



SSC CHSL 18th March 2020 Shift-1

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English Language (Basic Knowledge)

Instructions

For the following questions answer them individually

Question 1

Select the most appropriate meaning of the given idiom.

Vanish into the air

- A Perpetually postpone
- B Totally dilute
- C Permanently mix
- D Completely disappear

Answer: D

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Question 2

Select the wrongly spelt word.

- A Selection
- B Conviction
- C Defenition
- D Valediction

Answer: C

Question 3

Select the correct passive form of the given sentence.

The students have performed a new version of Shakespeare's 'Macbeth'.

- A A new version of Shakespeare's 'Macbeth' has been performed by the students.
- B Shakespeare's 'Macbeth' have been performed by the new version of the students.
- C Shakespeare's 'Macbeth' has been performed by the new version of the students.
- D A new version of Shakespeare's 'Macbeth' have been performed by the students.

Answer: A

Question 4

Select the correct indirect form of the given sentence.

Shanti asked me, "Why did you keep this smartphone in the bin?"

- A Shanti asked me why I had kept that smartphone in the bin.
- B Shanti asked me why I was keeping that smartphone in the bin.
- C Shanti asked me why I had been keeping that smartphone in the bin.

D Shanti asked me why I kept that smartphone in the bin.

Answer: A

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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.

The internet is fast becoming trusted by (1)_____ children and adults as reliable and accurate (2)_____ of information. Through the internet children now have (3)_____ to an almost endless supply of information and opportunity for (4)_____. However, there can be real risks and dangers for an (5)_____ child.

Question 5

Select the most appropriate option for blank No. 1.

- A often
- B not only
- C both
- D neither

Answer: C

Question 6

Select the most appropriate option for blank No. 2.

- A piece
- B deposit
- C source
- D collection

Answer: C

Question 7

Select the most appropriate option for blank No. 3.

- A gathering
- B access
- C ability
- D easiness

Answer: B

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Question 8

Select the most appropriate option for blank No. 4.

- A deliberation
- B intimation
- C consultation
- D interaction

Answer: D

Question 9

Select the most appropriate option for blank No. 5.

- A unsupervised
- B undeveloped
- C unauthorised
- D unparalleled

Answer: A

Instructions

For the following questions answer them individually

Question 10

Select the most appropriate meaning of the given idiom.

Take one's hat off to someone

- A Express anger
- B Display humility
- C Indicate disapproval
- D Show admiration

Answer: D

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Question 11

Select the word which means the same as the group of words given.

A person who is neither well experienced nor professional

- A Amateur
- B Proficient
- C Veteran
- D Expert

Answer: A

Question 12

Select the most appropriate word to fill in the blank.

I had a broken bone in the hand which the doctor called a _____ and suggested immediate surgery.

- A wound
- B infection
- C contamination
- D fracture

Answer: D

Question 13

Select the word which means the same as the group of words given.

Something which is considered to be very important

- A Meagre
- B Cardinal
- C Scanty
- D Supplementary

Answer: B

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Question 14

Select the most appropriate synonym of the given word.

JOVIAL

- A Judgmental
- B Joyous
- C Jealous
- D Jeering

Answer: B

Question 15

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'.

As of you are here with me, who cares about the outcome of the issue.

- A So long
- B No improvement
- C As long to

D As long as

Answer: D

Question 16

Select the most appropriate ANTONYM of the given word

EARTHLY

A Temperamental

B Peripheral

C Celestial

D Temporal

Answer: C

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Question 17

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

- A. One day, a strange crow from the west, landed on one of the branches.
- B. There was a large mango tree deep inside a thick forest.
- C. The branches were full of leaves, which crackled when the storm blew.
- D. Its branches spread in all directions, lobbing a large shadow on the ground.

A BDCA

B BCAD

C CDBA

D ACDB

Answer: A

Question 18

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

- A. In the evening, Tejaswini would sing songs praising the Lord.
- B. She would go to the Lord's temple twice a day.
- C. Tejaswini was known in the village for her devotion to the Lord.
- D. In the morning, she would take with her a pot of milk and a bunch of flowers as offering.

A CADB

B DCAB

C CBDA

D ACDB

Answer: C

Question 19

In the sentence identify the segment which contains the grammatical error.

Thomas is a man of word who have been paying back the borrowed money in instalments.

- A the borrowed money
- B in instalments
- C Thomas is a man of word
- D who have been paying back

Answer: D

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Question 20

Select the wrongly spelt word.

- A Collaborate
- B Comemorate
- C Corporate
- D Conjugate

Answer: B

Question 21

Select the most appropriate word to fill in the blank.

She has shown a great interest towards space science, since her early childhood and a passion to _____ the outer space.

- A elicit
- B entertain
- C enlighten
- D explore

Answer: D

Question 22

In the sentence identify the segment which contains the grammatical error.

Though she was able to finish the work on time, she couldn't do that out in fear.

- A finish the work on time,
- B she couldn't do that
- C Though she was able to
- D out in fear

Answer: D

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Question 23

Select the most appropriate synonym of the given word.

CHOOZY

- A Productive
- B Frank
- C Selective
- D Tricky

Answer: C

Question 24

Select the most appropriate ANTONYM of the given word.

OBSCURE

- A Ambiguous
- B Clear
- C Uncertain
- D Vague

Answer: B

Question 25

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'.

Before it was modified, the Law provided with the owner could take possession of the goods at any time.

- A provided that
- B provided on
- C No improvement
- D provided as

Answer: A

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General Intelligence

Instructions

For the following questions answer them individually

Question 26

Rishabh is a 10 year old boy. If his mother is 20 years older than him and 6 years younger than his father, then what is his father's age?

- A 34 years
- B 26 years
- C 30 years
- D 36 years

Answer: D

Explanation:

Age of Rishabh = 10 years

Rishabh's mother is 20 years older than Rishabh

$$\Rightarrow \text{Rishabh's mother age} = 10 + 20 = 30 \text{ years}$$

Let the age of Rishabh's father = a

Rishabh's mother is 6 years younger than Rishabh's father

$$\Rightarrow 30 = a - 6$$

$$\Rightarrow a = 36$$

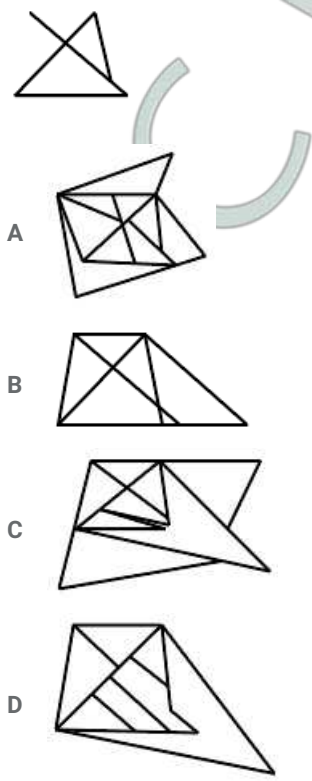
\therefore Rishabh's father age = 36 years

Hence, the correct answer is Option D

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Question 27

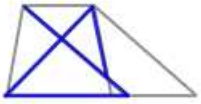
Select the option in which the given figure is embedded. (Rotation is not allowed)



Answer: B

Explanation:

The given figure is embedded in the second figure as shown below



Hence, the correct answer is Option B

Question 28

In certain code language, PAGER is written as RCIGT. How will ANGEL be written as in that language?

- A CPIGN
- B AVOIDK
- C ILVDB
- D AVIDH

Answer: A

Explanation:

Let us decode the question

PAGER is written as RCIGT

here there is one letter between every question and answer letter

i.e; P Q R

A B C

G H I

R S T

Similarly, for ANGEL

A B C

N O P

G H I

E F G

L M N

Therefore, Answer is CPIGN

Question 29

In a code certain code language, MUSIC is coded as 60 and TUNE is coded as 56. How will LYRIC be coded as in that language ?

- A 62
- B 65
- C 63
- D 67

Answer: A

Explanation:

Given, MUSIC is coded as 60 and TUNE is coded as 56 in the code language.

The logic here is

$$M + U + S + I + C - 5 = 13 + 21 + 19 + 9 + 3 - 5 = 65 - 5 = 60$$

$$T + U + N + E - 4 = 12 + 25 + 18 + 9 + 3 - 4 = 60 - 4 = 56$$

The code value is the difference of sum of the values of the letters and number of letters in the word.

Similarly,

$$L + Y + R + I + C - 5 = 12 + 25 + 18 + 9 + 3 - 5 = 67 - 5 = 62$$

∴ LYRIC is coded as 62 in the code language

Hence, the correct answer is Option A

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Question 30

Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

1. All doors are teachers.
2. All teachers are cups.

Conclusions:

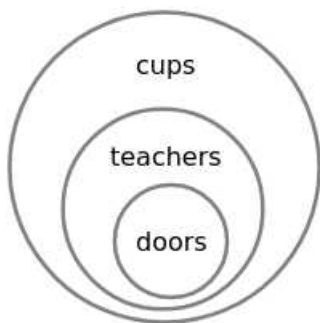
- I. All cups are doors.
- II. All doors are cups.
- III. All teachers are doors.
- IV. Some cups are teachers.

- A** Only conclusions I and II follow.
B Only conclusion I follows.
C Only conclusions II and IV follow.
D Only conclusions I and III follow.

Answer: C

Explanation:

The basic diagram for the given statements is



I. All cups are doors

From the basic diagram, all cups are not doors. Hence conclusion I do not follow.

II. All doors are cups

From the basic diagram, all doors are cups. Hence conclusion II follows.

III. All teachers are doors

From the basic diagram, all teachers are not doors. Hence conclusion III do not follow.

IV. Some cups are teachers

From the basic diagram, some cups are teachers. Hence conclusion IV follows.

∴ Only conclusions II and IV follow the given statements

Hence, the correct answer is Option C

Question 31

Select the option that is related to the third number in the same way as the second number is related to the first number.

9 : 121 :: 7 : ?

- A 81
- B 102
- C 105
- D 79

Answer: A

Explanation:

The logic here is

$$121 = 11^2 = (9 + 2)^2$$

The first and second number are in the form of $n : (n + 2)^2$.

Similarly,

$$\text{The fourth number} = (7 + 2)^2 = 81$$

∴ 81 is related to 7 in the same way 121 is related to 9.

Hence, the correct answer is Option A

Question 32

Arrange the following words in a logical and meaningful order.

1. Letter
2. Satellite
3. Telephone
4. Smartphone

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

Answer: C

Explanation:

In the olden days, letters are used for communication and then telephones are introduced. After telephones, smartphones are introduced. In the modern days, most of the communication like live cricket is transferred using satellites.

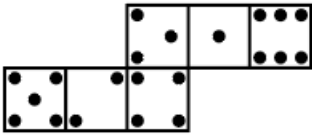
∴ The meaningful order of the given words is Letter, Telephone, Smartphone, Satellite.

Hence, the correct answer is Option C

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Question 33

If the following figure is folded to form a cube, then how many dots will be on the face opposite to the face having 2 dots ?



- A 1
- B 6
- C 4
- D 3

Answer: A

Explanation:

When the figure is folded to form a cube with base as 4,

4 will be opposite to 5

3 will be opposite to 6

2 will be opposite to 1

∴ 1 will be on the face opposite to the face having number 2.

Hence, the correct answer is Option A

Question 34

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.

INTEX : EINTX :: SMALL : ?

- A ALMLV
- B AJKLM
- C ALLMS
- D LLAMV

Answer: C

Explanation:

Given, EINTX is related to INTEX

The logic here is the vowels are placed first and then consonants are placed in order.

Similarly, the letter-cluster related to SMALL is ALLMS.

Hence, the correct answer is Option C

Question 35

Select the combination of letters that when sequentially placed in the blanks of the given letter series will complete the series.

ab__cba__dd__abcd__baa__cba

- A abeaacdecdecdd
- B acbdecdeaacecdd
- C cddabccbdcdbcd

D abbaacdeecdecdd

Answer: C

Explanation:

By Trial and Error method,

Option A

ababecba | aacdddec | abcddeba | aecddcba

The above letters do not form a series. Hence option A is incorrect.

Option B

abacbcba | decdddea | abcdacba | aecddcba

The above letters do not form a series. Hence option B is incorrect.

Option C

abcddcba | abcddcba | abcddcba | abcddcba

The above letters form a series.

Hence, the correct answer is Option C

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Question 36

Select the combination of letters that when sequentially placed in the blanks of the given letter series will complete the series.

e_gef_gg_ee_f_gg

A g, f, e, f, f

B f, f, f, f, f

C f, g, f, g, g

D f, f, e, f, f

Answer: D

Explanation:

By Trial and Error method,

Option A

egg | eeffgg | eeeffgg

The above letters do not form a series. Hence option A is incorrect.

Option B

efg | eeffgg | feeffgg

The above letters do not form a series. Hence option B is incorrect.

Option C

efg | eeffgg | feeffgg

The above letters do not form a series. Hence option C is incorrect.

Option D

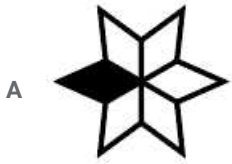
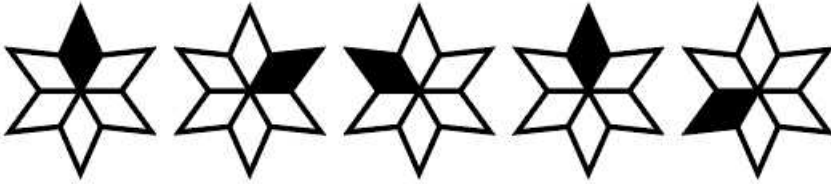
efg | eeffgg | eeeffgg

The above letters form a series.

Hence, the correct answer is Option D

Question 37

Select the option figure that will come next in the following series.



Answer: D

Explanation:

The part of the figure which is black is moving one place in clockwise direction and two places in anti-clockwise direction alternatively. Next it has to move one place in clockwise direction.

∴ The figure that will come next in the given series is



Hence, the correct answer is Option D

Question 38

Four letter-pairs have been given, out of which three are alike in some manner and one is different. Select the odd letter-pair.

A BE

B AY

C US

D OM

Answer: A

Explanation:

In the letter-pairs AY, US, OM, the number of letters between the letters is 1. In BE, the number of letters between B and E is 2.

∴ BE is the odd letter-pair among the given letter-pairs.

Hence, the correct answer is Option A

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Question 39

A and B can do a piece of work in 30 days and 18 days respectively. A started the work alone and then after 6 days B joined him till the completion of the work. In how many days has the whole work completed?

- A 17
- B 15
- C 9
- D 12

Answer: B

Explanation:

Let the total work be W

Number of days required for A to complete the work = 30 days

$$\Rightarrow \text{Work done by A in 1 day} = \frac{W}{30}$$

Number of days required for B to complete the work = 18 days

$$\Rightarrow \text{Work done by B in 1 day} = \frac{W}{18}$$

$$\text{Work done by A and B together in 1 day} = \frac{W}{30} + \frac{W}{18} = \frac{3W+5W}{90} = \frac{4W}{45}$$

$$\text{Work done by A alone in 6 days} = \frac{W}{30} \times 6 = \frac{W}{5}$$

$$\text{Remaining work} = W - \frac{W}{5} = \frac{4W}{5}$$

$$\text{Number of days required for both A and B to complete remaining work} = \frac{\text{Remaining work}}{\text{Work in 1 day}} = \frac{\frac{4W}{5}}{\frac{4W}{45}} = 9 \text{ days}$$

∴ Number of days required to complete the whole work = 6 + 9 = 15 days

Hence, the correct answer is Option B

Question 40

Select the option in which the words share the same relationship as that shared by the given pair of words.

Chair : Furniture

- A Letter paper : Stationary
- B Pencil : Wood
- C Bicycle : Travel
- D Seat : Cover

Answer: A

Explanation:

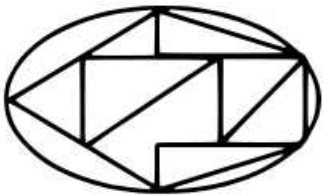
Furniture includes Chairs, Tables, etc. Similarly, Stationary includes Letter paper and writing materials.

∴ Letter paper and Stationary share same relationship as Chair and Furniture.

Hence, the correct answer is Option A

Question 41

How many triangles are there in the given figure?



A 12

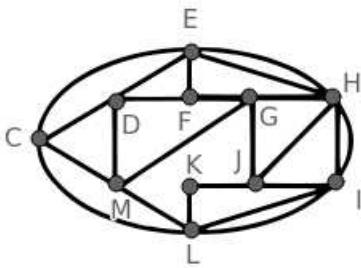
B 10

C 8

D 13

Answer: C

Explanation:



The different triangles in the given figure are CDE, DEF, FEH, DEH, DMG, HIJ, HGJ, LKI

∴ Number of triangles in the given figure = 8

Hence, the correct answer is Option C

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Question 42

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

$$4 \div 6 + 9 - 48 \times 8 = 27$$

A + and ×

B + and -

C ÷ and +

D ÷ and ×

Answer: D

Explanation:

By Trial and Error method,

Option A

$$4 \div 6 \times 9 - 48 + 8 = 27$$

$$\frac{2}{3} \times 9 - 48 + 8 = 27$$

$$6 - 48 + 8 = 27$$

$$-34 = 27$$

Hence Option A is incorrect

Option B

$$4 \div 6 - 9 + 48 \times 8 = 27$$

$$\frac{2}{3} - 9 + 48 \times 8 = 27$$

After solving the value will be decimal which is not possible

Option C

$$4 + 6 \div 9 - 48 \times 8 = 27$$

$$4 + \frac{2}{3} - 48 \times 8 = 27$$

After solving the value will be decimal which is not possible

Option D

$$4 \times 6 + 9 - 48 \div 8 = 27$$

$$4 \times 6 + 9 - 6 = 27$$

$$24 + 9 - 6 = 27$$

$$27 = 27$$

Hence, the correct answer is Option D

Question 43

Select the number that can replace the question mark (?) in the following series.

2, 8, 15, 24, 36, 52, ?

A 83

B 73

C 78

D 63

Answer: B

Explanation:

Given series is 2, 8, 15, 24, 36, 52, ?

The logic here is difference of differences of the numbers are consecutive natural numbers as shown below

2	8	15	24	36	52	?
	6	7	9	12	16	21
		1	2	3	4	5

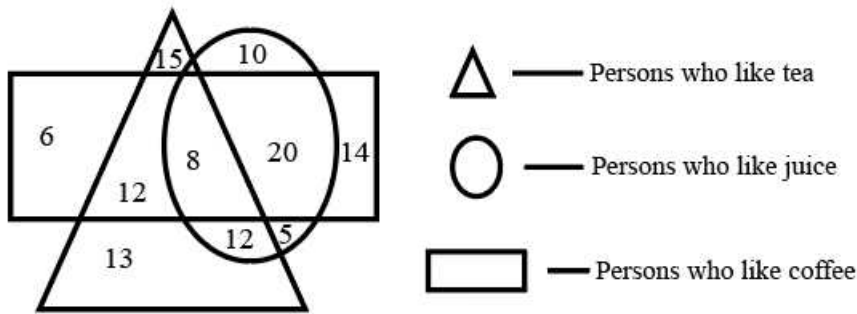
The next natural number will be 5 and the difference between required number and 52 should be 21.

\therefore Required number = $52 + 21 = 73$

Hence, the correct answer is Option B

Question 44

Study the following diagram and answer the given question.



How many people like both tea and coffee, but do NOT like juice?

- A 22
- B 12
- C 8
- D 20

Answer: B

Explanation:

From the diagram,

Number of people like both tea and coffee, but do not like juice = Intersection of triangle and rectangle but not circle = 12

Hence, the correct answer is Option B

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Question 45

Which two signs and numbers should be interchanged to make the following equation correct?

$$16 \times 18 + 2 - 14 \div 3 = 38$$

- A 14 and 18, + and -
- B 16 and 14, - and \times
- C 14 and 18, + and \times
- D 16 and 3, - and \div

Answer: C

Explanation:

By Trial and Error method,

Option A

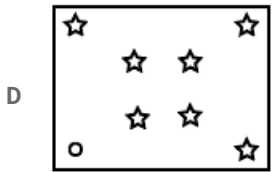
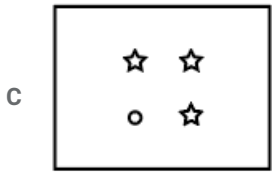
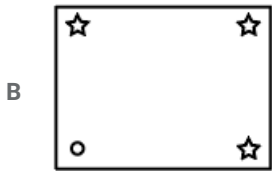
$$16 \times 14 - 2 + 18 \div 3 = 38$$

$$16 \times 14 - 2 + 6 = 38$$

$$224 - 2 + 6 = 38$$

$$228 = 38$$

Hence Option A is incorrect



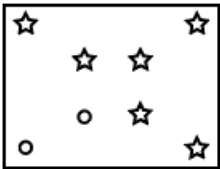
Answer: A

Explanation:

When the paper is cut and unfolded, the pattern of cutting will be similar on the unfolded parts.

A star will appear on the top right, left right and bottom right parts. A circle will appear on the bottom left part.

∴ When the paper is unfolded it appears as shown below



Hence, the correct answer is Option A

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Question 48

Sheela introduced Rahul saying, "His sister is the single daughter of my mother". How are Rahul and Sheela related to each other?

- A Uncle - Niece
- B Cousins
- C Brother - Sister
- D Son - Mother

Answer: C

Explanation:

According to the problem, Rahul's sister is the single daughter of Sheela's mother.

Since Sheela is female, so single daughter of Sheela's mother is Sheela.

⇒ Rahul's sister is Sheela

Hence, the correct answer is Option C

Question 49

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

(2, 6, 32)

A (9, 13, 43)

B (4, 12, 36)

C (8, 18, 80)

D (4, 8, 34)

Answer: C

Explanation:

The logic for (2, 6, 32) is

$$(2 + 1) \times 2 = 6 \rightarrow (\text{first number} + 1) \times 2 = \text{second number}$$

$$(6 + 2) \times 4 = 32 \rightarrow (\text{second number} + 2) \times 4 = \text{third number}$$

Similarly,

$$(8 + 1) \times 2 = 18$$

$$(18 + 2) \times 4 = 80$$

\therefore (8, 18, 80) are related in the same way as (2, 6, 32) are related.

Hence, the correct answer is Option C

Question 50

In a certain code language, 'APRICOT' is written as 'GLXRIKZ' then how will 'ORANGE' be written in the same code language ?

A LIZMTV

B VTNZHM

C VTMZIL

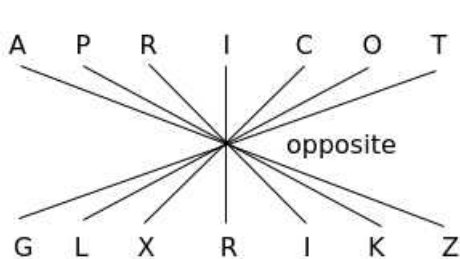
D LHZMSV

Answer: C

Explanation:

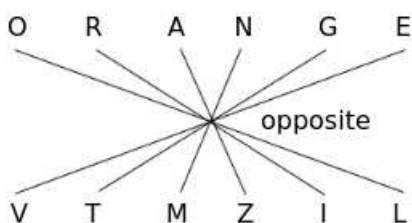
Given, APRICOT is written as GLXRIKZ in the code language

The logic here is



The opposite letters are coded as shown in the above pattern.

Similarly,



∴ ORANGE is written as VTMZIL in the code language.

Hence, the correct answer is Option C

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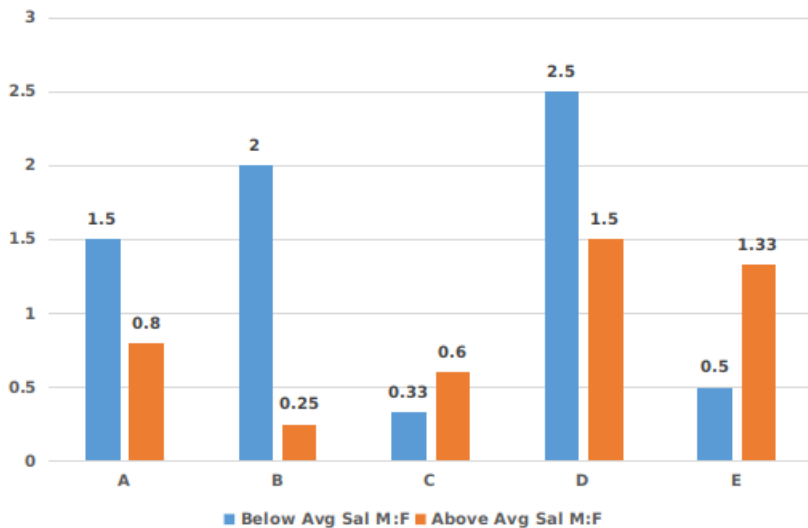
Quantitative Aptitude(Basic Arithmetic Skill)

Instructions

For the following questions answer them individually

Question 51

The following graph shows the data of five companies A, B, C, D, E with respect to the male and female ratio of employees above, or below the average salary.



If in the company D, the percentage of employees above the average salary is 16% which is equal to 80, then the number of employees below average salary are:

- A 520
- B 300
- C 420
- D 470

Answer: C

Explanation:

Let the total number of employees in Company D = T

Given,

Percentage of employees above average salary in Company D = 16%

Number of employees above average salary in Company D = 80

$$\Rightarrow \frac{16}{100} T = 80$$

$$\Rightarrow T = 500$$

∴ Number of employees below average salary = 500 - 80 = 420

Hence, the correct answer is Option C

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Question 52

25 men can complete a task in 16 days. Four days after they started working, 5 more men, with equal workmanship, joined them. How many days will be needed by all to complete the remaining task?

- A 10 days
- B 12 days
- C 15 days
- D 18 days

Answer: A

Explanation:

Let the total work = W

25 men can complete the task in 16 days

\Rightarrow Number of days required for 25 men to complete the work = 16 days

\Rightarrow Work done by 25 men in 1 day = $\frac{W}{16}$

\Rightarrow Work done by 25 men in 4 days = $4 \times \frac{W}{16} = \frac{W}{4}$

\therefore Remaining work = $W - \frac{W}{4} = \frac{3W}{4}$

Let the number of days required for 30 men to complete remaining work = d_2 days

We know that $\frac{M_1 d_1}{W_1} = \frac{M_2 d_2}{W_2}$

$\Rightarrow \frac{25 \times 16}{W} = \frac{30 \times d_2}{\frac{3W}{4}}$

$\Rightarrow \frac{25 \times 16}{W} = \frac{30 \times d_2 \times 4}{3W}$

$\Rightarrow d_2 = 10$ days

\therefore The number of days required for 30 men to complete remaining work = 10 days

Hence, the correct answer is Option A

Question 53

If $1 + \sqrt{2} + \sqrt{3} = a + b\sqrt{2} + c\sqrt{3} - d\sqrt{6}$, where a, b, c, d are natural numbers, then the value of $a + b + c + d$ is:

- A 1
- B 0
- C 2
- D 4

Answer: D

Explanation:

Given, $1 + \sqrt{2} + \sqrt{3} = a + b\sqrt{2} + c\sqrt{3} - d\sqrt{6}$

$\Rightarrow 1 + \sqrt{2} + \sqrt{3} \times \frac{1 + \sqrt{2} - \sqrt{3}}{1 + \sqrt{2} - \sqrt{3}} = a + b\sqrt{2} + c\sqrt{3} - d\sqrt{6}$

$\Rightarrow \frac{4(1 + \sqrt{2} - \sqrt{3})}{(1 + \sqrt{2})^2 - (\sqrt{3})^2} = a + b\sqrt{2} + c\sqrt{3} - d\sqrt{6}$

$$\begin{aligned} & \frac{4(1+\sqrt{2}-\sqrt{3})}{1+2+2\sqrt{2}-3} = a + b\sqrt{2} + c\sqrt{3} - d\sqrt{6} \\ \Rightarrow & \frac{4(1+\sqrt{2}-\sqrt{3})}{2\sqrt{2}} = a + b\sqrt{2} + c\sqrt{3} - d\sqrt{6} \\ \Rightarrow & \frac{4(1+\sqrt{2}-\sqrt{3})}{2\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = a + b\sqrt{2} + c\sqrt{3} - d\sqrt{6} \\ \Rightarrow & \frac{4\sqrt{2}(1+\sqrt{2}-\sqrt{3})}{2(\sqrt{2})^2} = a + b\sqrt{2} + c\sqrt{3} - d\sqrt{6} \\ \Rightarrow & \frac{4\sqrt{2}(1+\sqrt{2}-\sqrt{3})}{2 \times 2} = a + b\sqrt{2} + c\sqrt{3} - d\sqrt{6} \\ \Rightarrow & \sqrt{2}(1 + \sqrt{2} - \sqrt{3}) = a + b\sqrt{2} + c\sqrt{3} - d\sqrt{6} \\ \Rightarrow & \sqrt{2} + 2 - \sqrt{6} = a + b\sqrt{2} + c\sqrt{3} - d\sqrt{6} \\ \Rightarrow & 2 + \sqrt{2} - \sqrt{6} = a + b\sqrt{2} + c\sqrt{3} - d\sqrt{6} \end{aligned}$$

Comparing both sides

$$a=2, b=1, c=0, d=1$$

$$\therefore a + b + c + d = 2 + 1 + 0 + 1 = 4$$

Hence, the correct answer is Option D

Question 54

A person purchased 40 items at some price. He sold some items at a profit of 30% by selling them at a price equal to the cost price of 26 items. The remaining items are sold at 18% profit. The total profit percentage is:

- A 27%
- B 28%
- C 24%
- D 25%

Answer: C

Explanation:

Let the cost price = $40C$

Number of items sold at 30% profit = a

Cost price of 'a' items = aC

Selling price of 'a' items = $\frac{130}{100}aC$

According to the problem,

Selling price of 'a' items = Cost price of 26 items

$$\Rightarrow \frac{130}{100}aC = 26C$$

$$\Rightarrow a = 20$$

\Rightarrow Number of items sold at 30% profit = $a = 20$

Remaining items sold at 18% profit = $40 - 20 = 20$

Selling price of items sold at 30% profit = $\frac{130}{100} \times 20C = 26C$

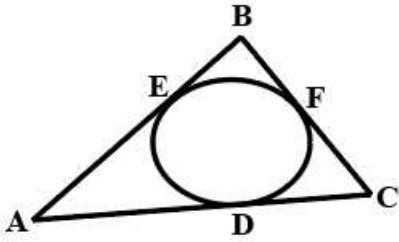
Selling price of items sold at 18% profit = $\frac{118}{100} \times 20C = 23.6C$

$$\therefore \text{Total profit percentage} = \frac{26C + 23.6C - 40C}{40C} \times 100 = \frac{9.6}{40} \times 100 = 24\%$$

Hence, the correct answer is Option C

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Question 55

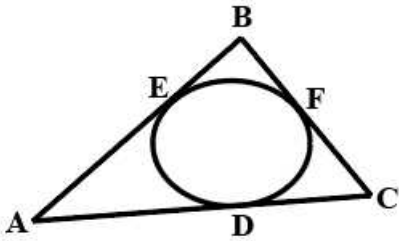


A circle is inscribed in the triangle ABC whose sides are given as $AB = 10$, $BC = 8$, $CA = 12$ units as shown in the figure. The value of $AD \times BF$ is:

- A 21 units
- B 15 units
- C 18 units
- D 16 units

Answer: A

Explanation:



Given,

$$AB = 10, BC = 8, CA = 12$$

AD and AE are tangents to the circle from point A

$$\Rightarrow AD = AE$$

$$\text{Let } AD = AE = a$$

BE and BF are tangents to the circle from point B

$$\Rightarrow BE = BF$$

$$\text{Let } BE = BF = b$$

CD and CF are tangents to the circle from point C

$$\Rightarrow CD = CF$$

$$\text{Let } CD = CF = c$$

$$AB = 10$$

$$\Rightarrow AE + BE = 10$$

$$\Rightarrow a + b = 10 \dots\dots\dots(1)$$

$$BC = 8$$

$$\Rightarrow BF + CF = 8$$

$$\Rightarrow b + c = 8 \dots\dots\dots(2)$$

$$CA = 12$$

$$\Rightarrow CD + AD = 12$$

$$\Rightarrow c + a = 12 \dots\dots\dots(3)$$

Solving (1) - (2)

$$a - c = 2 \dots\dots\dots(4)$$

Solving (3) + (4)

$$2a = 14$$

$$\Rightarrow a = 7$$

$$\text{From (1), } 7 + b = 10$$

$$\Rightarrow b = 3$$

$$\text{From (3), } c + 7 = 12$$

$$\Rightarrow c = 5$$

$$\therefore AD \times BF = a \times b = 7 \times 3 = 21 \text{ units}$$

Hence, the correct answer is Option A

Question 56

If $\left[\left\{ \left(\frac{2}{3} \right)^3 \right\}^{(2x+3)} \right]^{\frac{-3}{4}} = \left[\left\{ \left(\frac{2}{3} \right)^{\frac{2}{3}} \right\}^{(3x+7)} \right]^{\frac{-6}{5}}$ then the value of $\sqrt{2 - 42x}$ is:

A 6

B 5

C 3

D 4

Answer: B

Explanation:

Given,

$$\left[\left\{ \left(\frac{2}{3} \right)^3 \right\}^{(2x+3)} \right]^{\frac{-3}{4}} = \left[\left\{ \left(\frac{2}{3} \right)^{\frac{2}{3}} \right\}^{(3x+7)} \right]^{\frac{-6}{5}}$$

$$\Rightarrow \left\{ \left(\frac{2}{3} \right)^3 \right\}^{\frac{-3}{4}(2x+3)} = \left\{ \left(\frac{2}{3} \right)^{\frac{2}{3}} \right\}^{\frac{-6}{5}(3x+7)}$$

$$\Rightarrow \left(\frac{2}{3} \right)^{\frac{-9}{4}(2x+3)} = \left(\frac{2}{3} \right)^{\frac{-12}{5}(3x+7)}$$

$$\Rightarrow \frac{-9}{4}(2x+3) = \frac{-12}{5}(3x+7)$$

$$\Rightarrow 45(2x+3) = 16(3x+7)$$

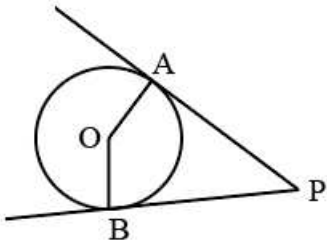
$$\Rightarrow 90x + 135 = 48x + 112$$

$$\Rightarrow 42x = -23$$

$$\therefore \sqrt{2 - 42x} = \sqrt{2 - (-23)} = \sqrt{2 + 23} = \sqrt{25} = 5$$

Hence, the correct answer is Option B

Question 57

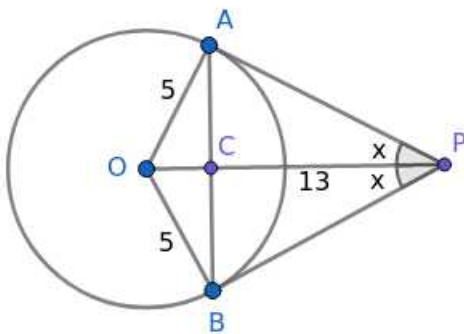


PA and PB are tangents to the circle and O is the centre of the circle. The radius is 5 cm and PO is 13 cm. If the area of the triangle PAB is M, then the value of $\sqrt{\frac{M}{15}}$ is:

- A $\frac{12}{13}$
- B $\frac{24}{13}$
- C $\sqrt{\frac{12}{13}}$
- D $\sqrt{\frac{24}{13}}$

Answer: B

Explanation:



In $\triangle OAP$,

$$OA^2 + AP^2 = OP^2$$

$$\Rightarrow 5^2 + AP^2 = 13^2$$

$$\Rightarrow 25 + AP^2 = 169$$

$$\Rightarrow AP^2 = 144$$

$$\Rightarrow AP = 12 \text{ cm}$$

Similarly, $BP = 12 \text{ cm}$

In $\triangle OAP$,

$$\sin x = \frac{OA}{OP}$$

$$\sin x = \frac{5}{13}$$

$$\cos x = \frac{AP}{OP}$$

$$\cos x = \frac{12}{13}$$

In $\triangle ACP$,

$$\sin x = \frac{AC}{AP}$$

$$\Rightarrow \frac{5}{13} = \frac{AC}{12}$$

$$\Rightarrow AC = \frac{60}{13}$$

Similarly, $BC = \frac{60}{13}$

$$\cos x = \frac{CP}{AP}$$

$$\Rightarrow \frac{12}{13} = \frac{CP}{12}$$

$$\Rightarrow CP = \frac{144}{13}$$

Area of the triangle PAB = M

$$\Rightarrow \frac{1}{2} \times AB \times CP = M$$

$$\Rightarrow \frac{1}{2} \times (AC+BC) \times CP = M$$

$$\Rightarrow \frac{1}{2} \times \left(\frac{60}{13} + \frac{60}{13} \right) \times \frac{144}{13} = M$$

$$\Rightarrow \frac{1}{2} \times \frac{120}{13} \times \frac{144}{13} = M$$

$$\Rightarrow M = \frac{60}{13} \times \frac{144}{13}$$

$$\therefore \sqrt{\frac{M}{15}} = \sqrt{\frac{60 \times 144}{169 \times 15}} = \sqrt{\frac{4 \times 144}{169}} = \frac{24}{13}$$

Hence, the correct answer is Option B

SSC CHSL Study Material

Question 58

The following graph shows the profit (in crore ₹) earned by a company in the years from 2012 to 2019.



The percentage increase in the profit from the previous year, is greatest in the year:

- A 2017
- B 2015
- C 2018
- D 2013

Answer: D

Explanation:

From the graph,

Percentage increase in the profit in 2013 from the previous year = 26.88%

Percentage increase in the profit in 2015 from the previous year = 22.96%

Percentage increase in the profit in 2017 from the previous year = 12.64%

Percentage increase in the profit in 2018 from the previous year = 17.46%

∴ Percentage increase in the profit in 2013 from the previous year is highest

Hence, the correct answer is Option D

Question 59

If $a \sin A + b \cos A = c$, then $a \cos A - b \sin A$ is equal to:

A $\sqrt{a^2 + b^2 - c^2}$

B $\sqrt{a^2 + b^2 + c^2}$

C $\sqrt{a^2 - b^2 + c^2}$

D $\sqrt{a^2 - b^2 - c^2}$

Answer: A

Explanation:

$$a \sin A + b \cos A = c$$

$$\Rightarrow (a \sin A + b \cos A)^2 = c^2$$

$$\Rightarrow a^2 \sin^2 A + b^2 \cos^2 A + 2ab \sin A \cos A = c^2$$

$$\Rightarrow a^2 \sin^2 A + b^2 (1 - \sin^2 A) + 2ab \sin A \cos A = c^2$$

$$\Rightarrow (a^2 - b^2) \sin^2 A + b^2 + 2ab \sin A \cos A = c^2$$

$$\Rightarrow (a^2 - b^2) \sin^2 A + 2ab \sin A \cos A = c^2 - b^2 \dots\dots\dots(1)$$

$$\text{Let } a \cos A - b \sin A = x$$

$$\Rightarrow (a \cos A - b \sin A)^2 = x^2$$

$$\Rightarrow a^2 \cos^2 A + b^2 \sin^2 A - 2ab \cos A \sin A = x^2$$

$$\Rightarrow a^2 (1 - \sin^2 A) + b^2 \sin^2 A - 2ab \cos A \sin A = x^2$$

$$\Rightarrow a^2 + (b^2 - a^2) \sin^2 A - 2ab \cos A \sin A = x^2$$

$$\Rightarrow a^2 - [(a^2 - b^2) \sin^2 A + 2ab \sin A \cos A] = x^2$$

$$\Rightarrow a^2 - [c^2 - b^2] = x^2$$

$$\Rightarrow a^2 - c^2 + b^2 = x^2$$

$$\Rightarrow x = \sqrt{a^2 + b^2 - c^2}$$

$$\therefore a \cos A - b \sin A = \sqrt{a^2 + b^2 - c^2}$$

Hence, the correct answer is Option A

Question 60

If the length of a rectangle is increased by 12% and the breadth is decreased by 8%, the net effect on the area is:

A decrease by 2.6%

B increase by 3.04%

C increase by 2.6%

D decrease by 3.04%

Answer: B

Explanation:

Let the length of the rectangle = l

Breadth of the rectangle = b

Area of the rectangle = lb

Length of the rectangle when increased by 12% = $\frac{112}{100}l = \frac{28}{25}l$

Breadth of the rectangle when decreased by 8% = $\frac{92}{100}b = \frac{23}{25}b$

New Area of the rectangle = $\frac{28}{25}l \times \frac{23}{25}b = \frac{644}{625}lb$

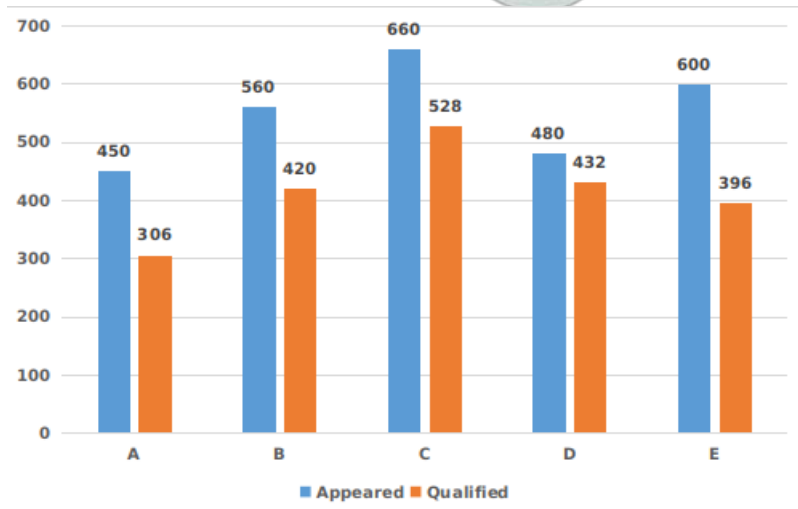
\therefore Percentage increase in Area = $\frac{\frac{644}{625}lb - lb}{lb} \times 100 = \frac{19}{625} \times 100 = 3.04\%$

Hence, the correct answer is Option B

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Question 61

The following graph shows the data of the number of candidates that appeared and qualified for a competitive exam from the colleges A, B, C, D, E.



Based on the information, the difference between the percentage of students that qualified, from the colleges B and D is:

- A 18
- B 15
- C 12
- D 20

Answer: B

Explanation:

From the graph,

Percentage of students qualified from college B = $\frac{420}{560} \times 100 = \frac{6}{8} \times 100 = 75\%$

Percentage of students qualified from college D = $\frac{432}{480} \times 100 = \frac{108}{120} \times 100 = 90\%$

\therefore Required difference = $90 - 75 = 15$

Hence, the correct answer is Option B

Question 62

In a 56 liters mixture of milk and water, the ratio of milk to water is 5 : 2. In order to make the ratio of milk to water 7 : 2, some quantity of milk is to be added to the mixture. The quantity of the milk present in the new mixture will be:

- A 16 liters
- B 40 liters
- C 48 liters
- D 56 liters

Answer: D

Explanation:

Given,

Ratio of milk and water in a 56 liters of mixture = 5 : 2

$$\Rightarrow \text{Quantity of milk in 56 liters mixture} = \frac{5}{5+2} \times 56 = 40$$

$$\Rightarrow \text{Quantity of water in 56 liters mixture} = \frac{2}{5+2} \times 56 = 16$$

Let the quantity of milk added to make the mixture in the ratio 7 : 2 = a

$$\Rightarrow \frac{40+a}{16} = \frac{7}{2}$$

$$\Rightarrow 40 + a = 56$$

$$\Rightarrow a = 16$$

\therefore Quantity of milk present in new mixture = $40+a = 40+16 = 56$ liters

Hence, the correct answer is Option D

Question 63

If the value of $\frac{3x\sqrt{y}+2y\sqrt{x}}{3x\sqrt{y}-2y\sqrt{x}} - \frac{3x\sqrt{y}-2y\sqrt{x}}{3x\sqrt{y}+2y\sqrt{x}}$ is same as that of $\sqrt{x}\sqrt{y}$, then which of the following relations between x and y is correct?

- A $9x + 4y = 36$
- B $9x + 4y = 24$
- C $9x - 4y = 36$
- D $9x - 4y = 24$

Answer: D

Explanation:

Given,
$$\frac{3x\sqrt{y}+2y\sqrt{x}}{3x\sqrt{y}-2y\sqrt{x}} - \frac{3x\sqrt{y}-2y\sqrt{x}}{3x\sqrt{y}+2y\sqrt{x}} = \sqrt{x}\sqrt{y}$$

$$\Rightarrow \frac{(3x\sqrt{y}+2y\sqrt{x})^2 - (3x\sqrt{y}-2y\sqrt{x})^2}{(3x\sqrt{y})^2 - (2y\sqrt{x})^2} = \sqrt{x}\sqrt{y}$$

$$\Rightarrow \frac{9x^2y+4y^2x+12xy\sqrt{x}\sqrt{y} - [9x^2y+4y^2x-12xy\sqrt{x}\sqrt{y}]}{9x^2y-4y^2x} = \sqrt{x}\sqrt{y}$$

$$\Rightarrow \frac{24xy\sqrt{x}\sqrt{y}}{xy(9x-4y)} = \sqrt{x}\sqrt{y}$$

$$\Rightarrow \frac{24}{9x-4y} = 1$$

$$\Rightarrow 9x - 4y = 24$$

Hence, the correct answer is Option D

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Question 64

A man has ₹10,000. He lent a part of it at 15% simple interest and the remaining at 10% simple interest. The total interest he received after 5 years amounted to ₹6,500. The difference between the parts of the amounts he lent is:

- A ₹1,750
- B ₹2,500
- C ₹2,000
- D ₹1,500

Answer: C

Explanation:

Given,

Total Amount = ₹10,000

Let the amount lent at 15% = x

\Rightarrow Amount lent at 10% = $10000 - x$

Total interest he received after 5 years amounted to ₹6,500

$$\Rightarrow \frac{x \times 15 \times 5}{100} + \frac{(10000 - x) \times 10 \times 5}{100} = 6500$$

$$\Rightarrow \frac{3x}{4} + \frac{1}{2}(10000 - x) = 6500$$

$$\Rightarrow \frac{3x}{4} - \frac{x}{2} + 5000 = 6500$$

$$\Rightarrow \frac{3x - 2x}{4} = 6500 - 5000$$

$$\Rightarrow \frac{x}{4} = 1500$$

$$\Rightarrow x = 6000$$

\therefore Difference between the parts of amounts he lent = $x - (10000 - x) = 6000 - (10000 - 6000) = ₹ 2000$

Hence, the correct answer is Option C

Question 65

If one side of a triangle is 7 with its perimeter equal to 18, and area equal to $\sqrt{108}$, then the other two sides are:

- A 3.5 and 7.5
- B 6 and 5
- C 7 and 4
- D 3 and 8

Answer: D

Explanation:

Given,

One side of the triangle (a) = 7

Let the other two sides of the triangle are b and c

Perimeter of the triangle = 18

$$\Rightarrow a+b+c = 18$$

$$\Rightarrow 7+b+c = 18$$

$$\Rightarrow b+c = 11 \dots\dots\dots(1)$$

$$\text{Semi perimeter of the triangle (s)} = \frac{18}{2} = 9$$

$$\text{Area of the triangle} = \sqrt{108}$$

$$\Rightarrow \sqrt{s(s-a)(s-b)(s-c)} = \sqrt{108}$$

$$\Rightarrow \sqrt{9(9-7)(9-b)(9-c)} = \sqrt{108}$$

$$\Rightarrow 9(2)(9-b)(9-c) = 108$$

$$\Rightarrow (9-b)(9-c) = 6$$

$$\Rightarrow 81 - 9c - 9b + bc = 6$$

$$\Rightarrow 81 - 9(b+c) + bc = 6$$

$$\Rightarrow 81 - 9(11) + bc = 6$$

$$\Rightarrow 81 - 99 + bc = 6$$

$$\Rightarrow bc = 6 + 99 - 81$$

$$\Rightarrow bc = 24$$

$$\Rightarrow c = \frac{24}{b}$$

Substituting $c = \frac{24}{b}$ in equation (1)

$$b + \frac{24}{b} = 11$$

$$\Rightarrow b^2 + 24 = 11b$$

$$\Rightarrow b^2 - 11b + 24 = 0$$

$$\Rightarrow b^2 - 8b - 3b + 24 = 0$$

$$\Rightarrow b(b-8) - 3(b-8) = 0$$

$$\Rightarrow (b-8)(b-3) = 0$$

$$\Rightarrow b = 8 \text{ or } b = 3$$

$$\text{when } b = 8, c = \frac{24}{8} = 3$$

$$\text{when } b = 3, c = \frac{24}{3} = 8$$

\therefore The other two sides of the triangle are 3 and 8

Hence, the correct answer is Option D

Question 66

$\frac{1-\tan A}{1+\tan A} = \frac{\tan 3^\circ \tan 15^\circ \tan 30^\circ \tan 75^\circ \tan 87^\circ}{\tan 27^\circ \tan 39^\circ \tan 51^\circ \tan 60^\circ \tan 63^\circ}$, then the value of $\cot A$ is :

A 2

B 1

C 4

D 3

Answer: A

Explanation:

$$\frac{1-\tan A}{1+\tan A} = \frac{\tan 3^\circ \tan 15^\circ \tan 30^\circ \tan 75^\circ \tan 87^\circ}{\tan 27^\circ \tan 39^\circ \tan 51^\circ \tan 60^\circ \tan 63^\circ}$$

$$\Rightarrow \frac{1 - \tan A}{1 + \tan A} = \frac{\tan 3^\circ \tan 15^\circ \tan 30^\circ \tan(90-15)^\circ \tan(90-3)^\circ}{\tan 27^\circ \tan 39^\circ \tan(90-39)^\circ \tan 60^\circ \tan(90-27)^\circ}$$

$$\Rightarrow \frac{1 - \tan A}{1 + \tan A} = \frac{\tan 3^\circ \tan 15^\circ \tan 30^\circ \cot 15^\circ \cot 3^\circ}{\tan 27^\circ \tan 39^\circ \cot 39^\circ \tan 60^\circ \cot 27^\circ}$$

$$\Rightarrow \frac{1 - \tan A}{1 + \tan A} = \frac{\tan 30^\circ}{\tan 60^\circ}$$

$$\Rightarrow \frac{1 - \tan A}{1 + \tan A} = \frac{1}{\sqrt{3}}$$

$$\Rightarrow \frac{1 - \tan A}{1 + \tan A} = \frac{1}{3}$$

$$\Rightarrow 3 - 3 \tan A = 1 + \tan A$$

$$\Rightarrow 4 \tan A = 2$$

$$\Rightarrow \tan A = \frac{1}{2}$$

$$\Rightarrow \cot A = 2$$

Hence, the correct answer is Option A

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Question 67

If x is the square of the number when $\left(\frac{2}{5} \text{ of } 6\frac{1}{4} \div \frac{3}{7}\right)$ of $1\frac{2}{7}$ is divided by $11\frac{1}{4}$, then the value of $81x$ is:

A 16

B 4

C 36

D 9

Answer: C

Explanation:

Given,

$$x = \left(\frac{\left(\frac{2}{5} \text{ of } 6\frac{1}{4} \div \frac{3}{7}\right) \text{ of } 1\frac{2}{7}}{11\frac{1}{4}} \right)^2$$

$$x = \left(\frac{\left(\frac{2}{5} \text{ of } \frac{25}{4} \div \frac{3}{7}\right) \text{ of } \frac{9}{7}}{\frac{45}{4}} \right)^2$$

$$x = \left(\frac{\left(\frac{5}{2} \div \frac{3}{7}\right) \text{ of } \frac{9}{7}}{\frac{45}{4}} \right)^2$$

$$x = \left(\frac{\left(\frac{5}{2} \times \frac{7}{3}\right) \text{ of } \frac{9}{7}}{\frac{45}{4}} \right)^2$$

$$x = \left(\frac{\frac{35}{6} \text{ of } \frac{9}{7}}{\frac{45}{4}} \right)^2$$

$$x = \left(\frac{\frac{35}{6} \times \frac{9}{7}}{\frac{45}{4}} \right)^2$$

$$x = \left(\frac{\frac{15}{2}}{\frac{45}{4}} \right)^2$$

$$x = \left(\frac{2}{3} \right)^2$$

$$\therefore 81x = 81 \times \frac{4}{9} = 36$$

Hence, the correct answer is Option C

Question 68

Ravi starts for his school from his house on his cycle at 8:20 a.m. If he runs his cycle at a speed of 10 km/h, he reaches his school 8 minutes late, and if he drives the cycle at a speed of 16 km/h, he reaches his school 10 minutes early. The school starts at:

- A 9:40 a.m.
- B 8:40 a.m.
- C 8:50 a.m.
- D 9:00 a.m.

Answer: D

Explanation:

Let the distance between Ravi's house and his school = d

$$\text{Time taken by him when he runs his cycle at a speed of } 10\text{km/h} = \frac{d}{10}$$

$$\text{Time taken by him when he drives his cycle at a speed of } 16\text{km/h} = \frac{d}{16}$$

According to the problem,

$$\frac{d}{10} - \frac{d}{16} = \frac{18}{60} \text{ hours}$$

$$\Rightarrow \frac{8d - 5d}{80} = \frac{18}{60}$$

$$\Rightarrow \frac{3d}{80} = \frac{18}{60}$$

$$\Rightarrow d = 8 \text{ km}$$

$$\text{Time taken by him when he runs his cycle at a speed of } 10\text{km/h} = \frac{8}{10} \text{ hour} = \frac{8}{10} \times 60 \text{ minutes} = 48 \text{ minutes}$$

$$\text{The time at which school starts} = 8:20 \text{ a.m.} + 48 \text{ minutes} - 8 \text{ minutes} = 8:20 + 40 \text{ minutes} = 9:00 \text{ a.m.}$$

Hence, the correct answer is Option D

Question 69

If $a\%$ of 240 is c and $c\%$ of a is 117.6, then the value of $a + c$ is:

- A 144
- B 260
- C 196
- D 238

Answer: D

Explanation:

Given,

$a\%$ of 240 is c

$$\Rightarrow \frac{a}{100} \times 240 = c$$

$$\Rightarrow c = \frac{240a}{100} \dots\dots\dots(1)$$

$c\%$ of a is 117.6

$$\Rightarrow \frac{c}{100} \times a = 117.6$$

$$\Rightarrow c = \frac{11760}{a}$$

$$\Rightarrow \frac{240a}{100} = \frac{11760}{a} \quad [\text{From (1)}]$$

$$\Rightarrow a^2 = 4900$$

$$\Rightarrow a = 70$$

$$\therefore a + c = a + \frac{240a}{100} = 70 + \frac{240 \times 70}{100} = 70 + 168 = 238$$

Hence, the correct answer is Option D

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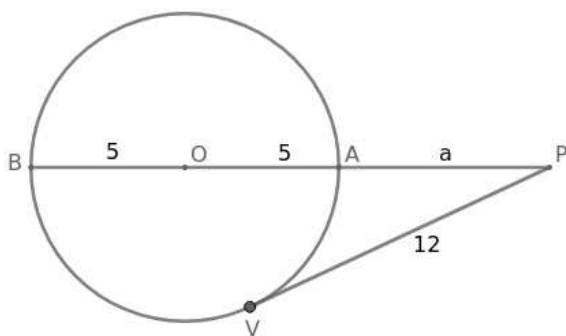
Question 70

A secant is drawn from a point P to a circle so that it meets the circle first at A, then goes through the centre, and leaves the circle at B. If the length of the tangent from P to the circle is 12 cm, and the radius of the circle is 5 cm, then the distance from P to A is:

- A 10 cm
- B 8 cm
- C 12 cm
- D 18 cm

Answer: B

Explanation:



Given,

Radius of the circle = 5 cm

Let the distance from P to A = a

PB is the secant and PV is the tangent to the circle from external point P

$$\Rightarrow PV^2 = PA \cdot PB$$

$$\Rightarrow 12^2 = PA(PA + AB)$$

$$\Rightarrow 144 = a(a + 10)$$

$$\Rightarrow 144 = a^2 + 10a$$

$$\Rightarrow a^2 + 10a - 144 = 0$$

$$\Rightarrow a^2 + 18a - 8a - 144 = 0$$

$$\Rightarrow a(a + 18) - 8(a + 18) = 0$$

$$\Rightarrow (a + 18)(a - 8) = 0$$

$$\Rightarrow a + 18 = 0 \text{ or } a - 8 = 0$$

$$\Rightarrow a = -18 \text{ or } a = 8$$

a cannot be negative

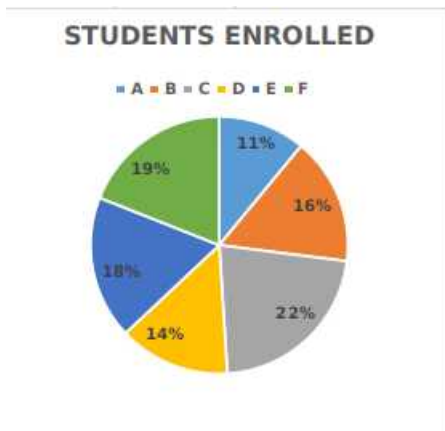
$$\Rightarrow a = 8 \text{ cm}$$

\therefore Distance from P to A = 8 cm

Hence, the correct answer is Option B

Question 71

The given pie chart shows the percentage of students enrolled into the colleges A, B, C, D, E and F in a city, and the table shows the ratio of boys to girls in the college.



A	9:04
B	5:09
C	3:04
D	7:02
E	1:04
F	3:02

Based on this information, if the total number of students is 9800, then the number of girls in the college B is:

- A 504
- B 560
- C 280
- D 1008

Answer: D

Explanation:

From the data,

$$\text{Number of students in college B} = \frac{16}{100} \times 9800 = 1568$$

$$\text{Ratio of boys to girls in college B} = 5 : 9$$

$$\therefore \text{Number of girls in college B} = \frac{9}{5+9} \times 1568 = \frac{9}{14} \times 1568 = 9 \times 112 = 1008$$

Hence, the correct answer is Option D

Question 72

A shopkeeper pays 12% of the cost price as tax while purchasing an item whose cost is ₹ 500. He wants to earn a profit of 20% after giving a discount of 16% on the marked price. So, the marked price should be:

- A ₹800
- B ₹780
- C ₹960
- D ₹840

Answer: A

Explanation:

Given,

$$\text{Cost of the item} = ₹ 500$$

Tax% = 12%

Cost price of the shopkeeper = $500 + \frac{12}{100} \times 500 = ₹ 560$

Profit% = 20%

Selling price of the item = $\frac{120}{100} \times 560 = ₹ 672$

Let the Marked price = M

Discount% = 16%

$$\Rightarrow \frac{84}{100} \times M = 672$$

$$\Rightarrow M = 800$$

∴ Marked price = ₹ 800

Hence, the correct answer is Option A

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Question 73

If $\tan a = \frac{2}{\sqrt{13}}$, then the value of $\frac{\operatorname{cosec}^2 a + 2 \sec^2 a}{\operatorname{cosec}^2 a - 3 \sec^2 a}$ is

A 16

B 32

C 14

D 21

Answer: D

Explanation:

Given, $\tan a = \frac{2}{\sqrt{13}}$

$$\frac{\operatorname{cosec}^2 a + 2 \sec^2 a}{\operatorname{cosec}^2 a - 3 \sec^2 a} = \frac{\frac{1}{\sin^2 a} + \frac{2}{\cos^2 a}}{\frac{1}{\sin^2 a} - \frac{3}{\cos^2 a}}$$

$$= \frac{\cos^2 a + 2 \sin^2 a}{\cos^2 a - 3 \sin^2 a}$$

$$= \frac{\cos^2 a \left(1 + \frac{2 \sin^2 a}{\cos^2 a}\right)}{\cos^2 a \left(1 - \frac{3 \sin^2 a}{\cos^2 a}\right)}$$

$$= \frac{1 + 2 \tan^2 a}{1 - 3 \tan^2 a}$$

$$= \frac{1 + 2 \left(\frac{2}{\sqrt{13}}\right)^2}{1 - 3 \left(\frac{2}{\sqrt{13}}\right)^2}$$

$$= \frac{1 + \frac{8}{13}}{1 - \frac{12}{13}}$$

$$= \frac{13 + 8}{13 - 12}$$

$$= 21$$

Hence, the correct answer is Option D

Question 74

Which of the following numbers is divisible by 2, 5 and 10?

- A 7,20,345
- B 149
- C 19,400
- D 1,25,372

Answer: C

Explanation:

From the options,

7,20,345 is not divisible by 2 because the units place is not an even number

149 is not divisible by 2 because the units place is not an even number

1,25,372 is not divisible by 10 because the units place is not zero

19,400 is divisible by 2,5,10 as it is even number and the units place is zero

Hence, the correct answer is Option C

Question 75

Several students have taken an exam. There was an error in the answer key which affected the marks of 48 students, and their average marks reduced from 78 to 66. The average of remaining students increased by 3.5 marks. This resulted the reduction of the average of all students by 4.5 marks. The number of students that attended the exam is:

- A 96
- B 84
- C 100
- D 93

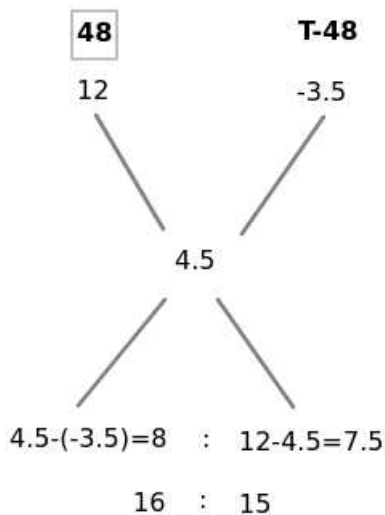
Answer: D

Explanation:

Let the total number of students = T

Number of students whose average is reduced = 48

Number of students whose average is increased = T-48



Using Alligation and Mixture rule,

Ratio 48 and T-48 = 16 : 15

$$\Rightarrow T - 48 = \frac{48}{15}$$

$$\Rightarrow T - 48 = 45$$

$$\Rightarrow T = 93$$

∴ Total number of students = 93

Hence, the correct answer is Option D

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For the following questions answer them individually

Question 76

Which of the following cities hosted the third edition of the Khelo India Youth Games?

- A Panaji
- B Cuttack
- C Guwahati
- D Patna

Answer: C

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Question 77

Who among the following was conferred with the 'Dadasaheb Phalke Award 2019'?

- A Kabir Bedi
- B Anupam Kher
- C Amitabh Bachchan
- D Dilip Kumar

Answer: C

Question 78

Who among the following won ICC's '2019 Sir Garfield Sobers Trophy'?

- A Virat Kohli
- B Ben Stokes
- C Rohit Sharma
- D Ken Williamson

Answer: B

Question 79

In the context of memory size in computer data storage, one gigabyte is equal to how many megabytes?

- A 1012 MB
- B 32 MB
- C 64 MB
- D 1024 MB

Answer: D

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Question 80

Who was the Chairman of the Drafting Committee of the Constituent Assembly of India?

- A BR Ambedkar
- B Jawaharlal Nehru
- C Sardar Vallabhbhai Patel
- D Rajendra Prasad

Answer: A

Question 81

A hard disk is an example of which type of data storage device?

- A Secondary Storage
- B Tertiary Storage
- C Primary Storage
- D Offline Storage

Answer: A

Question 82

Who among the following was appointed as the Deputy Governor of Reserve Bank of India (RBI) in January 2020?

- A NS Vishwanathan
- B BP Kanungo
- C Michael Debabrata Patra
- D Viral Acharya

Answer: C

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Question 83

What was India's overall rank in the medals tally in the 23rd edition of the Asian Athletics Championship?

- A Fourth
- B Fifth
- C First
- D Third

Answer: A

Question 84

The rhythmic rise and fall of ocean water twice in a day is called _____.

- A Wave
- B Current
- C Tsunami
- D Tide

Answer: D

Question 85

Who among the following won the 'Women's World Rapid Chess Championship 2019'?

- A Lei Tingjie
- B Dronavalli Harika
- C Sopiko Khukhashvili
- D Koneru Humpy

Answer: D

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Question 86

Which of the following articles of the Constitution of India has a provision for financial emergency?

- A Article 365
- B Article 330
- C Article 356
- D Article 360

Answer: D

Question 87

Which of the following is NOT a credit rating agency in India?

- A RBI
- B CRISIL
- C CARE
- D ICRA

Answer: A

Question 88

Who among the following took charge as India's first Chief of Defence Staff (CDS) on 1 January 2020?

- A Navy Chief Admiral Karambir Singh
- B General Manoj Mukund Naravane
- C General Bipin Rawat
- D Air Chief Marshal Rakesh Kumar Singh Bhadauria

Answer: C

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Question 89

The 'Kathakali' dance is a harmonious combination of _____ forms of fine art.

- A five
- B seven
- C four
- D six

Answer: A

Question 90

Which of the following teams won the 129th edition of Durand Cup in August 2019?

- A East Bengal
- B Mohammedan Sporting Club
- C Mohun Bagan
- D Gokulam Kerala

Answer: D

Question 91

Under which of the following schemes has the Government of India set up a new institution for development and refinancing activities related to micro units?

- A Pradhan Mantri MUDRA Yojana

- B Pradhan Mantri Sadak Yojana
- C Pradhan Mantri Yojna
- D Pradhan Mantri MNREGA Yojana

Answer: A

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Question 92

Tummalapalle, believed to have one of the largest uranium reserves in the world, is situated in which of the following states?

- A Tamil Nadu
- B Karnataka
- C Telangana
- D Andhra Pradesh

Answer: D

Question 93

In which of the following years did India come under the direct rule of the British crown?

- A 1888
- B 1878
- C 1858
- D 1868

Answer: C

Question 94

_____ is the term used for breeding of fish in specially constructed tanks and ponds.

- A Horticulture
- B Agriculture
- C Pisciculture
- D Viticulture

Answer: C

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Question 95

Who among the following scientists invented dynamite?

- A Rudolf Diesel
- B Benjamin Franklin

- C Alfred Nobel
- D Thomas Alva Edison

Answer: C

Question 96

Which of the following is a disease caused by protozoa?

- A Small Pox
- B AIDS
- C Kala azar
- D Rabies

Answer: C

Question 97

Which is the largest uranium producing country in the world?

- A Uzbekistan
- B USA
- C India
- D Kazakhstan

Answer: D

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Question 98

'Gurpurab' is the most important and sacred festival of the Sikh community. In which of the following months of the Hindu calendar is it celebrated?

- A Jyaistha
- B Kartik
- C Shravana
- D Vaisakha

Answer: B

Question 99

Which of the following statements is correct?

- A The Governor has no power to grant pardon in respect of punishment or sentence inflicted by Court Martial.
- B The President has no power to grant pardon in respect of punishment or sentence inflicted by Court Martial.
- C The Governor has no power to suspend, remit or commute a sentence of death.
- D The Governor has power to grant pardon in case of a death sentence.

Answer: D

Question 100

Which of the following scientists was awarded a Nobel Prize for his services to Theoretical Physics, and especially for his discovery of the Law of the Photoelectric Effect?

- A Ernest Rutherford
- B Thomas Edison
- C Nikola Tesla
- D Albert Einstein

Answer: D

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