

Directions of Test

Test Name	Actual CAT 2020 Slot I	Total Questions	76	Total Time	120 Mins
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Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	26	0:40(h:m)	3	1/3
DI & Reasoning	24	0:40(h:m)	3	1/3
Quantitative Ability	26	0:40(h:m)	3	1/3

Section : Verbal Ability

QNo:- 1 ,Correct Answer:- D

Explanation:-

Option A is supported by lines "In the late 1960s, while studying the northern-elephant-seal population along the coasts of Mexico and California, Burney Le Boeuf and his colleagues couldn't help but notice that the threat calls of males at some sites sounded different from those of males at other sites. . . . **That was the first time dialects were documented in a nonhuman mammal.**

All the northern elephant seals that exist today are descendants of the small herd that survived on Isla Guadalupe [after the near extinction of the species in the nineteenth century]. As that tiny population grew, northern elephant seals started to recolonize former breeding locations. **It was precisely on the more recently colonized islands where Le Boeuf found that the tempos of the male vocal displays showed stronger differences** to the ones from Isla Guadalupe, the founder colony."

Had the seals not become nearly extinct and had the descendants of the surviving herd at Isla Guadalupe not spread out and gotten isolated in the first place, the seals wouldn't have exhibited dialects.. Also the options takes this as a possible cause by use of words 'might' "male northern elephant seals **might** not have exhibited dialects had they not become nearly extinct in the nineteenth century."

OPtion B is supported by lines "But the average pulse rate was changing. Immigration could have been responsible for this increase, as in the early 1970s, **43 percent of the males on Año Nuevo had come from southern rookeries that had a faster pulse rate.** This led Le Boeuf and his collaborator, Lewis Petrinovich, to deduce that the dialects were, perhaps, a result of isolation over time, after the breeding sites had been recolonized. For instance, **the first settlers of Año Nuevo could have had, by chance, calls with low pulse rates** As the population continued to expand and the islands kept on receiving immigrants from the original population, **the calls in all locations would have eventually regressed to the average pulse rate of the founder colony.**" (The last part - regression of calls in all locations -implies disappearance of dialects)

Option C is supported by 1st lines of para 4 "At the individual level, the pulse of the calls stayed the same: A male would maintain his vocal signature throughout his lifetime."

Option D contradicts the lines "As the population continued to expand and the islands kept on receiving immigrants from the original population, **the calls in all locations would have eventually regressed to the average pulse rate of the founder colony.**"

QNo:- 2 ,Correct Answer:- B

Explanation:-

Refer lines "As the population continued to expand and the islands kept on receiving immigrants from the original population, the calls in all locations would have eventually regressed to the average pulse rate of the founder colony" Option 2 talks about situation where immigrants tempo changed to become that of resident males which would have allowed the distinctive tempo of island to continue and not become extinct
Option 4 talks about opposite of option 2 hence is incorrect
Option 1 is incorrect as migration still happened from other islands even if didn't happen from one island so no migration from the other island has no effect here

QNo:- 3 ,Correct Answer:- A

Explanation:-

Option 1 is correct and 2 and 3 incorrect

Refer last lines of passage "Yet there are other differences between the males from the late 1960s and their great-great-grandsons: Modern males exhibit more individual diversity, and their calls are more complex. While 50 years ago the drumming pattern was quite simple and the dialects denoted just a change in tempo, Casey explained, the calls recorded today have more complex structures, sometimes featuring doublets or triplets..."

Option 4 is incorrect as it doesn't answer the Q i.e. sum up the overall history

QNo:- 4 ,Correct Answer:- C

Explanation:-

Option 3 Refer following lines of penultimate para "This led Le Boeuf and his collaborator, Lewis Petrinovich, to deduce that the dialects were, perhaps, a result of isolation over time, after the breeding sites had been recolonized. For instance, the first settlers of Año Nuevo could have had, by chance, calls with low pulse rates . At other sites, where the scientists found faster pulse rates, the opposite would have happened—seals with faster rates would have happened to arrive first."

Option 1 though factually correct doesn't answer the Q – why the call pulse rate of male northern elephant seals in the southern rookeries was faster

QNo:- 5 ,Correct Answer:- D

Explanation:-

Q is which if false supports arguments in the passage.

Option 4 is opposite of what's stated in the passage Hence is the best option here Refer lines Of first para "Nouns and verbs are the two indispensable parts of writing."

And of last para "Take any noun, put it with any verb, and you have a sentence. It never fails."

Option 2 neither supports nor goes against the passage as women writers weren't talked about in passage.

Option 3 is true hence incorrect option here. Refer lines of para 3 ""It is an old observation," he writes, "that the best writers sometimes disregard the rules of rhetoric."

QNo:- 6 ,Correct Answer:- B

Explanation:- Answer would be an option which is similar. Hence the answer clearly is 2

Take any noun, put it with any verb, and you have a sentence.

Take any vegetable, put some spices in it, and you have a dish.

Options 1,3,4 are incorrect as nothing was added unlike in original stt

QNo:- 7 ,Correct Answer:- A

Explanation:- 2 and 4 are incorrect as author is not against grammar rules "Unless he is certain of doing well, [the writer] will probably do best to follow the rules."

3 is incorrect as author isn't against rhetoric

QNo:- 8 ,Correct Answer:- D

Explanation:-

Options 1 and 2 are supported by lines "Must you write complete sentences each time, every time? Perish the thought. If your work consists only of fragments and floating clauses, the Grammar Police aren't going to come and take you away. Even William Strunk, that Mussolini of rhetoric, recognized the delicious pliability of language. "It is an old observation," he writes, "that the best writers sometimes disregard the rules of rhetoric."

Option 3 is supported by line "since a sentence is, by definition, a group of words containing a subject (noun) and a predicate (verb);"

QNo:- 9 ,Correct Answer:- C

Explanation:- Main focus of the passage is grammar Hence 3rd is the best option

QNo:- 10 ,Correct Answer:- D

Explanation:-

Option 4 Throughout the passage and in lines of penultimate para "It differs from state socialism in opposing the concept of any central authority." And Refer line 1 "The word 'anarchy' comes from the Greek anarkhia, meaning contrary to authority or without a ruler,"

Option 2 is incorrect refer lines of last para "There are, unsurprisingly, several traditions of individualist anarchism, one of them deriving from the 'conscious egoism' of the German writer Max Stirner (1806–56), and another from a remarkable series of 19th-century American figures"

QNo:- 11 ,Correct Answer:- D

Explanation:- Options 1 and 3 are easily eliminated as they leave out anarchism

Option 2 is eliminated because of word Betrayal which can't be as easily related as 'individual' in 4

QNo:- 12 ,Correct Answer:- A

Explanation:- Refer last para

QNo:- 13 ,Correct Answer:- C

Explanation:-

Option 3

Option 4 is supported by last lines of para 3

Option 2 is supported by last para

Option 1 can be inferred from lines "**anarchism arose** not only as an explanation of the gulf between the rich and the poor in any community, and of the reason why the poor have been obliged to fight for their share of a common inheritance, but **as a radical answer to the question 'What went wrong?' that followed the ultimate outcome of the French Revolution"**

QNo:- 14 ,Correct Answer:- B

Explanation:- Option 2 can be inferred from para 2 and 3

QNo:- 15 ,Correct Answer:- B

Explanation:- Refer line 1 of last para "In actuality, our own currency system today has some similarities even as it is changing in front of our eyes"

QNo:- 16 ,Correct Answer:- C

Explanation:-

Refer to following lines of paras 3 and 4

"But textiles had some advantages over coins. For a start, textile production was widespread and there were fewer problems with the supply of textiles. For large transactions, textiles weighed less than their equivalent in coins since a string of coins . . . could weigh as much as 4 kg. Furthermore, the dimensions of a bolt of silk held remarkably steady from the third to the tenth century: 56 cm wide and 12 m long . . . The values of different textiles were also more stable than the fluctuating values of coins . . .

The government also required the use of textiles for large transactions. Coins, on the other hand, were better suited for smaller transactions, and possibly, given the costs of transporting coins, for a more local usage. Grain, because it rotted easily, was not used nearly as much as coins and textiles, but taxpayers were required to pay grain to the government as a share of their annual tax obligations, and official salaries were expressed in weights of grain. . . ."

QNo:- 17 ,Correct Answer:- A

Explanation:-

Refer lines "Stained, faded and torn bolts of textiles had less value than a brand new bolt. Furthermore, a full bolt had a particular value. If consumers cut textiles into smaller pieces to buy or sell something worth less than a full bolt, that, too, greatly lessened the value of the textiles".

QNo:- 18 ,Correct Answer:- D

Explanation:-

Refer following line of last para "In actuality, our own currency system today has some similarities"

Option 2 is incorrect as grains, though they rotted easily, were used as currency

Option 3 is incorrect Refer following line of penultimate para 'The government also required the use of textiles for large transactions.'

QNo:- 19 ,Correct Answer:- 3

Explanation:- SR 1542

1-5 are linked by 'more specifically'

5-4 this realization' in 4 refers to "**the literary canon is androcentric**" in 5

2 closes the para by giving an example

3 though looks related doesn't fit into the para

QNo:- 20 ,Correct Answer:- A

Explanation:-

Option 2 takes a positive tone while para calls the expectations from forensic phonetics unrealistic

Option 3 is incorrect as it leaves out that the expectations from forensic phonetics unrealistic

Option 4 leaves out the part where judges have unrealistic expectations because of movies and TV series

QNo:- 21 ,Correct Answer:- 3124

Explanation:- 3 is the most generic stt so comes first.

3-12 'Tensions and sometimes conflict **remain an issue**' in 1 exemplifies 'continuity in 3'

And 'China's rise' exemplifies 'profound changes' in 3

1-4 States from outside take interest because of "China's rise" in 1

QNo:- 22 ,Correct Answer:- 1432

Explanation:-

1 is the most generic stt so comes first

1-4 4 explains how significance can be understood - by probing beneath the narrative of verbatim

4-3 when tales are probed by method stated in 4, Selected tales reveal that they deal with a form of spiritual conflict
3-2 are linked by Shamans introduced in 3

QNo:- 23 ,Correct Answer:- C

Explanation:- Option 1 captures only 1st lines of the para

Option 2 talks about immutable but leaves out heredity

Option 4 is factually incorrect as biologists aren't questioning "ways in which that is inherited."

QNo:- 24 ,Correct Answer:- A

Explanation:- Option 2 talks only of politics leaves out economics

Option 3 is more generic as compared to option 1. Option 1 correctly captures "lower political and economic heterogeneity" instead of just **changing**_internal structure and "emerging multi-polar world" instead of "**changing** world order" in 3

Option 4 is too generic esp when compared to option 1. Option 1 talks of "emerging multi-polar world" instead of "**changing**_world order" in option 4. Also, "a united Europe" gives an impression that complete Europe has united which is an inference not warranted by the para

QNo:- 25 ,Correct Answer:- 3

Explanation:- 3 talks about spirit world which isn't talked about in any other stt

4215

4-2 2 exemplifies how even in the most extreme circumstances slaves couldn't be muted

1-5 1 gives reason why slave owners obsessed over slave talk because Talk was the most common way for enslaved men and women to subvert the rules of their bondage, to gain more agency than they were supposed to have.

QNo:- 26 ,Correct Answer:- 1324

Explanation:- 1324

The stts are arranged chronologically

1 has 'dawn of civilization' as the time frame

1 is also the most generic stt and also introduces topic under discussion – poison/biological weapons

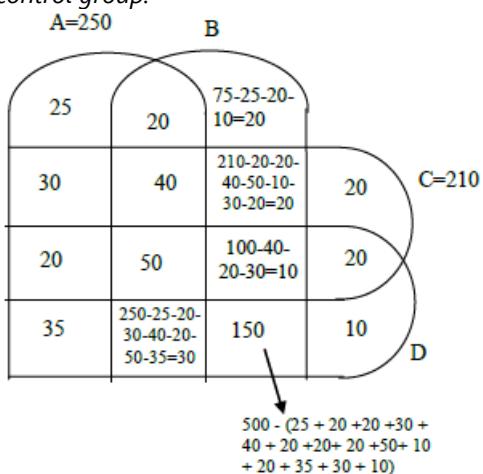
3-2 'these dangers' in 2 is referring to stt 3

2-4 2 and 4 are linked as both talk about nations working together through declarations in 2 and 4 talks about treaties

Section : DI & Reasoning

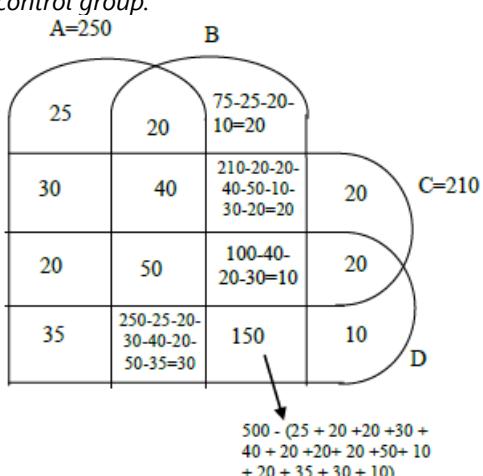
QNo:- 27 ,Correct Answer:- 340

Explanation:- From instruction we can say that these are 500 patients in treatment group and 500 patients in control group.



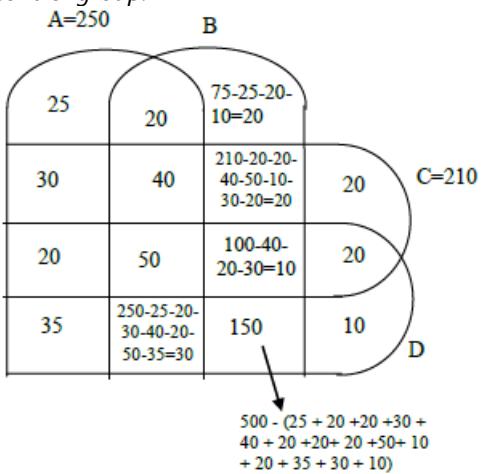
QNo:- 28 ,Correct Answer:- 10

Explanation:- From instruction we can say that these are 500 patients in treatment group and 500 patients in control group.



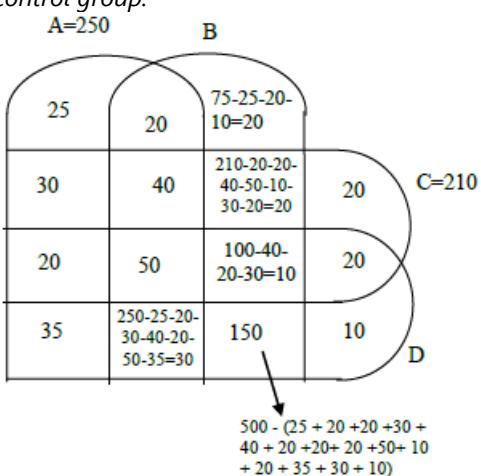
QNo:- 29 ,Correct Answer:- 150

Explanation:- From instruction we can say that these are 500 patients in treatment group and 500 patients in control group.



QNo:- 30 ,Correct Answer:- 325

Explanation:- From instruction we can say that these are 500 patients in treatment group and 500 patients in control group.



$$20 + 50 + 10 + 20 + 35 + 30 + 150 + 10 = 325$$

QNo:- 31 ,Correct Answer:- A

Explanation:- Given that each institute have contract with two vendors
 From I, II, and III facts given, we have

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
X	X	X	X	X	X				
Y									Y
		W							
		W							

From the IV fact, we can say in 2012 there are five contracts. This means out of Z and X, one must be double.

If Z is double then the contract can be split into 3 years and 8 years which is not possible as given contract can be 7 years contract, 4 years contract, 3 years contract or one year contract.

∴ From 2012 to 2015, X will have a four year contract with D, as D did not have any contract in 2010.

C did not have a contract in 2011

∴ A will have contract with C from 2010 to 2012 and C must from contract with Z from 2017 to 2019 and initial 7 years contract of B with Z.

Since B and D have only one contract in 2012, ∴ W will have contract with A and C in 2012.

A and C already made contract with 2 vendors, we are left with B & D for single year contract. D didn't have contract in 2010.

∴ D will have contract in 2019 with Y and B will have contract with Y in 2010.

Therefore the final table,

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BZ	CZ	CZ	CZ						
AX	AX	AX							
		DX	DX	DX	DX				
BY		CW					DY		
		AW							

2015 (BZ and DX)

QNo:- 32 ,Correct Answer:- A

Explanation:- Given that each institute have contract with two vendors
 From I, II, and III facts given, we have

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
X	X	X	X	X	X				
Y								Y	
	W								
	W								

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Therefore the final table,

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BZ	CZ	CZ	CZ						
AX	AX	AX							
		DX	DX	DX	DX				
BY		CW				DY			
		AW							

D had a contract with Y in 2019

QNo:- 33 ,Correct Answer:- A

Explanation:- Given that each institute have contract with two vendors
 From I, II, and III facts given, we have

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
X	X	X	X	X	X				
Y									Y
		W							
		W							

From the IV fact, we can say in 2012 there are five contracts. This means out of Z and X, one must be double.

If Z is double then the contract can be split into 3 years and 8 years which is not possible as given contract can be 7 years contract, 4 years contract, 3 years contract or one year contract.

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∴ D will have contract in 2019 with Y and B will have contract with Y in 2010.

Therefore the final table,

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BZ	CZ	CZ	CZ						
AX	AX	AX							
		DX	DX	DX	DX				
BY		CW					DY		
		AW							

3 (2016, 2017, 2018)

QNo:- 34 ,Correct Answer:- C

Explanation:- Given that each institute have contract with two vendors
 From I, II, and III facts given, we have

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
X	X	X	X	X	X				
Y								Y	
	W								
	W								

From the IV fact, we can say in 2012 there are five contracts. This means out of Z and X, one must be double.

If Z is double then the contract can be split into 3 years and 8 years which is not possible as given contract can be 7 years contract, 4 years contract, 3 years contract or one year contract.

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A and C already made contract with 2 vendors, we are left with B & D for single year contract. D didn't have contract in 2010.

∴ D will have contract in 2019 with Y and B will have contract with Y in 2010.

Therefore the final table,

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BZ	CZ	CZ	CZ						
AX	AX	AX							
		DX	DX	DX	DX				
BY		CW				DY			
		AW							

Exactly 3

QNo:- 35 ,Correct Answer:- B

Explanation:- Given that each institute have contract with two vendors
 From I, II, and III facts given, we have

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
X	X	X	X	X	X				
Y									Y
		W							
		W							

From the IV fact, we can say in 2012 there are five contracts. This means out of Z and X, one must be double.

If Z is double then the contract can be split into 3 years and 8 years which is not possible as given contract can be 7 years contract, 4 years contract, 3 years contract or one year contract.

∴ From 2012 to 2015, X will have a four year contract with D, as D did not have any contract in 2010.

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A and C already made contract with 2 vendors, we are left with B & D for single year contract. D didn't have contract in 2010.

∴ D will have contract in 2019 with Y and B will have contract with Y in 2010.

Therefore the final table,

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BZ	CZ	CZ	CZ						
AX	AX	AX							
		DX	DX	DX	DX				
BY		CW					DY		
		AW							

A and B only (In 2010 ⇒ BZ and BY, In 2012 ⇒ AX and AW)

QNo:- 36 ,Correct Answer:- A

Explanation:- Given that each institute have contract with two vendors
 From I, II, and III facts given, we have

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
X	X	X	X	X	X				
Y							Y		
	W								
	W								

From the IV fact, we can say in 2012 there are five contracts. This means out of Z and X, one must be double.

If Z is double then the contract can be split into 3 years and 8 years which is not possible as given contract can be 7 years contract, 4 years contract, 3 years contract or one year contract.

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∴ D will have contract in 2019 with Y and B will have contract with Y in 2010.

Therefore the final table,

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BZ	CZ	CZ	CZ						
AX	AX	AX							
		DX	DX	DX	DX				
BY		CW				DY			
		AW							

A, B, W and X

QNo:- 37 ,Correct Answer:- A

Explanation:- Average cannot be maximum or minimum.

Given that the student who missed mathematics exam didn't miss any other exam.

∴ If Alva miss mathematics then Alva's average = $\frac{80+75+75}{3}$ that's not equal to 70

∴ Alva eliminated, if Foni miss Mathematics, then Foni average (of best 3) = $\frac{88+83+83}{3}$

Which is not equal to 78. ∴ Foni is eliminated.

We can see that Esha got maximum marks in mathematics (which is not possible if she misses mathematics, as the missed exam is the average of remaining subjects).

∴ Carl will be the right answer as, Carl average = $\frac{100+90+80}{3} = 90$

Which is equal to mathematics score.

QNo:- 38 ,Correct Answer:- B

Explanation:-

As the marks in the missing exam in the average of the remaining marks (according to different condition) and we know average can neither be least nor maximum. ∴ Alva Bithi, Carl and Deep are eliminated. ∴ Answer will be Esha and Foni

QNo:- 39 ,Correct Answer:- B

Explanation:- Let's check for Esha only, by checking for Esha only we can eliminate all the wrong options.

There are two cases with the Hindi;

Case I ⇒ only miss Hindi exam ∴ score for Hindi for Esha = $\frac{95+80+60}{3} = 78.33$

∴ Not equal to 85. Not satisfied

Case II ⇒ miss Hindi and Science both. Not possible as score is different for Hindi and Science. ∴ Alva and Deep will be the answer

QNo:- 40 ,Correct Answer:- D

Explanation:- From the table, we can see Bithi missed the Science paper definitely but we are not sure of Alva and Deep. One out of Alva and Deep will definitely miss the Science exam

QNo:- 41 ,Correct Answer:- 3,4

Explanation:- We can see that Esha, Carl and one out of Alva or Deep missed one examination.

QNo:- 42 ,Correct Answer:- 4

Explanation:- We are definite about Bithi, Carl, Esha and Foni

QNo:- 43 ,Correct Answer:- A

Explanation:- We have to maximize the rating of Damodaran, taking care that he did not get the bonus.

∴ Damodaran = 5 + 5 + 3 + 4 + 1 = 18 ∴ Rating = 18/5 = 3.6

QNo:- 44 ,Correct Answer:- C

Explanation:- We have to minimize the rating of Eman, taking care that Eman will get bonus.

∴ Eman = 5 + 3 + 3 + 2 + 2 = 15 ∴ Rating = 15/5 = 3.0

QNo:- 45 ,Correct Answer:- A

Explanation:- As, we have to find the minimum possible value of monthly payment is mean we need to find the payment of all the drivers, keeping their rating minimum and all drivers will get the bonus.

$$\text{Arun} = 5 + 2 + 2 + 4 = 16$$

$$\text{Arun Rating} = 16/5 = 3.2$$

$$\therefore \text{Arun payment} = 1000 + 3.2 \times 250 = 1800$$

$$\text{Barun} = 3 + 5 + 2 + 2 + 3 = 15$$

$$\text{Barun Rating} = 15/5 = 3.0$$

$$\therefore \text{Barun payment} = 1200 + 200 \times 3 = 1800$$

$$\text{Chandan} = 5 + 5 + 2 + 2 + 3 = 17$$

$$\text{Chandan Rating} = 17/5 = 3.4$$

$$\text{Chandan Payment} = 1400 + 3.4 \times 100 = 1740$$

$$\text{Damodaran} = 5 + 3 + 3 + 2 + 2$$

$$\text{Damodaran Rating} = 15/5 = 3.0$$

$$\therefore \text{Damodaran payment} = 1300 + 150 \times 3 = 1750$$

$$\text{Eman} = 5 + 3 + 3 + 2 + 2 = 15$$

$$\text{Eman Rating} = 15/5 = 3.0$$

$$\therefore \text{Eman Payment} = 1100 + 200 \times 3 = 1700$$

$\therefore \text{Eman payment will be minimum i.e. } 1700$

QNo:- 46 ,Correct Answer:- A

Explanation:- Now we have to maximize the rating of all five drivers

$$\text{Arun} = 5 + 4 + 3 + 4 + 3 = 19. \text{Rating} = 19/5 = 3.80$$

$$\therefore \text{Arun Payment} = 1000 + 3.8 \times 250 = 1950$$

$$\text{Barun} = 3 + 5 + 4 + 4 + 3. \text{Rating} = 19/5 = 3.80$$

$$\therefore \text{Barun Payment} = 1200 + 200 \times 3.80 = 1960$$

$$\text{Chandan} = 5 + 5 + 2 + 4 + 4 = 20. \text{Rating} = 20/5 = 4.0$$

$$\therefore \text{Chandan Payment} = 1400 + 100 \times 4 = 1800$$

$$\text{Damodaran} = 5 + 3 + 5 + 4 + 4 = 21$$

$$\text{Rating} = 21/5 = 4.2$$

$$\therefore \text{Damodaran Payment} = 1300 + 150 \times 4.2 = 1930$$

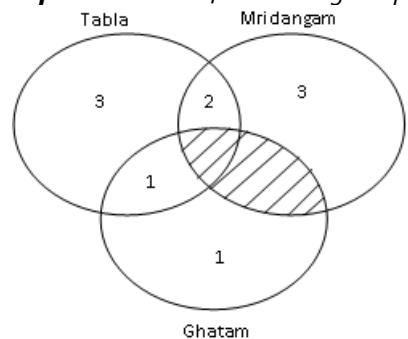
$$\text{Eman} = 5 + 5 + 4 + 4 + 2 = 20. \text{Rating} = 20/5 = 4.0$$

$$\therefore \text{Eman payment} = 100 + 200 \times 4 = 1900$$

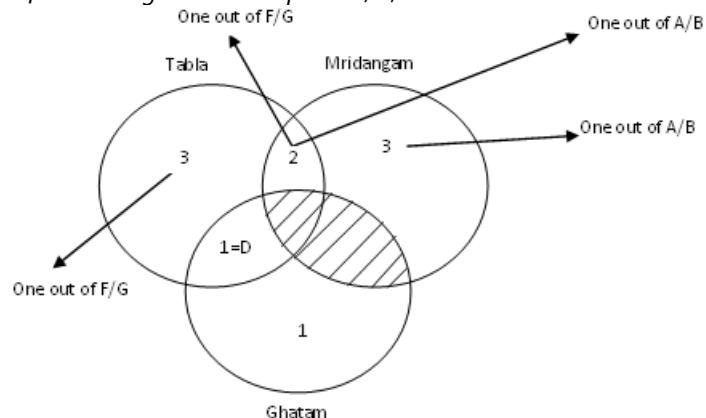
$\therefore \text{Barun's payment is maximum i.e. } 1960$

QNo:- 47 ,Correct Answer:- C

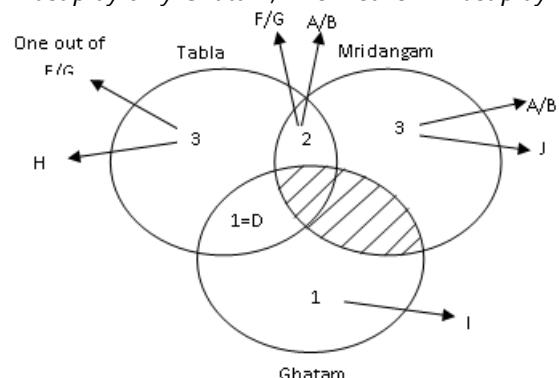
Explanation:- After Reading the passage



After reading instruction point 1, 2, 3



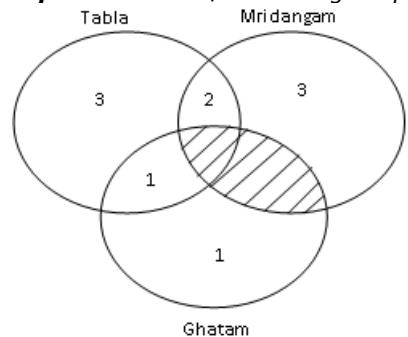
4th point says that neither I nor J is an expert in Tabla. After combining 4th and 5th point. We can definitely say that, I must play only Ghatam, This means H must play only Tabla



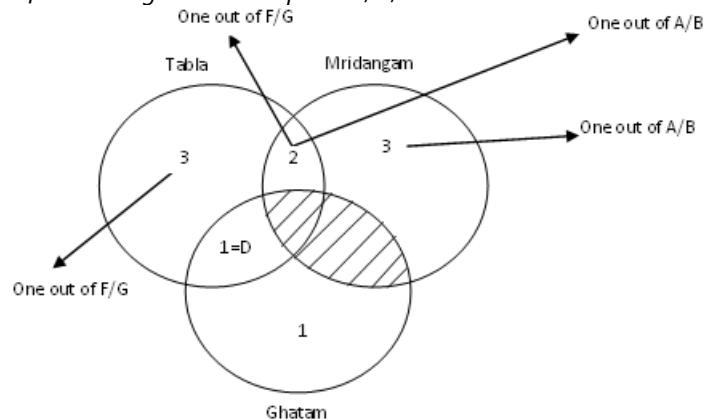
H

QNo:- 48 ,Correct Answer:- C

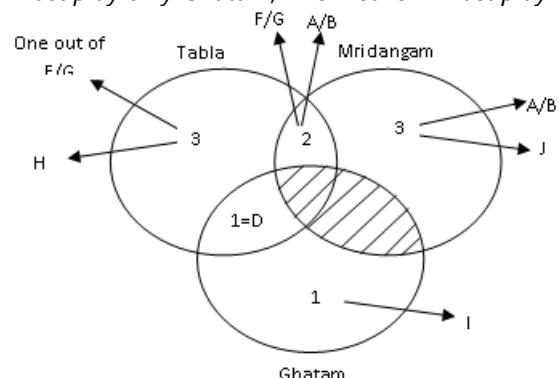
Explanation:- After Reading the passage



After reading instruction point 1, 2, 3



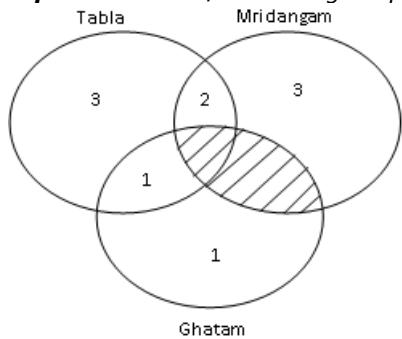
4th point says that neither I nor J is an expert in Tabla. After combining 4th and 5th point. We can definitely say that, I must play only Ghatam, This means H must play only Tabla



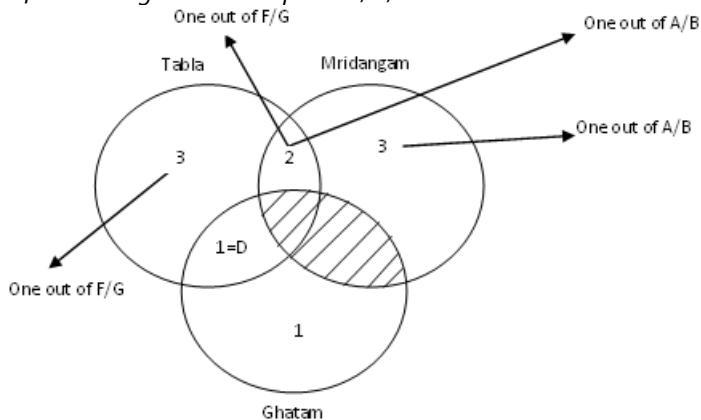
J

QNo:- 49 ,Correct Answer:- C

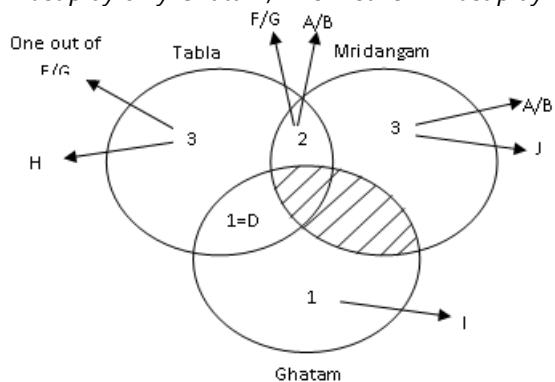
Explanation:- After Reading the passage



After reading instruction point 1, 2, 3



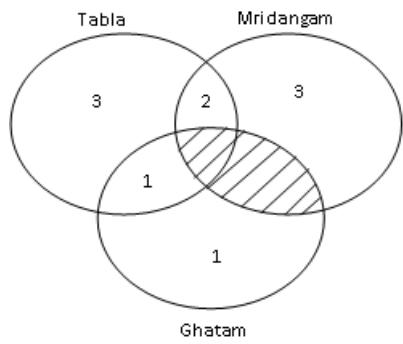
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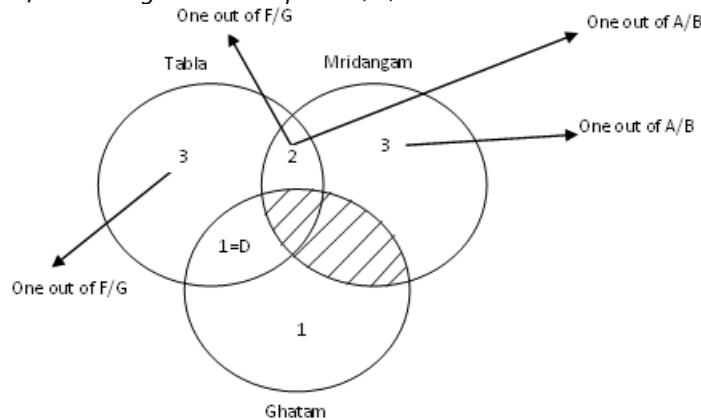
*It can only be from A/B, F/G
 ∴ C and F is the correct options*

QNo:- 50 ,Correct Answer:- A

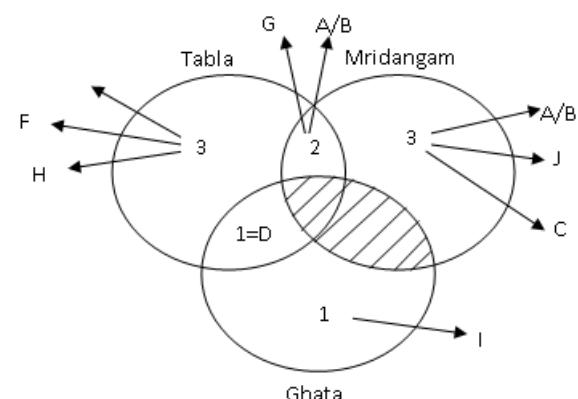
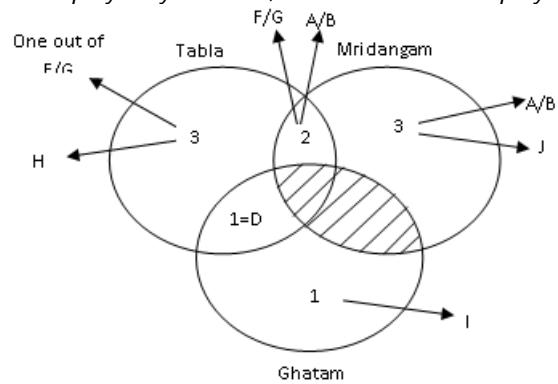
Explanation:- After Reading the passage



After reading instruction point 1, 2, 3



4th point says that neither I nor J is an expert in Tabla. After combining 4th and 5th point. We can definitely say that, I must play only Ghatam, This means H must play only Tabla



∴ E, F & H are expert in Tabla only

Section : Quantitative Ability
QNo:- 51 ,Correct Answer:- B

Explanation:- We want the least value of the maximum function, which is possible when the values inside the brackets are as close as possible. As number of students must be integer, therefore values of x_1, x_2, \dots, x_{12} can be 8 or 9 (i.e 8,8,8,8,8,8,8,9,9,9,9).

Therefore max value of x_0 is 9.

QNo:- 52 ,Correct Answer:- 62

Explanation:- Let the number of toffees be x .

Toffees Given to first child = $(x/2) + 1$

Toffees given to second child = $(1/2)(x - (x/2) - 1) + 1 = (x/4) + (1/2)$

We find the symmetry in the pattern of toffees distribution,

Therefore toffees distribution done $[(x/2) + 1], [(x/4) + (1/2)], [(x/8) + (1/4)], [(x/16) + (1/8)], [(x/32) + (1/16)]$

$$\Rightarrow [(x/2) + 1] + [(x/4) + (1/2)] + [(x/8) + (1/4)] + [(x/16) + (1/8)] + [(x/32) + (1/16)] = x$$

$$\Rightarrow (62/32) = x - (31/32)x$$

$$\Rightarrow x = 62$$

QNo:- 53 ,Correct Answer:- 12

Explanation:- Let x be the number of year after which veeru amount will be equal to Joy amount.

So, (principle + Interest) for Veeru after x year = $10,000 + 10,000\left(\frac{5x}{100}\right)$ and (principle + Interest) for Joy after $(x - 2)$ years = $8000 + 8000\left(\frac{10(x-2)}{100}\right)$

According to given condition,

$$\Rightarrow 10000 + 10000\left(\frac{5x}{100}\right) = 8000 + 8000\left(\frac{10(x-2)}{100}\right)$$

$$\Rightarrow 10000 + 500x = 800 + 800x - 1600 \Rightarrow x = 12$$

QNo:- 54 ,Correct Answer:- D

Explanation:- $2^{y^2 \log_3^5} = 5^{\log_2^3}$

$$\Rightarrow \log(2^{y^2 \log_3^5}) = \log(5^{\log_2^3})$$

$$\Rightarrow y^2 \frac{\log 5}{\log 3} \times \log 2 = \frac{\log 3}{\log 2} \times \log 5$$

$$\Rightarrow y^2 = \left(\frac{\log 3}{\log 2}\right)^2 \Rightarrow y = -\left(\frac{\log 3}{\log 2}\right) [\because y \text{ is negative}]$$

$$y = -\log_2 3 = \log_2 \frac{1}{3}$$

QNo:- 55 ,Correct Answer:- 12

Explanation:- As, distance covered is same with both the speed,

$$\therefore D = S \times T \Rightarrow \frac{8}{60} \times t = \frac{15}{60} \times (t - 35)$$

(where, t is the time taken in minutes by Amal when his speed is 8km/hr)

$$\Rightarrow t = 75 \text{ minutes} \therefore D = \frac{8}{60} \times 75$$

This means, Amal started from his house at 9:00 AM and taken 75 minutes to reach office with the speed of 8 km/hr.

Now, Amal starts at 9:10 Am and wanted to reach office at 10:00 AM, i.e. is 50 minutes.

$$\text{We know, } S = \frac{\text{Distance}}{\text{Time}} = \frac{8 \times 60 \times 75}{50 \times 60} = 12 \text{ km/hr}$$

QNo:- 56 ,Correct Answer:- D

Explanation:- Let usual speed is x and time is t

If speed becomes $1/3$ time will become 3 times so, time taken is $3t$

Given that $3t - t = 30$. So t is 15 min.

On return journey, in 5 minutes, it will cover $1/3^{rd}$ return journey, in 5 minutes, it will cover $1/3^{rd}$ distance, To cover the remaining distance, it has 10 minutes at usual speed but as it stopped for 4 minutes, remaining time is 6 minutes.

Ratio of normal time to new time is 5:3.

Ratio of normal speed to new speed is 3:5.

So speed increased by $2/3$ or 66.77%

QNo:- 57 ,Correct Answer:- B

Explanation:-

$$2^x + 2^{-x} = 2 - (x-2)^2$$

LHS equation will always be greater than or equal to 2, whereas RHS equation will always be less than or equal to 2.

This means this can only be equal when LHS and RHS both are 2, which is not possible as they will be equal to 2 at two different values of x .

QNo:- 58 ,Correct Answer:- 8

Explanation:- Dye Water

$$\begin{array}{rcl} 40L & \Rightarrow & 2 : 3 \\ & \Rightarrow & 16 : 24 \end{array}$$

Now, water is added and ratio becomes 2:5 but dye volume in the solution is same

$$\begin{array}{rcl} \text{Let, } x L & \Rightarrow & 2 : 5 \\ & \Rightarrow & 16 : ? \\ \therefore \frac{2}{7} \times x = 16 \Rightarrow x = 56 \end{array}$$

$$\Rightarrow 16 : 40$$

Now, one fourth of solution taken out
 $\Rightarrow 12 : 30$

Now, dye is added but water volume remain same and ratio become 2:3

$$\begin{array}{rcl} \text{Let } y^2 & \Rightarrow & 2 : 3 \\ & & ? : 30 \\ \Rightarrow \frac{3}{5} \times y = 30 \Rightarrow y = 50 \\ \therefore 50L & \Rightarrow & 2 : 3 \\ & \Rightarrow & 20 : 30 \end{array}$$

This means 8L dye is added.

QNo:- 59 ,Correct Answer:- D

Explanation:- $A + \frac{B+C}{2} = 5 \Rightarrow 2A + B + C = 10 \dots\dots\dots(1)$

$$B + \frac{A+C}{2} = 7 \Rightarrow 2B + A + C = 14 \dots\dots\dots(2)$$

$$(2) - (1) \Rightarrow B - A = 4$$

This means sum of A and B must be greater than 4 and it should also be even because if the sum of A and B will be odd then value of A and B will not be integer.

Therefore, only one option $\Rightarrow A + B = 6$

QNo:- 60 ,Correct Answer:- 21

Explanation:- 113, 114, 115, 116, 122

$$\frac{3!}{2!} = 3 \text{ cases for each number. } 123 \Rightarrow 3! = 6 \text{ cases for } 123. \therefore \text{Total} = 15 + 6 = 21$$

QNo:- 61 ,Correct Answer:- C

Explanation:- Time taken to meet together will be the square root of the product of time taken to reach their destination after the meeting point.

$$\text{i.e., } t = \sqrt{45 \times 20} = 30 \text{ minutes}$$

Distance = Speed \times time

$$\Rightarrow \frac{60}{60} \times (30+45) = \frac{S_2}{60} \times (30+20) \Rightarrow S_2 = \frac{60}{50} \times 75 \Rightarrow S_2 = 90 \text{ km/hr}$$

QNo:- 62 ,Correct Answer:- 36

Explanation:- $\log_4 5 = (\log_4 y) (\log_6 \sqrt{5})$

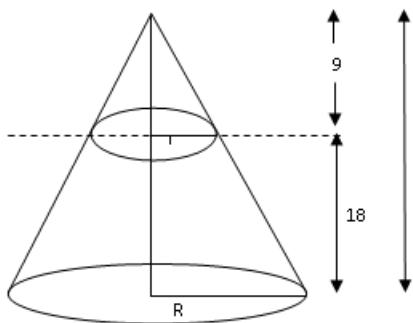
$$\Rightarrow \frac{\log 5}{\log y} = \log_6 \sqrt{5}$$

$$\Rightarrow \log_y 5 = \log_6 \sqrt{5} \Rightarrow \log_y 5 = 2 \log_6 \sqrt{5}$$

$$\Rightarrow \log_y 5 = \log_{36} 5$$

$$\Rightarrow y = 36$$

QNo:- 63 ,Correct Answer:- A



Explanation:-

$$\text{We know, } \frac{27}{R} = \frac{9}{r}$$

$$\Rightarrow r = \frac{R}{3}. \text{ Given,}$$

$$\frac{1}{3}\pi[R^2 \times 27 - r^2 \times 9] - \frac{1}{3}\pi[r^2 \times 9] = 225$$

$$\Rightarrow \frac{1}{3}\pi R^2 [25] = 225$$

$$\Rightarrow \frac{1}{3}\pi R^2 \times 27 = \frac{225}{25} \times 27$$

$$\Rightarrow \text{Volume of cone} = 243$$

QNo:- 64 ,Correct Answer:- D

Explanation:- Time taken

$$\text{Length of train} \rightarrow 90 \rightarrow S - 2$$

$$\text{Length of train} \rightarrow 100 \rightarrow S - 4$$

$$\text{Length of train} \rightarrow ? \rightarrow S$$

$$\therefore \frac{S-2}{S-4} = \frac{100}{90}$$

$$\Rightarrow 9S - 18 = 10S - 40$$

$$\Rightarrow S = 22$$

$$\therefore \text{time taken} = \frac{\text{Distance}}{\text{Speed}}$$

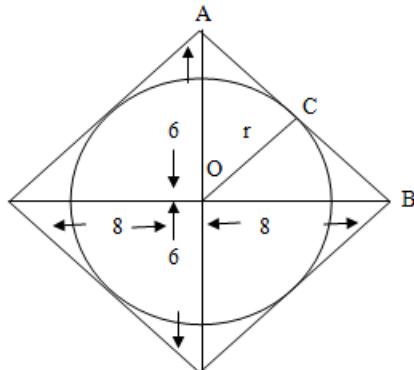
$$= \frac{90 \times 20}{22}$$

$$= 81.81$$

$$\approx 82$$

Relative speed

QNo:- 65 ,Correct Answer:- C



Explanation:-

By Pythagoras, AB will be = 10 cm

Now, area of $\Delta AOB = \frac{1}{2} \times 6 / 8$

Also $\Delta AOB = \frac{1}{2} \times 10 \times OC$

$$\Rightarrow \frac{1}{2} \times 6 \times 8 = \frac{1}{2} \times 10 \times OC$$

$$\Rightarrow 4.8cm = r.$$

$$\frac{\text{Area of circle}}{\text{Area of Rhombus}} = \frac{\pi(4.8)^2}{\frac{1}{2} \times 12 \times 16} = \frac{6}{25}\pi$$

QNo:- 66 ,Correct Answer:- D

Explanation:- $f(5 + x) = f(5 - x)$

$$x \rightarrow x - 5$$

$$\Rightarrow f(5 + x - 5) = f(5 - x + 5)$$

$$\Rightarrow f(x) = f(10 - x)$$

Given, $f(x) = 0$

\therefore Also, $f(10 - x) = 0$

Given that these are four distinct solutions

$$\Rightarrow f(\alpha) = 0, f(\beta) = 0$$

$$\Rightarrow f(10 - \alpha) = 0, f(10 - \beta) = 0$$

$$\text{Sum of these roots} = \alpha + \beta + 10 - \alpha + 10 - \beta = 20$$

QNo:- 67 ,Correct Answer:- C

Explanation:- $x = (4096)^{7+4\sqrt{2}}$

$$\Rightarrow x = (2^6)^{2(7+4\sqrt{3})}$$

$$\Rightarrow x = (64)^{14+8\sqrt{3}}$$

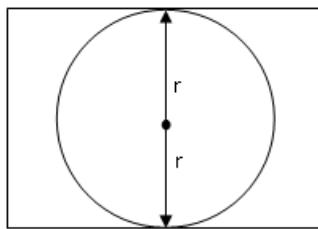
$$\Rightarrow (x)^{\frac{1}{14+8\sqrt{3}}} = 64$$

$$\Rightarrow (x)^{\frac{14+8\sqrt{3}}{4}} = 64$$

$$\Rightarrow x^{\left(\frac{7}{2}-2\sqrt{3}\right)} = 64$$

$$\Rightarrow \frac{x^{\frac{7}{2}}}{x^{2\sqrt{3}}} = 64$$

QNo:- 68 ,Correct Answer:- A



Explanation:-

Let the area of circle be x

$$\Rightarrow x + \frac{2}{3}x = 135$$

$$\Rightarrow x = \frac{9}{2}x$$

$$\Rightarrow x = \frac{135 \times 3}{5} \Rightarrow x = 81 \Rightarrow \pi r^2 = 81 \text{ (where, } r \text{ is radius of circle)}$$

$$\Rightarrow r = \frac{9}{\sqrt{\pi}}$$

$$\Rightarrow 2r = \frac{18}{\sqrt{\pi}} \Rightarrow (2r). (\text{other side of rectangle}) = 135$$

(let, ℓ be the other side of rectangle)

$$\ell = \frac{135}{18} \sqrt{\pi}$$

$$\ell = \frac{15\sqrt{\pi}}{2}$$

Perimeter = $2(\ell + b)$

$$= 2 \left(\frac{15}{2} \sqrt{\pi} + \frac{18}{\sqrt{\pi}} \right)$$

$$= 3\pi \left(5 + \frac{12}{\pi} \right)$$

QNo:- 69 ,Correct Answer:- 1

Explanation:- Let, $x + \frac{1}{x} = y$

$$\Rightarrow y^2 - 3y + 2 = 0$$

$$\Rightarrow y = \frac{3 \pm \sqrt{9 - 4 \cdot 1 \cdot 2}}{2}$$

$$= 2, 1$$

$$\therefore x + \frac{1}{x} = 2$$

$$\Rightarrow x^2 + 1 - 2x = 0$$

$$\Rightarrow x = \frac{2 \pm \sqrt{4 - 4 \cdot 1 \cdot 1}}{2}$$

$$= 1$$

$$x + \frac{1}{x} = 1$$

$$\Rightarrow x^2 + 1 - x = 0$$

$$\Rightarrow x = \frac{1 \pm \sqrt{1 - 4 \cdot 1 \cdot 1}}{2}$$

Imaginary root

$\therefore x = 1$. Only one real root

QNo:- 70 ,Correct Answer:- D

Explanation:- Case I \Rightarrow when $C = 8$

$$\Rightarrow bc = 96 \Rightarrow b = 12$$

$$\therefore ab = 432$$

$$\Rightarrow a = 36$$

$$\Rightarrow a + b + c = 8 + 12 + 36 = 56$$

Case II \Rightarrow when $C = 7$

$\Rightarrow bc = 96 \Rightarrow b$ will not be integer

$\therefore c = 7$ not possible

Case III \Rightarrow when $C = 6$

$$\Rightarrow bc = 96 \Rightarrow b = 16$$

$$\therefore ab = 432$$

$$\Rightarrow a = 432/16 = 27$$

$$\Rightarrow a + b + c = 49$$

Case IV $\Rightarrow C = 5$ (not possible) because b will not be integer

Case V $\Rightarrow C = 4$

$$\therefore bc = 96 \Rightarrow b = 24$$

$$\therefore ab = 432 \Rightarrow a = 432/24 = 18$$

$$\therefore a + b + c = 46$$

No, need to check further, of 46 is the least option given

QNo:- 71 ,Correct Answer:- 3

Explanation:- $x| -y \leq 1, y \geq 0, y \leq 1$

$$\text{If } x > 0 \Rightarrow x - y = 1 \dots\dots\dots (1)$$

$$\text{And } x < 0 \Rightarrow x - y = 1$$

$$\text{Or } x + y = -1 \dots\dots\dots (2)$$

$$\text{Put } x = 0 \text{ in (1), } y = -1$$

$$\text{Put } y = 0 \text{ in (1) } x = 1$$

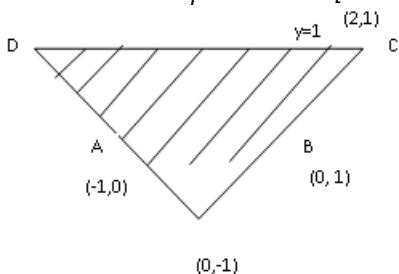
$$\text{Put } y = 1 \text{ in (1), } x = 2$$

$$\text{Put } x = 0 \text{ in (2), } y = -1$$

$$Y = 0 \text{ in (2), } x = -1$$

$$Y = 1 \text{ in (2), } x = -2$$

Shaded area is trapezium $= \frac{1}{2} [2 + 4] \times 1 = 3$ units



QNo:- 72 ,Correct Answer:- C

Explanation:- 65% lit. 35% Illiterates

↓

25%

16.25% young

Given, 28% are young in which 16.25% are literates (from above) and 11.75% are illiterates. ∴ out of 35% illiterates 23.25% are old, that means

$$\left(\frac{23.25}{35} \times 100 \right) \%$$

⇒ 66.428% old illiterates

QNo:- 73 ,Correct Answer:- C

Explanation:- aa bb a > 0

So, numbers are

1100 2200

1122 2222

1144 2244

1166 2266

1188 2288

↓ ↓

Mean Mean and so on

1144 2244

Average of 1144, 2244, 3344, 4444, 5544, 6644, 7744, 8844, 9944 is 5544

QNo:- 74 ,Correct Answer:- C

Explanation:-

	A	B	C
Volume	3	4	7
Weight of volume	5	2	6
Weight	15	8	42

$$\therefore \text{C's weight} = \frac{42}{(15 + 8 + 42)} \times 130 = 84 \text{ kg}$$

QNo:- 75 ,Correct Answer:- 20000

Explanation:- Let the purchase price of develop be x ∴ $1.2x + 0.9(50000-x) = 1.02 \times 50000$

$$\Rightarrow 0.3x + 45000 = 51000 \Rightarrow x = \frac{6000}{3} \times 10 \Rightarrow x = 20,000$$

QNo:- 76 ,Correct Answer:- B

Explanation:- $(x^2 - 7x + 11)^{x^2 + 3x + 42} = 1$

As $a^0 = 1$

$$\Rightarrow x^2 - 13x + 42 = 0$$

$$\Rightarrow x = 6, 7$$

$$\text{Also, } x^2 - 7x + 11 = 1, x^2 - 7x + 10 = 0$$

$$\Rightarrow x = 2, 5$$

$$\text{Also, } x^2 - 7x + 11 = -1, x^2 - 7x + 12 = 0$$

$$\Rightarrow x = 3, 4$$