- D. "Come here, brother," he greeted me.

- A DBCA
- B CABD
- C BACD
- D CDAB

Answer: D

Question 91

Select the most appropriate word for the given group of words.
One who makes and sells sweets and pastries

- A grocer
- B confectioner
- C cobbler
- D barber

Answer: B

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Question 92

Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order.

- A. The first person who thought of trading must have been a clever person.
- B. He must have found them easy to carry and exchange for goods.
- C. And gradually paying for things in gold and silver became a regular practice.
- D. When gold and silver were first found people started using them for trade.

- A DBCA
- B BDCA
- C CDAB
- D DABC

Answer: D

Question 93

Select the most appropriate word to fill in the blank.

Government personnel on official trips are _____ to claim reimbursement of their expenses.

- A entitled
- B incited
- C indicted
- D invited

Answer: A

Question 94

Select the most appropriate synonym of the given word.

IDEOLOGY

- A contract
- B belief
- C mark
- D recognition

Answer: B

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Question 95

Select the most appropriate word to fill in the blank.

The critics were _____ about his remarks on the efficiency of the government and gave many examples to prove they didn't agree with him.

- A optimistic

- B morose
- C rational
- D cynical

Answer: D

Question 96

Select the correct indirect form of the given sentence.

Uma asked me, "How's your brother?"

- A Uma asked me how was my brother.
- B Uma asked me how your brother was.
- C Uma asked me how my brother was.
- D Uma asked me how is my brother.

Answer: C

Question 97

Select the correctly spelt word

- A expection
- B ecseption
- C exception
- D ecxception

Answer: C

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Instructions

Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select No improvement.

Question 98

Its always advisable put your car into neutral gear when you stop at a traffic signal.

- A Its always advisable putting
- B It's always advisable to put
- C No improvement
- D It is always advisable for putting

Answer: B

Question 99

What a relief to sit down after walking in the park from a hour!

- A by an hour
- B No improvement
- C for an hour
- D in a hour

Answer: C

Instructions

For the following questions answer them individually

Question 100

Select the most appropriate word for the given group of words
The art of cleaning and preserving animal skins

- A etymology
- B taxonomy
- C dermatology
- D taxidermy

Answer: D

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