Directions of Test

Test Name	Actual CAT 2021 Slot I	Total Questions	66	Total Time	120 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	24	0:40(h:m)	3	1/3
DI & Reasoning	20	0:40(h:m)	3	1/3
Quantitative Ability	22	0:40(h:m)	3	1/3

Section : Verbal Ability

QNo:- 1 ,Correct Answer:- D

Explanation:-
Refer to this line of the third paragraph – "That showed the researchers that cuttlefish wouldn't reject the prawns if it was the only food available." Thus It's not about survival.
Other options are explicitly mentioned in the passage.

QNo:- 2 ,Correct Answer:- C

Explanation:-
Refer to this line of the third paragraph – "In the experimental trials, the cuttlefish didn't jump on the prawns if the live grass shrimp were labeled with a triangle— many waited for the shrimp drawer to open up"
and this line of the second paragraphPreliminary experiments showed that cuttlefishes' favorite food is live grass shrimp, while raw prawns are so-so and Asian shore crab is nearly unacceptable.

QNo:- 3 ,Correct Answer:- C

Explanation:-
Option C is correct; refer to this line of the last paragraph – "We don't know if living in a social group is important for complex cognition unless we also show those abilities are lacking in less social species,"
Option A is wrong; refer to this line of the third paragraph – "The longest that a cuttlefish waited was 130 seconds." As 100 is less than 130."
Option B is wrong; refer to this line of the second paragraph – "Preliminary experiments showed that cuttlefishes' favorite food is live grass shrimp, while raw prawns are so-so and Asian shore crab is nearly unacceptable."
Option D if true would not complement the findings in any way.

QNo:- 4 ,Correct Answer:- C

Explanation:-
Refer to this line of the last paragraph – "We don't know if living in a social group is important for complex cognition unless we also show those abilities are lacking in less social species," Hence Option C cannot be inferred.
Options A, B and D can be inferred from Second & third paragraph of the passage.

QNo:- 5 ,Correct Answer:- A

Explanation:-   Refer to this line of the third paragraph – "Indeed, they **might** be twins, the progeny of the same parents." Might refers to a probability whereas 'are' refers to certainty.

QNo:- 6 ,Correct Answer:- D

Explanation:-   The passage treads from introducing 'Utopia' and then harps on that as per popular belief it provides 'security' and leads to 'Homogeneity' and finally refers to 'international community' towards the end.

QNo:- 7 ,Correct Answer:- A

Explanation:-
Refer to this line of the first paragraph –" In More's time, for much of the population, given the plenty and security on offer, **such restraints would not have seemed overly unreasonable.**" This implies that restraints were not unwelcome. As this is an 'Except' question so first option is ruled out.

QNo:- 8 ,Correct Answer:- D

Explanation:-
Refer to this line of the first paragraph –" In More's time, for much of the population, given the plenty and security on offer, such restraints would not have seemed overly unreasonable."

QNo:- 9 ,Correct Answer:- B

Explanation:-
Option A finds help in this line of the second paragraph – "Beginning in the 1700s, the temperance movement advocated for tea as a pleasure that cheered but did not inebriate."
Option C finds help in this line of the second paragraph – "industrialists soon borrowed this moral argument in advancing their case for free trade in tea."
Option D finds help in this line of the second paragraph – "Factory owners joined in, compelled by the cause of a sober workforce."

QNo:- 10 ,Correct Answer:- D

Explanation:-
Refer to the last line of the passage –"It is not a stretch to say that tea marketers have advanced the particularly noble cause of human dialogue and friendship."

QNo:- 11 ,Correct Answer:- D

Explanation:-
Option D can't be supported based on the information stated in the passage.
Option C is correct, refer to this line of the second paragraph – "During the Second World War, tea service was presented as a social and patriotic activity that uplifted soldiers and calmed refugees."
Option A and B are correct – Refer to these last lines of the passage – "It is not a stretch to say that tea marketers have advanced the particularly noble cause of human dialogue and friendship."

QNo:- 12 ,Correct Answer:- B

Explanation:-
Refer to this line of the second last paragraph – "And morality marketing is **now** a commodity as well, applied to food, "fair trade" apparel and eco-tourism."

QNo:- 13 ,Correct Answer:- B

Explanation:-
Only option B respects the plants for its needs and accepts it as an independent identity whereas all other options mark the element for its link or usage with humans.

QNo:- 14 ,Correct Answer:- C

Explanation:-
This is a double negative question, thus we need to look for the statement that strengthens or is in line with the main idea conveyed by the passage.
Option D is explicitly against the main idea of the passage. Option B gives importance of human linkage to identify/ respect the identity of cats and dogs. Option A also mentions the importance of human linkage. Whereas Option C gives more importance to 'local medicinal plants'.

QNo:- 15 ,Correct Answer:- B

Explanation:-
The example is neither meant to complicate nor provide an exemption. Rather it's an attempt to break the non-binary understanding of personhood by bringing in a third category that shares a similar relation.
Refer to this line of the last paragraph - "With these Maya examples, we are challenged to discard the person/nonperson binary that constitutes our basic ontological outlook......"

QNo:- 16 ,Correct Answer:- C

Explanation:-
Refer to this line of the first paragraph – "For the Maya (who did have plenty of other communicating objects, if not smartphones), the answer was no." But if the personhood of the incense burner and the stone chopper was a function of their usefulness to humans. Then the answer would be changed to 'yes'.

QNo:- 17 ,Correct Answer:- 4

Explanation:-
The discussion is regarding the ownership & rights related to the 'space'. Option 4 though touches upon the rights but it is not specifically linked to the 'outer space'

QNo:- 18 ,Correct Answer:- 4312

Explanation:-
Sentence 4 introduces the topic by listing the 'two poles'. Sentence 3 mentions that 'fact must lie halfway between' Sentence 1 elaborates it further. The 'convergence' mentioned in sentence 2 makes it the appropriate concluding sentence.

QNo:- 19 ,Correct Answer:- D

Explanation:-
Option A is wrong as it's not about 'confusion'. Option B is wrong as instead of multiplication it is about 'an entirely different message. 'Option C is wrong as it's not about winning over rather 'mismatch'

QNo:- 20 ,Correct Answer:- B

Explanation:-
Options A & D are wrong as they focus on production & distribution & miss on 'business models'. Option C is wrong as the developing economies are not being forced into something.

QNo:- 21 ,Correct Answer:- 5

Explanation:-
The topic of discussion is the 'predatory journals' specifically with reference to India but Option 5 moves on to the 'Global' aspect.

QNo:- 22 ,Correct Answer:- 2341

Explanation:-
Sentence 2 is a standalone complete and introductory sentence. 'They' is sentence 3 refers to Biologists mentioned in '2'.Sentence 4 lists the specific aspect and Statement 1 aptly sums up the discussion.

QNo:- 23 ,Correct Answer:- 2143

Explanation:-
Statement 2 raises a concern. Statement 1 lists a popular response to counter 'global warming'. Sentence 4 explains the mechanism. 'It' in Sentence 3 refers to carbon mentioned in statement 4.

QNo:- 24 ,Correct Answer:- D

Explanation:-
Option A is wrong as it shifts the onus on the 'environment' and hampers the need to mix up and listen to the grievance of the locals. Option B is wrong as this has not been stated as the reason for foreign peacekeepers being despised by the locals. Option C is wrong as the passage states that –"their spending more time working with communities, understanding their grievances and earning their trust, rather than only meeting government officials."
Their refers to the foreign peacekeepers and not locals.

Section : DI & Reasoning

QNo:- 25 ,Correct Answer:- D

Explanation:-   Total sales in 2019 of office supply
= 3.65 + 0.4 + 1.8 + 0.3 + 0.1 + 0.3 + 1.5 + 4.3 + 1.1 = 13.5 million

QNo:- 26 ,Correct Answer:- C

Explanation:-   Sales of Furniture in 2019 = 1.9 + 6.2 + 2.0 + 4.4 = 14.5 million
Sales of furniture in 2020 = 22 + 70 + 201 + 45 = 15.8 million

$$\% \text{ increase} = \frac{15.8 - 14.5}{14.5} = 100$$

$$= \frac{1.3}{14.5} \times 100 = 8\%$$

QNo:- 27 ,Correct Answer:- 1

Explanation:-   By Visualisation
The increase should be 1/4 of Bar
It is only of Phones. Hence only 1

QNo:- 28 ,Correct Answer:- D

Explanation:-   In Technology
The improvement index is for

Accessories and is $\dfrac{4.4 - 3.1}{3.1} \times 100 = 41\%$

In Furniture improvement index is

For book case and is $\dfrac{2.2 - 1.9}{1.9} \times 100 = 15\%$

In office supply improvement index is for

Appliance and is $\dfrac{3.2 - 1.8}{1.8} \times 100 = 77\%$

Hence order is Furniture technology office supply

QNo:- 29 ,Correct Answer:- C

Explanation:- *As per information following are SP of finished product (will be represented by (a, b, c, d, e)*

a	Mango smoothie	12
b	Apple smoothie	11
c	Banana smoothie	10
d	Mix fruit smoothie	19
e	Fruit salad	12

Now following are possible product sale of each of them in every hour and in last hour sale of left over and product in shown

	Ganga	Kavari	Narmada
Hour 1	a/b or e/b	b/d	d/e
Hour 2	b/c	(a/c) or (e/c)	b/c
Hour 3	c/d	b/d	a/b or e/b
Hour 4	Left over milk + mango sold a/e	Case 1: (2+1) Sold a/c Case 2: (4+1) sold a/c or e/c	Left over mango+apple (2+1) sold (d)

As shown fruit salad is represented by e. So it could be 1 or 2.

QNo:- 30 ,Correct Answer:- C

Explanation:- As per information following are SP of finished product (will be represented by (a, b, c, d, e)

a	Mango smoothie	12
b	Apple smoothie	11
c	Banana smoothie	10
d	Mix fruit smoothie	19
e	Fruit salad	12

Now following are possible product sale of each of them in every hour and in last hour sale of left over and product in shown

	Ganga	Kavari	Narmada
Hour 1	a/b or e/b	b/d	d/e
Hour 2	b/c	(a/c) or (e/c)	b/c
Hour 3	c/d	b/d	a/b or e/b
Hour 4	Left over milk + mango sold a/e	Case 1: (2+1) Sold a/c Case 2: (4+1) sold a/c or e/c	Left over mango+apple (2+1) sold (d)

As shown Ganga sold only left over milk and Mango not Apple. Hence option 3 is true.

QNo:- 31 ,Correct Answer:- D

Explanation:- *As per information following are SP of finished product (will be represented by (a, b, c, d, e)*

a	Mango smoothie	12
b	Apple smoothie	11
c	Banana smoothie	10
d	Mix fruit smoothie	19
e	Fruit salad	12

Now following are possible product sale of each of them in every hour and in last hour sale of left over and product in shown

	Ganga	Kavari	Narmada
Hour 1	a/b or e/b	b/d	d/e
Hour 2	b/c	(a/c) or (e/c)	b/c
Hour 3	c/d	b/d	a/b or e/b
Hour 4	Left over milk + mango sold a/e	Case 1: (2+1) Sold a/c Case 2: (4+1) sold a/c or e/c	Left over mango+apple (2+1) sold (d)

As shown it is 18 or 19 or 20

QNo:- 32 ,Correct Answer:- 6

Explanation:- *As per information following are SP of finished product (will be represented by (a, b, c, d, e)*

a	Mango smoothie	12
b	Apple smoothie	11
c	Banana smoothie	10
d	Mix fruit smoothie	19
e	Fruit salad	12

Now following are possible product sale of each of them in every hour and in last hour sale of left over and product in shown

	Ganga	Kavari	Narmada
Hour 1	a/b or e/b	b/d	d/e
Hour 2	b/c	(a/c) or (e/c)	b/c
Hour 3	c/d	b/d	a/b or e/b
Hour 4	Left over milk + mango sold a/e	Case 1: (2+1) Sold a/c Case 2: (4+1) sold a/c or e/c	Left over mango+apple (2+1) sold (d)

It means each of them sold 1 left over Mango. So we have to count Apple smoothie i.e. b
So 2 + 2 + 2 = 6 is the answer

QNo:- 33 ,Correct Answer:- C

Explanation:-
Before drawing the table following Summarization should be done

Authors (eight) : A,B,C,D,E,F,G,H
Research paper (18) : 5 in Jan, 5 in April, 4 in July, 4 in Oct.
Also ratio of (A,D,G,H) to B,C,E,F) is 2:1
So, A,D,E,G must have published total 12 and BCEF total 6 papers

Further no one can publish more than 3 papers, so A,D,E,H each must have published 3 each .
Now B,C,E,F could have published 3, 1, 1, 1 or 2, 2, 1, 1 in any order.
According to point 6 both C and E have published same number and for 2 months.
So C and E have published 2 each and B and F 1 each respectively.
So whole points are summarized in following table.

Authors	No. of Papers	Everyday	Area	Months
A	3	Indian	Automation	Jan, April, July
B	1	Indian	Logistics	April
C	2	Chinese	Manufacturing	Jan, Oct
D	3	Japanese	Manufacturing	Jan, April, Oct
E	2	Chinese	Logistics	April, July
F	1	Indian	Logistics	Oct.
G	3	Indian	Automation	Jan, July, Oct
H	3	Japanese	Logistics	Jan, April, July

As shown it is 1,2,2,3

QNo:- 34 ,Correct Answer:- 8

Explanation:-
Before drawing the table following Summarization should be done

Authors (eight) : A,B,C,D,E,F,G,H
Research paper (18) : 5 in Jan, 5 in April, 4 in July, 4 in Oct.
Also ratio of (A,D,G,H) to B,C,E,F) is 2:1
So, A,D,E,G must have published total 12 and BCEF total 6 papers

Further no one can publish more than 3 papers, so A,D,E,H each must have published 3 each .
Now B,C,E,F could have published 3, 1, 1, 1 or 2, 2, 1, 1 in any order.
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D	3	Japanese	Manufacturing	Jan, April, Oct
E	2	Chinese	Logistics	April, July
F	1	Indian	Logistics	Oct.
G	3	Indian	Automation	Jan, July, Oct
H	3	Japanese	Logistics	Jan, April, July

Total papers by Indian Authors are 3 + 1 + 1 + 3 = 8

QNo:- 35 ,Correct Answer:- C

Explanation:-
Before drawing the table following Summarization should be done

Authors (eight) : A,B,C,D,E,F,G,H
Research paper (18) : 5 in Jan, 5 in April, 4 in July, 4 in Oct.
Also ratio of (A,D,G,H) to B,C,E,F) is 2:1
So, A,D,E,G must have published total 12 and BCEF total 6 papers

Further no one can publish more than 3 papers, so A,D,E,H each must have published 3 each .
Now B,C,E,F could have published 3, 1, 1, 1 or 2, 2, 1, 1 in any order.
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C	2	Chinese	Manufacturing	Jan, Oct
D	3	Japanese	Manufacturing	Jan, April, Oct
E	2	Chinese	Logistics	April, July
F	1	Indian	Logistics	Oct.
G	3	Indian	Automation	Jan, July, Oct
H	3	Japanese	Logistics	Jan, April, July

Only option A is true

QNo:- 36 ,Correct Answer:- A

Explanation:-
Before drawing the table following Summarization should be done

Authors (eight) : A,B,C,D,E,F,G,H
Research paper (18) : 5 in Jan, 5 in April, 4 in July, 4 in Oct.
Also ratio of (A,D,G,H) to B,C,E,F) is 2:1
So, A,D,E,G must have published total 12 and BCEF total 6 papers

Further no one can publish more than 3 papers, so A,D,E,H each must have published 3 each .
Now B,C,E,F could have published 3, 1, 1, 1 or 2, 2, 1, 1 in any order.
According to point 6 both C and E have published same number and for 2 months.
So C and E have published 2 each and B and F 1 each respectively.
So whole points are summarized in following table.

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C	2	Chinese	Manufacturing	Jan, Oct
D	3	Japanese	Manufacturing	Jan, April, Oct
E	2	Chinese	Logistics	April, July
F	1	Indian	Logistics	Oct.
G	3	Indian	Automation	Jan, July, Oct
H	3	Japanese	Logistics	Jan, April, July

Option 1 is false

QNo:- 37 ,Correct Answer:- B

Explanation:-
Before drawing the table following Summarization should be done

Authors (eight) : A,B,C,D,E,F,G,H
Research paper (18) : 5 in Jan, 5 in April, 4 in July, 4 in Oct.
Also ratio of (A,D,G,H) to B,C,E,F) is 2:1
So, A,D,E,G must have published total 12 and BCEF total 6 papers

Further no one can publish more than 3 papers, so A,D,E,H each must have published 3 each .
Now B,C,E,F could have published 3, 1, 1, 1 or 2, 2, 1, 1 in any order.
According to point 6 both C and E have published same number and for 2 months.
So C and E have published 2 each and B and F 1 each respectively.
So whole points are summarized in following table.

Authors	No. of Papers	Everyday	Area	Months
A	3	Indian	Automation	Jan, April, July
B	1	Indian	Logistics	April
C	2	Chinese	Manufacturing	Jan, Oct
D	3	Japanese	Manufacturing	Jan, April, Oct
E	2	Chinese	Logistics	April, July
F	1	Indian	Logistics	Oct.
G	3	Indian	Automation	Jan, July, Oct
H	3	Japanese	Logistics	Jan, April, July

Option 2 is false

QNo:- 38 ,Correct Answer:- A

Explanation:-
Before drawing the table following Summarization should be done

Authors (eight) : A,B,C,D,E,F,G,H
Research paper (18) : 5 in Jan, 5 in April, 4 in July, 4 in Oct.
Also ratio of (A,D,G,H) to B,C,E,F) is 2:1
So, A,D,E,G must have published total 12 and BCEF total 6 papers

Further no one can publish more than 3 papers, so A,D,E,H each must have published 3 each .
Now B,C,E,F could have published 3, 1, 1, 1 or 2, 2, 1, 1 in any order.
According to point 6 both C and E have published same number and for 2 months.
So C and E have published 2 each and B and F 1 each respectively.
So whole points are summarized in following table.

Authors	No. of Papers	Everyday	Area	Months
A	3	Indian	Automation	Jan, April, July
B	1	Indian	Logistics	April
C	2	Chinese	Manufacturing	Jan, Oct
D	3	Japanese	Manufacturing	Jan, April, Oct
E	2	Chinese	Logistics	April, July
F	1	Indian	Logistics	Oct.
G	3	Indian	Automation	Jan, July, Oct
H	3	Japanese	Logistics	Jan, April, July

Papers by Authors from Automation are 3 + 3 = 6
BY Manufacturing are 2 + 3 = 5
By Logistics are 1 + 2 + 1 + 3 = 7
Hence option 1 is the answer

QNo:- 39 ,Correct Answer:- B

Explanation:-
Before solving we have to understand the following :
(i) Each one will have total 6 relation (Friend, Acquaintances, strangers). So in first row for Amudha number of friends are 6 -(1+4) = 6.5 = 1.

Similarly for Gowtham the number of friends for Gowtham are also 6-(2 + 3) = 6-5= 1
(ii) The best way of solving is by Grid e.g. if C and G are friends we write in intersection of C and G as Fr and intersection of G and C also Fr

Proceeding in this way we will conclude the whose information in following Grid:

.	A	B	C	D	E	F	G
A	X	S	S	Ac	Fr	S	S
B	S	X	S	Fr	Ac	S	S
C	S	S	X	S	S	Ac	Fr
D	Ac	Fr	S	X	Fr	S	Ac
E	Fr	Ac	S	Fr	X	Fr	Ac
F	S	S	Ac	Ac	Fr	X	Ac
G	S	S	Fr	Ac	Ac	Ac	X

As shown Gowtham's Acquaintances are Dhinesh, Ezhil and Fani

QNo:- 40 ,Correct Answer:- A

Explanation:-
Before solving we have to understand the following :
(i) Each one will have total 6 relation (Friend, Acquaintances, strangers). So in first row for Amudha number of friends are 6 -(1+4) = 6.5 = 1.

Similarly for Gowtham the number of friends for Gowtham are also 6-(2 + 3) = 6-5= 1
(ii) The best way of solving is by Grid e.g. if C and G are friends we write in intersection of C and G as Fr and intersection of G and C also Fr

Proceeding in this way we will conclude the whose information in following Grid:

.	A	B	C	D	E	F	G
A	X	S	S	Ac	Fr	S	S
B	S	X	S	Fr	Ac	S	S
C	S	S	X	S	S	Ac	Fr
D	Ac	Fr	S	X	Fr	S	Ac
E	Fr	Ac	S	Fr	X	Fr	Ac
F	S	S	Ac	Ac	Fr	X	Ac
G	S	S	Fr	Ac	Ac	Ac	X

As in option 1 both pairs above same relation of Acquaintance. Hence the Answer

QNo:- 41 ,Correct Answer:- C

Explanation:-
Before solving we have to understand the following :
(i) Each one will have total 6 relation (Friend, Acquaintances, strangers). So in first row for Amudha number of friends are 6 -(1+4) = 6.5 = 1.

Similarly for Gowtham the number of friends for Gowtham are also 6-(2 + 3) = 6-5= 1
(ii) The best way of solving is by Grid e.g. if C and G are friends we write in intersection of C and G as Fr and intersection of G and C also Fr

Proceeding in this way we will conclude the whose information in following Grid:

.	A	B	C	D	E	F	G
A	X	S	S	Ac	Fr	S	S
B	S	X	S	Fr	Ac	S	S
C	S	S	X	S	S	Ac	Fr
D	Ac	Fr	S	X	Fr	S	Ac
E	Fr	Ac	S	Fr	X	Fr	Ac
F	S	S	Ac	Ac	Fr	X	Ac
G	S	S	Fr	Ac	Ac	Ac	X

As shown it is Dhinesh

QNo:- 42 ,Correct Answer:- A

Explanation:-
Before solving we have to understand the following :
(i) Each one will have total 6 relation (Friend, Acquaintances, strangers). So in first row for Amudha number of friends are 6 -(1+4) = 6.5 = 1.

Similarly for Gowtham the number of friends for Gowtham are also 6-(2 + 3) = 6-5= 1
(ii) The best way of solving is by Grid e.g. if C and G are friends we write in intersection of C and G as Fr and intersection of G and C also Fr

Proceeding in this way we will conclude the whose information in following Grid:

.	A	B	C	D	E	F	G
A	X	S	S	Ac	Fr	S	S
B	S	X	S	Fr	Ac	S	S
C	S	S	X	S	S	Ac	Fr
D	Ac	Fr	S	X	Fr	S	Ac
E	Fr	Ac	S	Fr	X	Fr	Ac
F	S	S	Ac	Ac	Fr	X	Ac
G	S	S	Fr	Ac	Ac	Ac	X

As shown it is Fani

QNo:- 43 ,Correct Answer:- 3

Explanation:-
Before solving we have to understand the following :
(i) Each one will have total 6 relation (Friend, Acquaintances, strangers). So in first row for Amudha number of friends are 6 -(1+4) = 6.5 = 1.

Similarly for Gowtham the number of friends for Gowtham are also 6-(2 + 3) = 6-5= 1
(ii) The best way of solving is by Grid e.g. if C and G are friends we write in intersection of C and G as Fr and intersection of G and C also Fr

Proceeding in this way we will conclude the whose information in following Grid:

.	A	B	C	D	E	F	G
A	X	S	S	Ac	Fr	S	S
B	S	X	S	Fr	Ac	S	S
C	S	S	X	S	S	Ac	Fr
D	Ac	Fr	S	X	Fr	S	Ac
E	Fr	Ac	S	Fr	X	Fr	Ac
F	S	S	Ac	Ac	Fr	X	Ac
G	S	S	Fr	Ac	Ac	Ac	X

As shown 3 Friends

QNo:- 44 ,Correct Answer:- 4

Explanation:-
Before solving we have to understand the following :
(i) Each one will have total 6 relation (Friend, Acquaintances, strangers). So in first row for Amudha number of friends are 6 -(1+4) = 6.5 = 1.

Similarly for Gowtham the number of friends for Gowtham are also 6-(2 + 3) = 6-5= 1
(ii) The best way of solving is by Grid e.g. if C and G are friends we write in intersection of C and G as Fr and intersection of G and C also Fr

Proceeding in this way we will conclude the whose information in following Grid:

.	A	B	C	D	E	F	G
A	X	S	S	Ac	Fr	S	S
B	S	X	S	Fr	Ac	S	S
C	S	S	X	S	S	Ac	Fr
D	Ac	Fr	S	X	Fr	S	Ac
E	Fr	Ac	S	Fr	X	Fr	Ac
F	S	S	Ac	Ac	Fr	X	Ac
G	S	S	Fr	Ac	Ac	Ac	X

Friends are Amudha, Dhinesh and Fani. Also Dhani's friend Bhartan. So 4 is answer

Section : Quantitative Ability

QNo:- 45 ,Correct Answer:- 200

Explanation:- Indigo in 1st bottle = 33% of 800 = 264gm
Indigo in 2nd bottle = 17% of 800 = 136gm
New Indigo in 1st bottle = 21% of 800 = 168gm
Reduction in Indigo = 264 - 168 = 96gm
Now per 100cc reduction (if 100 cc are thrown form 1st bottle and replaced from 2nd bottle = 33 - 17 = 16gm

$$\therefore \text{ solution transferred from 2nd bottle} = \frac{96}{16} \times 100 = 600 \text{ cc}$$

$\therefore$ solution left in 2nd bottle = 800 - 600 = 200cc

QNo:- 46 ,Correct Answer:- 70

Explanation:- Let digit at unit place = a
Ten's place = b
Hundred's place = c
$\therefore$ Number = 100c + 10 b + a
On reversing number = 100a + 10b + c
$\therefore$ (100a + 10b+c) - (100c + 10 b + a) = 198
99a - 99c = 198
$\Rightarrow$ a-c = 2
Now (a,c) can have seven combination i.e. (3,1) (4, 2) (5,3) (6,4) (7,5) (8,6) (9,7) and b can take 10 values (0 to 9)
$\therefore$ 7 × 10 = 70 are possible three digits numbers

QNo:- 47 ,Correct Answer:- C

Explanation:- (Neeta + Geeta) : Sita = 6 : 1

$$\text{Means Sita} = \frac{1}{7}th \text{ of total}$$

(Sita + Neeta) : Geeta = 2: 1

$$\text{Means Geeta} = \frac{1}{3}rd \text{ of total}$$

$$\text{So Neeta} = 1 - \frac{1}{7} - \frac{1}{3}$$

$$\frac{21 - 3 - 7}{21} = \frac{11}{21}$$

$$\therefore \text{ Highest to lowest ratio} = \frac{11}{21} \frac{7}{7}$$

$$= \frac{11:3}{21} = 11:3$$

QNo:- 48 ,Correct Answer:- B

Explanation:- Let total work = 60 units

$\therefore$ Anu can do $\dfrac{60}{15}$ = 4 units/day

Vinu can do $\dfrac{60}{12}$ = 5 units/day

Manu can do $\dfrac{60}{20}$ = 3 units/day

1st day work = (4+5) = 9 units
2nd day work = (5+3) = 8 units
$\therefore$ work done in 2 days= 9 + 8 = 17 units
Work done in 6 days = 17 × 3 = 51 units
So remaining 60-51 = 9 units are done in 7th day

QNo:- 49 ,Correct Answer:- A

Explanation:- x_0 = 1

x_1 = 2

As $x_{n+2} = \dfrac{1+2n+1}{xn}$

$\therefore x_2 = \dfrac{1+x_1}{x_0} = \dfrac{1+2}{1} = 3$

$x_3 = \dfrac{1+x_2}{x_1} = \dfrac{1+3}{2} = 2$

$x_4 = \dfrac{1+x_3}{x_2} = \dfrac{1+2}{3} = 1$

So sequence become (1,2,3, 2,1) and it states replacing from x_5.
$\therefore x_{2021}$ which will be 2022nd term will be 2nd term i.e. 2

QNo:- 50 ,Correct Answer:- 99

$$5-\log_{10}\sqrt{1+x}+4\log_{10}\sqrt{1-x}=\log_{10}\dfrac{1}{\sqrt{1-x^2}}$$

$$\log 100000 -\log\sqrt{1+x}+\log\left(\sqrt{1-x}\right)^4=\log\dfrac{1}{\sqrt{1-x^2}}$$

$$\log\left[\dfrac{100000\times\left(\sqrt{1-x}\right)^4}{\sqrt{1+x}}\right]=\log\dfrac{1}{\sqrt{1-x^2}}$$

Explanation:-

$$\dfrac{100000\left(\sqrt{1-x}\right)^4}{\sqrt{1+x}}=\dfrac{1}{\sqrt{1+x}\sqrt{1-x}}$$

$$\dfrac{100000}{1}\left(\sqrt{1-x}\right)^4=\dfrac{1}{\left(\sqrt{1-x}\right)}$$

$$\Rightarrow\left(\sqrt{1-x}\right)^5=10^{-5}$$

$$\sqrt{1-x}=10^7$$

$$1-x=\dfrac{1}{100}$$

$$\Rightarrow x=\dfrac{99}{100}$$

$$\therefore 100x=\dfrac{99}{100}\times100=99$$

QNo:- 51 ,Correct Answer:- 35

Explanation:- *Let patient in hospital B = x*
Patient in hospital A = x - 21
Patient/day in B = B
Patient/day in A= B+3
According to question
xB = 152
(x-21) (B+3) = 200

$$B = \frac{152}{x}$$

$$(x\text{-}21)\left(\frac{152}{x}+3\right)=200$$

152x - 3192 + 3x² + 630 = 200x
3x² - 11x - 3192 = 0
x² - 37x - 1064 = 0
(x-56) (x+19) = 0
⇒ x = 56
So patient in A = x - 21
= 56 - 21 = 35

QNo:- 52 ,Correct Answer:- A

Explanation:- *Here $|x^2 - 4x - 13| = r$*
Let $f(x) = x^2 - 14x - 13 = (x -2)^2 - 17$
Its graph will be

(2, -17)
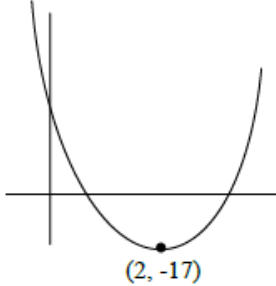
Now $|x^2 - 4x - 13| = 0$
$\Rightarrow |(x-2)^2 - 17| = 0$, its graph will be
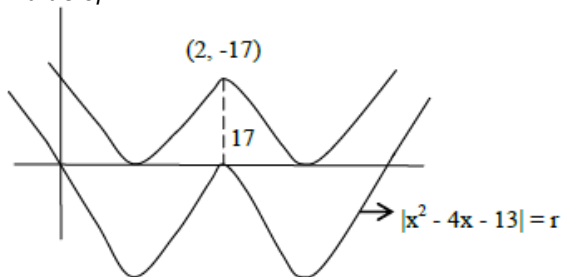

(2, -17)
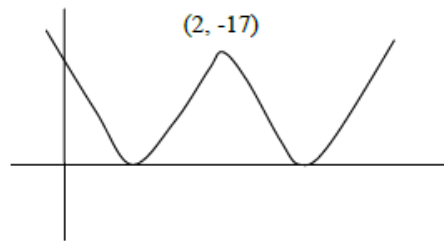
The original equation is $|x^2 - 4x - 13| = r$
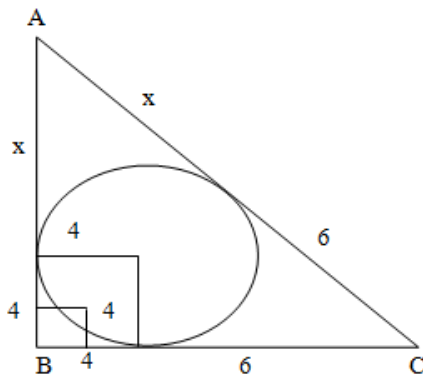*$\Rightarrow |(x-2)^2 - 17| - r = 0$*
As it has exactly 3 roots so the above graph will tough x-axis thrice, so
$\therefore$ value of r = 17

(2, -17)

17

$|x^2 - 4x - 13| = r$

QNo:- 53 ,Correct Answer:- A

Explanation:-
$$\text{Required interest} = \frac{866.72}{806.25} \times 866.72 = 931.72$$

QNo:- 54 ,Correct Answer:- 120

Explanation:-

$$\text{In radius} = \frac{Area\ of\ \Delta}{Semi\ perimeter}$$

$$\therefore 4 = \frac{\frac{1}{2} \times BC \times AB}{\frac{x+4+10+x+6}{2}}$$

$$4 = \frac{\frac{1}{2} \times 10(x+4)}{\frac{2x+20}{2}}$$

$$4 = \frac{5(x+4)}{x+10}$$

4x + 40 = 5x + 20

⇒ x = 20

$$\text{Area of } \Delta \frac{1}{2} \times BC \times AB$$

$$= \frac{1}{2} \times 10 \times 24$$

= 120 sq. inch

QNo:- 55 ,Correct Answer:- A

$$\text{Speed of 1st train} = \frac{160}{12} = \frac{40}{3}\ m/sec$$

$$\text{Speed of 2nd train} = \frac{40}{3} - \frac{6\times5}{18}$$

$$= \frac{40}{3} - \frac{5}{3} = \frac{35}{3} m/sec$$

$$\text{Relative speed} = = \frac{40}{3} + \frac{35}{3} = \frac{75}{3} = 25m/sec$$

Explanation:-

∴ *time = 14 sec*

∴ *Sum of lengths of two trains = 25 × 14 = 350m*

∴ *length of 2nd train = 350 - 160 = 190m*

QNo:- 56 ,Correct Answer:- B

Explanation:- $2A + 4O + 6M = 1A + 4O + 8M$
$\Rightarrow 1A = 2M$ .... (1)
$1A + 4O + 8M = 8O + 7M$
$2M + 4O + 8M = 8O + 7M$
$10M + 4O = 8O + 7M$
$3M = 8O - 4O$
$3M = 4O$
So 1st basket in terms of M can be $2A + 4O + 6M$
$= 4M + 3M + 6M$
$= 13$ Mangoes

QNo:- 57 ,Correct Answer:- 32

Explanation:- Amar and Akbar can do work in 12 months
Akbar and Anthony in 16 months
Anthony and Amar in 24 months
Let total work = 48 units
$\therefore$ Amar + Akbar will 48/12 = 4 units/month
Akbar + Anthony will 48/16 = 3 units/month
Anthony + Amar will do 48/24 = 2 units/months
$\therefore$ 2 (Amar + Akbar + Anthony) will do 4 + 3 + 2 = 9 units/month
$\therefore$ Amar + Akbar + Anthony do 9/2 = 4.5 units/month
$\therefore$ Anthony will do 4.5 - 4 = .5 units/month
Hence will do work in 48/.5 = 96 months

Amar will do $\dfrac{48}{(4.5-3)} = \dfrac{48}{1.5} = 32$ months

Akbar will do in $\dfrac{48}{(4.5-2)} = \dfrac{48}{2.5} = 19.2$ months

So neither fastest non slowest will do in 32 months.

QNo:- 58 ,Correct Answer:- B

Explanation:- Let side of hexagon = a
$\therefore \dfrac{6 \times \sqrt{3}}{4} \times a^2 = \dfrac{\sqrt{3}}{4} \times 12^2$
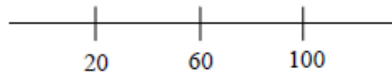$a^2 = \dfrac{12 \times 12}{6} = 24$
$\Rightarrow a = \sqrt{24} = 2\sqrt{6}$

QNo:- 59 ,Correct Answer:- 1000

Explanation:-
Let number of pens = n
Fixed salary = k
CP of n pens = 8n Rs.
So According to question
$[12 \times 100 + (n-100) \times 11] - [k+8n] = 300$ .... (1)
Also
$[12 \times 100 + (n-100) \times 9] - [k+8n] = -300$
Solving we get = n = 400
and k = 1000
∴ Salary = 1000 Rs.

QNo:- 60 ,Correct Answer:- A

Explanation:-

(i) $|n - 60|$ is the distance of n from 60 or number line
(ii) $|n - 100|$ is the distance of n from 100 or number line
(iii) $|n - 20|$ is distance of n from 20 on number line

Given that $|n-60| < |n-100| < |n-20|$
At n = 60, $|n-20|$ and $|n-100|$ are equal
∴ n > 60
Mid-point of 60 and 100 is 80
At n = 80, $|n-60| = |n-100|$
∴ n < 80
So n lines between 60 and 80
n = (61, 62, ...79)
Hence 19 values possible

QNo:- 61 ,Correct Answer:- A

Explanation:- Let as suppose each chocolate weight k gm and n_1 are chocolate in small box and n_2 in second box and price are P and 88 p.
∴ $(n_2 \times k) \times .88P = 2(n_1 \times k) \times P$

$$\therefore \frac{n_2 \times k}{n_1 \times k} = \frac{2}{.88} = \frac{200}{88} = \frac{25}{11}$$

$$\therefore \% \text{ increase} = \frac{25-11}{11} \times 100$$

$$= \frac{14}{11} \times 100$$

$$\approx 127\%$$

QNo:- 62 ,Correct Answer:- A

Explanation:- In first group 1 element is there
In second group 3 elements are there
In third group 5 elements are there
∴ in 14th group 27 elements are there
∴ Numbers used = 1 + 3 + 5 + ... + 27 = 14^2
∴ First elements of 15th group will be 197 and it will have 29 numbers
∴ S = 29/2 [2 × 197 + (28)] = 6119

QNo:- 63 ,Correct Answer:- C

Explanation:- Fixed amount for 1st 3 months will be LCM of 10, 20, 25 i.e. 100 Rs. And last two months will be 100/2 = 50 Rs.

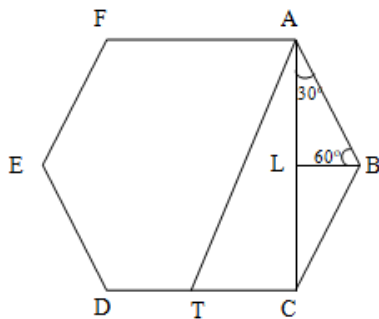∴ Quantity purchase = $\frac{100}{10} + \frac{100}{20} + \frac{100}{25} + \frac{50}{25} + \frac{50}{50}$

= 10 + 5 + 4 + 2 + 1
= 22kg

∴ Average Price = $\frac{100 + 100 + 100 + 50 + 80}{22}$

= $\frac{400}{22}$ = 18 Rs./kg

QNo:- 64 ,Correct Answer:- A

Explanation:-
As shown BL = √3   (30°, 60°, 90° Δ)
Also LC = √3
∴ AC = 2√3
∴ A T^2 = (2 √3)^2 + (1)^2
= 12 + 1
= 13
⇒ AT = √13

QNo:- 65 ,Correct Answer:- B
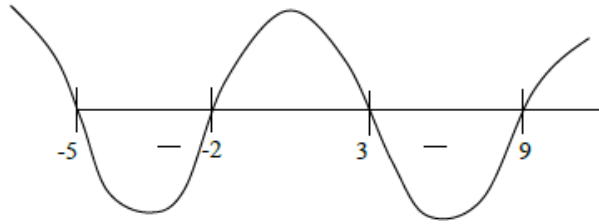
Explanation:-

$$f(x) = \frac{x^2 + 2x - 15}{x^2 - 7x - 18}$$

$$= \frac{x^2 + 5x - 3x - 15}{x^2 - 9x + 2x - 18} = \frac{(x+5)(x-3)}{(x-9)(x+2)}$$

$$\frac{(x+5)(x-3)}{(x-9)(x+2)} < 0$$

∵ -5 < x <-2 or 3 < x < 9

is the answer

QNo:- 66 ,Correct Answer:- 47

Explanation:- As 3, 5 are fixed. So we have to select remaining digits such that 7, 8 are not together.

Three digits number = $^6c_1$ = 6 (as only 1 digit is selected out of)

4 digit number = $^6c_2$ -1 = 14

5 digits number = $^6c_3$ - 4 = 16

6 digits number = $^6c_4$ - 6 = 9

7 digits number = $^6c_5$ - $^4c_3$ = 2

8 digit number will not be possible as (7,8) will be together'

∴ number of groups = 6 + 14 + 16 + 9 + 2 = 47

Directions of Test

Test Name	Actual CAT 2021 Slot II	Total Questions	66	Total Time	120 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	24	0:40(h:m)	3	1/3
DI & Reasoning	20	0:40(h:m)	3	1/3
Quantitative Ability	22	0:40(h:m)	3	1/3

Section : Verbal Ability

QNo:- 1 ,Correct Answer:- C

Explanation:-
Q is all of the following are true, EXCEPT
For option 1, refer lines "a framework for analyzing the contradictory pulls on [Indian] nationalist ideology in its struggle against the dominance of colonialism and the resolution it offered to those contradictions. Briefly, this resolution was built around a separation of the domain of culture into two spheres—the material and the spiritual."
For option 2, refer lines "The discourse of nationalism shows that the material/spiritual distinction was condensed into an analogous, but ideologically far more powerful, dichotomy: that between the outer and the inner."
For option 4, refer lines "The discourse of nationalism shows that the material/spiritual distinction was condensed into an analogous, but ideologically far more powerful, dichotomy: that between the outer and the inner. . . . Applying the inner/outer distinction to the matter of concrete day-to-day living separates the social space into ghar and bāhir, the home and the world. The world is the external, the domain of the material; the home represents one's inner spiritual self, one's true identity."

QNo:- 2 ,Correct Answer:- D

Explanation:-
Refer lines "**It was in the material sphere that the claims of Western civilization were the most powerful**. Science, technology, rational forms of economic organization, modern methods of statecraft—these had given the European countries the strength to subjugate the non-European people . . . **To overcome this domination, the colonized people had to learn those superior techniques of organizing material life and incorporate them within their own cultures. . . . But this could not mean the imitation of the West in every aspect of life, for then the very distinction between the West and the East would vanish—the self-identity of national culture would itself be threatened. . .**"

QNo:- 3 ,Correct Answer:- A

Explanation:-
Option 1 goes against lines "But this could not mean the imitation of the West in every aspect of life, for then the very distinction between the West and the East would vanish—the self-identity of national culture would itself be threatened."
Here the author talks about distinction, while the option talks about hybridization in all realms

QNo:- 4 ,Correct Answer:- C

Explanation:-
Q is about liberals' **_perception_**. Refer lines
"as liberals are apt to in their despair at the many marks of social conservatism in nationalist practice, a total rejection of the West."

QNo:- 5 ,Correct Answer:- A

Explanation:-
Option1 is supported by paras 1 and 2
Option2 is incorrect Refer lines "We hold our beliefs and presumptive knowledges more or less confidently, usually **_depending on how we acquired them_** (I saw it with my own eyes; I heard it on Fox News; a guy at the office told me)"
Option 3 is incorrect as sceptic says "we should aim to know that reality independently" isn't supported by the passage

QNo:- 6 ,Correct Answer:- C

Explanation:-
Refer to lines preceding the line in Q and we reach option 3 as the answer
"we cannot be sure that we know anything – at least not if we think of knowledge as something like having a correct mental representation of reality, and not if we think of reality as something like things-as-they-are-in-themselves, independent of our perceptions, ideas or descriptions. For, the sceptic will note, since reality, under that conception of it, is outside our ken (we cannot catch a glimpse of things-in-themselves around the corner of our own eyes; we cannot form an idea of reality that floats above the processes of our conceiving it), we have no way to compare our mental representations with things-asthey-are-in-themselves and therefore no way to determine whether they are correct or incorrect"

QNo:- 7 ,Correct Answer:- D

Explanation:-
Refer lines "We hold our beliefs and presumptive knowledge's more or less confidently, usually **_depending on how we acquired them_** (I saw it with my own eyes; I heard it on Fox News; a guy at the office told me) **_and how broadly and strenuously they seem to be shared or endorsed by various relevant people:_** experts and authorities, friends and family members, colleagues and associates"

QNo:- 8 ,Correct Answer:- D

Explanation:-
Q is all of the following, EXCEPT
For option 1 refer lines "sceptic's contention that we cannot be sure that we know anything – at least not if we think of knowledge as something like having a correct mental representation of reality, and not if we think of reality as something like things-as-they-are-in-themselves, independent of our perceptions, ideas or descriptions."
For option2 refer lines "**_unless we can ground our claims to knowledge as such, which is to say, distinguish it from mere opinion_**, superstition, fantasy, wishful thinking, ideology, illusion **_or delusion_**, then the actions we take on the basis of presumed knowledge – boarding an airplane, swallowing a pill, finding someone guilty of a crime – **_will be irrational and unjustifiable._**"
For option 3 refer lines "While it is not clear that the scandal matters to anyone but philosophers, philosophers point out that it should matter to everyone"

QNo:- 9 ,Correct Answer:- D

Explanation:-
*Option 4 is correct as it's supported by lines "Both push and pull factors lead to the decline of languages. ..... More commonly, speakers live on but abandon their language in favor of another vernacular, a widespread process that linguists refer to as "**language shift**" from which few languages are immune. Such trading up and out of a speech form occurs for complex political, cultural and economic reasons – sometimes voluntary for economic and educational reasons, although often amplified by state coercion or neglect. Welsh, long stigmatized and disparaged by the British state, has rebounded with vigor." where author talks about language shift in previous lines*
Option 1 is incorrect as author doesn't state globalization as reason for Welsh language
Option 2 is incorrect as it's not about people but about the language
*Option 3 is incorrect as it gives credit to state opposite to what the author states "Such trading up and out of a speech form occurs for complex political, cultural and economic reasons – sometimes voluntary for economic and educational reasons, although often amplified by **state coercion** or neglect. Welsh, **long stigmatized and disparaged by the British state**, has rebounded with vigor."*

QNo:- 10 ,Correct Answer:- C

Explanation:-
Refer last paragraph

QNo:- 11 ,Correct Answer:- C

Explanation:-
Q is all of the following EXCEPT
Option 3 is incorrect because of words 'challenging to document' which isn't supported by the passage
*Option 1 is supported by lines "But indigenous languages are about much more than unusual words and intriguing grammar**: They function as vehicles for the transmission of cultural traditions, environmental understandings** and knowledge about medicinal plants, all at risk when elders die and livelihoods are disrupted."*
Option 2 is supported by lines "While speech communities are increasingly involved in projects to protect their languages – in print, on air and online – orality is fragile and contributes to linguistic vulnerability."
*Option 4 is supported throughout the passage especially by lines "It's easy to forget that **most of the world's languages are still transmitted orally with no widely established written form.** While speech communities are increasingly involved in projects to protect their languages – in print, on air and online – **orality is fragile and contributes to linguistic vulnerability**."*

QNo:- 12 ,Correct Answer:- B

Explanation:-
Q is all of the following EXCEPT
Option 2 is opposite of what author states Refer lines:
"Speakers of previously exclusively oral tongues are turning to the web as a virtual space for languages to live on. Internet technology offers powerful ways for oral traditions and cultural practices to survive, even thrive, among increasingly mobile communities"
"By widening access to technology, globalization can support indigenous and scholarly communities engaged in documenting and protecting our shared linguistic heritage"

QNo:- 13 ,Correct Answer:- B

Explanation:- Q is about 'successful' leaders
Option 1 is incorrect because of the word 'better' which isn't supported by the passage
Option 3 is incorrect as it isn't first but second type of power
Option 4 is extreme owing to its meaning and use of words 'need' and 'both' and 'to remain'

QNo:- 14 ,Correct Answer:- C

Explanation:- 2 Main points to be covered are 'truth' and 'unity' Refer lines "Should they aim to unite people by making sure everyone believes in the same fiction, or should they let people know the truth even at the price of disunity?"

QNo:- 15 ,Correct Answer:- A

Explanation:- None of the other options actually talks about fiction

QNo:- 16 ,Correct Answer:- A

Explanation:-
Option 2 is not correct as author doesn't recommend staying close to unalloyed truth Refer line "Hence if you stick to unalloyed reality, few (i.e. hardly anyone) people will follow you."
Option 3 is incorrect as author doesn't talk about limits
Option 4 is incorrect as author doesn't talk about "a leader who propagates **only** myths"

QNo:- 17 ,Correct Answer:- 3214

Explanation:-
1-4 1-4 is an obvious pair as 'this invention' in 1 is referring to 'commercial fusion power' in 1
3-2   2 tells why the modern scientific method is the greatest as the method (including controlled tests, precise observations and clever analysis) provides meaningful insights
32-14   14 add to the why the method is the greatest by providing an example (commercial fusion power is inconceivable without it)

QNo:- 18 ,Correct Answer:- B

Explanation:-
Option 1 is incorrect as the industrialist and the unemployed don't capture the political agenda, the capitalist does
Option 3 is incorrect as 'stifle competition in free markets'
isn't talked about in the paragraph
Option 4 is incorrect as 'the capitalists capture the political agenda' because of competition isn't implied by the paragraph
Option 2 summarizes the paragraph without committing any of the mistakes in other options

QNo:- 19 ,Correct Answer:- 5

Explanation:- Statement 1 to 4 talk about marketing and neuromarketing while Statement 5 talks about social scientists, who haven't been talked about in any other Statement Hence 5 is the odd one out

QNo:- 20 ,Correct Answer:- C

Explanation:-
Option 1 is incorrect as it's the undue obsession not the industry that is hampering creativity. Also, 'destroyed' is too strong a word
Option 2 is incorrect as it's not proliferation of creativity that is negative but undue obsession with it. Also, the paragraph never implied that there ever was a stable process for creativity
Option 4 is incorrect as it focuses on **_defining_** creativity while paragraph is talking about real creativity
Option 3 summarizes the paragraph without committing any of the mistakes in other options

QNo:- 21 ,Correct Answer:- B

Explanation:-
Option 1 is factually incorrect because of use of words 'almost all'
Option 3 is incorrect as it leaves out biologists and physicists completely and also because of use of word 'most'
Option 4 is factually incorrect as preprints aren't accepted by biologists

QNo:- 22 ,Correct Answer:- 1

Explanation:- Statement 2 and 3 both talk about genetics
Statement 3,4 and 5 talk about enhancement through genetics
Statement 4 talks about philosophers shrinking from/shying away while Statement 1 talks about 'The care with which philosophers examine ' Hence Statement 1 and 4 are conceptually opposing

QNo:- 23 ,Correct Answer:- 2413

Explanation:- Statement 2 at the beginning states that we are at crossroads
2-41 41 state why we are at crossroads comparing situations 'half a century ago' and 'today'
1-3 'This' in 3 is referring to initial part of Statement 1

QNo:- 24 ,Correct Answer:- 2143

Explanation:- 2 starts the paragraph as it states what the northwest passage is composed of
4-3 'the dispute' in 3 is referring to Statement 4
Also, 3 concludes by stating the dispute is transitory
21--3 the basis of 'the dispute' in 3 is given in Statement 2 and 1 so 2 and 1 come before Statement 3 though not immediately before statement 3

Section : DI & Reasoning

QNo:- 25 ,Correct Answer:- 6

Explanation:- From the given information, we can make the following table. The numbers here are the dates on which the orders are booked (B) and dispatched (D).

	Order									
	I		II		III		IV		V	
	B	D	B	D	B	D	B	D	B	D
Art	1	3	3	4	4	6	6	13	13	21
Binders	1	2	2	4	4	5	5	16		
Paper	2	4	4	7	7	12				
Phones	2	4	4	5	5	17				
Appliances	2	4	4	12						
Book cases	3	4	4	6	6	7				
Fasteners	2	4	4	6	6	8				
Furnishing	1	5	5	12						
Labels	2	4	4	12						
Tables	2	4	4	10						
Chairs	2	3	3	9						
Accessories	1	19								
Envelopes	3	7								
Storage	2	7	7	22						

From the above table, we can see that no booking was done on 8th, 9th, 10th, 11th, 12th and 14th Sept. Therefore, for 6 days there was no booking.

QNo:- 26 ,Correct Answer:- 11

Explanation:- From the given information, we can make the following table. The numbers here are the dates on which the orders are booked (B) and dispatched (D).

	Order									
	I		**II**		**III**		**IV**		**V**	
	B	D	B	D	B	D	B	D	B	D
Art	1	3	3	4	4	6	6	13	13	21
Binders	1	2	2	4	4	5	5	16		
Paper	2	4	4	7	7	12				
Phones	2	4	4	5	5	17				
Appliances	2	4	4	12						
Book cases	3	4	4	6	6	7				
Fasteners	2	4	4	6	6	8				
Furnishing	1	5	5	12						
Labels	2	4	4	12						
Tables	2	4	4	10						
Chairs	2	3	3	9						
Accessories	1	19								
Envelopes	3	7								
Storage	2	7	7	22						

Accessories and Envelopes have only one type of shipping mode.
Processing time for Accessories = (19 - 1) = 18 days
Processing time for Envelopes = (7 - 3) = 4 days

$$\text{Therefore, average time} = \frac{18+4}{2} = 11 \text{days}$$

QNo:- 27 ,Correct Answer:- B

Explanation:- From the given information, we can make the following table. The numbers here are the dates on which the orders are booked (B) and dispatched (D).

	Order									
	I		II		III		IV		V	
	B	D	B	D	B	D	B	D	B	D
Art	1	3	3	4	4	6	6	13	13	21
Binders	1	2	2	4	4	5	5	16		
Paper	2	4	4	7	7	12				
Phones	2	4	4	5	5	17				
Appliances	2	4	4	12						
Book cases	3	4	4	6	6	7				
Fasteners	2	4	4	6	6	8				
Furnishing	1	5	5	12						
Labels	2	4	4	12						
Tables	2	4	4	10						
Chairs	2	3	3	9						
Accessories	1	19								
Envelopes	3	7								
Storage	2	7	7	22						

Average processing time for Arts

$$= \frac{(3-1)+(4-3)+(6-4)+(13-6)+(21-13)}{5} = \frac{2+1+2+7+8}{5} = \frac{20}{5} = 4 \, days$$

Average processing time for Binders

$$= \frac{(2-1)+(4-2)+(5-4)+(16-5)}{4} = \frac{1+2+1+11}{4} = \frac{15}{4} = 3.75$$

Average processing time for Paper $$= \frac{(4-2)+(7-4)+(12-7)}{3} = \frac{2+3+5}{3} = \frac{10}{3} = 3.33$$

Average processing time for Phones $$= \frac{(4-2)+(5-4)+(17-5)}{3} = \frac{2+1+12}{3} = \frac{15}{3} = 5$$

Therefore, the decreasing order is Phones, Art, Binders, Paper

QNo:- 28 ,Correct Answer:- C

Explanation:- From the given information, we can make the following table. The numbers here are the dates on which the orders are booked (B) and dispatched (D).

	Order									
	I		II		III		IV		V	
	B	D	B	D	B	D	B	D	B	D
Art	1	3	3	4	4	6	6	13	13	21
Binders	1	2	2	4	4	5	5	16		
Paper	2	4	4	7	7	12				
Phones	2	4	4	5	5	17				
Appliances	2	4	4	12						
Book cases	3	4	4	6	6	7				
Fasteners	2	4	4	6	6	8				
Furnishing	1	5	5	12						
Labels	2	4	4	12						
Tables	2	4	4	10						
Chairs	2	3	3	9						
Accessories	1	19								
Envelopes	3	7								
Storage	2	7	7	22						

Total orders = 35
Orders with processing time of one day = 7

$\therefore$ Required %age $= \dfrac{7}{35} \times 100 = 20\%$

QNo:- 29 ,Correct Answer:- C

Explanation:-
3 games:- Aruna, Biju, Chira, Dipen
2 games:- Azul, Chetan
1 game:- Arif, Brinda, Brij, Chhavi, Donna, Deb

Group A:- Arif played one game & Azul played 2 games
∴   1st match →Arif vs Azul → Azul won
*   2nd match →Azul vs Aruna →Aruna won*
∴ Aruna is Rank 1 player of group A.
As Aruna played 3 matches and she played only one match in group 1, so the remaining two matches of Aruna are semifinal & final.
⇒ Aruna played final

Group B:- Brinda & Brig played 1 match each, so Biju cannot be rank one player in Group B. This is because, if Biju is rank 1, then Brinda & Brij will play first match and winner of that match will play against Biju, so that person will play 2 matches, which is not possible.
If Brinda is rank 1 player, then
I match →Biju vs Brij ⇒ Biju won
II match →Biju vs Brinda ⇒ Biju won
If Brij is rank 1 player, then
I match →Biju vs Brinda ⇒ Biju won
II match →Biju vs Brij ⇒ Biju won
So either Brij or Brinda is rank 1 player in group B and Biju played 2 matches in group.
So the third match which Biju will play is semifinal.

Group C:- Here Chhavi played one match and Chetan played 2 matches.
So match I:- Chhavi vs Chetan ⇒ Chetan won
*   match II:- Chitra vs Chetan ⇒ Chitra won*
if Chhavi plays with Chitra & Chitra beats her, then Chitra will beat Chetan also. In that case Chetan has played only one game which is not possible.
Here Chitra had played one match in group and her remaining matches are semifinal & final. So Chitra played final.

Group D:- Here Donna & Deb played one match each. So as discussed in Group B, Dipen cannot be rank 1 player.
∴ In group D, either Donna & Deb are rank 1 player & Dipen played 2 matches in group and his one match will be semifinal.

Dipen is definitely not ranked first in his group.

QNo:- 30 ,Correct Answer:- D

Explanation:-
3 games:- Aruna, Biju, Chira, Dipen
2 games:- Azul, Chetan
1 game:- Arif, Brinda, Brij, Chhavi, Donna, Deb

Group A:- Arif played one game & Azul played 2 games
∴   1st match →Arif vs Azul → Azul won
*   2nd match →Azul vs Aruna →Aruna won*
∴ Aruna is Rank 1 player of group A.
As Aruna played 3 matches and she played only one match in group 1, so the remaining two matches of Aruna are semifinal & final.
⇒ Aruna played final

Group B:- Brinda & Brig played 1 match each, so Biju cannot be rank one player in Group B. This is because, if Biju is rank 1, then Brinda & Brij will play first match and winner of that match will play against Biju, so that person will play 2 matches, which is not possible.
If Brinda is rank 1 player, then
I match →Biju vs Brij ⇒ Biju won
II match →Biju vs Brinda ⇒ Biju won
If Brij is rank 1 player, then
I match →Biju vs Brinda ⇒ Biju won
II match →Biju vs Brij ⇒ Biju won
So either Brij or Brinda is rank 1 player in group B and Biju played 2 matches in group.
So the third match which Biju will play is semifinal.

Group C:- Here Chhavi played one match and Chetan played 2 matches.
So match I:- Chhavi vs Chetan ⇒ Chetan won
*   match II:- Chitra vs Chetan ⇒ Chitra won*
if Chhavi plays with Chitra & Chitra beats her, then Chitra will beat Chetan also. In that case Chetan has played only one game which is not possible.
Here Chitra had played one match in group and her remaining matches are semifinal & final. So Chitra played final.

Group D:- Here Donna & Deb played one match each. So as discussed in Group B, Dipen cannot be rank 1 player.
∴ In group D, either Donna & Deb are rank 1 player & Dipen played 2 matches in group and his one match will be semifinal.

Dipen is definitely not ranked first in his group.

QNo:- 31 ,Correct Answer:- C

Explanation:-
3 games:- Aruna, Biju, Chira, Dipen
2 games:- Azul, Chetan
1 game:- Arif, Brinda, Brij, Chhavi, Donna, Deb

Group A:- Arif played one game & Azul played 2 games
∴   1st match →Arif vs Azul → Azul won
*   2nd match →Azul vs Aruna →Aruna won*
∴ Aruna is Rank 1 player of group A.
As Aruna played 3 matches and she played only one match in group 1, so the remaining two matches of Aruna are semifinal & final.
⇒ Aruna played final

Group B:- Brinda & Brig played 1 match each, so Biju cannot be rank one player in Group B. This is because, if Biju is rank 1, then Brinda & Brij will play first match and winner of that match will play against Biju, so that person will play 2 matches, which is not possible.
If Brinda is rank 1 player, then
I match →Biju vs Brij ⇒ Biju won
II match →Biju vs Brinda ⇒ Biju won
If Brij is rank 1 player, then
I match →Biju vs Brinda ⇒ Biju won
II match →Biju vs Brij ⇒ Biju won
So either Brij or Brinda is rank 1 player in group B and Biju played 2 matches in group.
So the third match which Biju will play is semifinal.

Group C:- Here Chhavi played one match and Chetan played 2 matches.
So match I:- Chhavi vs Chetan ⇒ Chetan won
*   match II:- Chitra vs Chetan ⇒ Chitra won*
if Chhavi plays with Chitra & Chitra beats her, then Chitra will beat Chetan also. In that case Chetan has played only one game which is not possible.
Here Chitra had played one match in group and her remaining matches are semifinal & final. So Chitra played final.

Group D:- Here Donna & Deb played one match each. So as discussed in Group B, Dipen cannot be rank 1 player.
∴ In group D, either Donna & Deb are rank 1 player & Dipen played 2 matches in group and his one match will be semifinal.

Aruna & Chitra reached the final. As Chitra did not win final, so Aruna must have won it.

QNo:- 32 ,Correct Answer:- A

Explanation:-
3 games:- Aruna, Biju, Chira, Dipen
2 games:- Azul, Chetan
1 game:- Arif, Brinda, Brij, Chhavi, Donna, Deb

Group A:- Arif played one game & Azul played 2 games
∴   1st match →Arif vs Azul → Azul won
        2nd match →Azul vs Aruna →Aruna won
∴ Aruna is Rank 1 player of group A.
As Aruna played 3 matches and she played only one match in group 1, so the remaining two matches of Aruna are semifinal & final.
⇒ Aruna played final

Group B:- Brinda & Brig played 1 match each, so Biju cannot be rank one player in Group B. This is because, if Biju is rank 1, then Brinda & Brij will play first match and winner of that match will play against Biju, so that person will play 2 matches, which is not possible.
If Brinda is rank 1 player, then
I match →Biju vs Brij ⇒ Biju won
II match →Biju vs Brinda ⇒ Biju won
If Brij is rank 1 player, then
I match →Biju vs Brinda ⇒ Biju won
II match →Biju vs Brij ⇒ Biju won
So either Brij or Brinda is rank 1 player in group B and Biju played 2 matches in group.
So the third match which Biju will play is semifinal.

Group C:- Here Chhavi played one match and Chetan played 2 matches.
So match I:- Chhavi vs Chetan ⇒ Chetan won
    match II:- Chitra vs Chetan ⇒ Chitra won
if Chhavi plays with Chitra & Chitra beats her, then Chitra will beat Chetan also. In that case Chetan has played only one game which is not possible.
Here Chitra had played one match in group and her remaining matches are semifinal & final. So Chitra played final.

Group D:- Here Donna & Deb played one match each. So as discussed in Group B, Dipen cannot be rank 1 player.
∴ In group D, either Donna & Deb are rank 1 player & Dipen played 2 matches in group and his one match will be semifinal.

Biju played semifinal against Aruna and lost it. So he cannot play against Chitra.

QNo:- 33 ,Correct Answer:- 6

Explanation:-   The total tip received is Rs. 120
Now 120 = 20 + 20 + 30 + 50 or 20 + 50 + 50 + 0 or 30 + 30 + 30 + 30
It is given that in Timeliness, Ravi received a total of 21 points. As per point 1, let Atal gave x points then Bihari, Chirag and Deepak will give y each, s.t. $x > y$ & $x + 3y = 21$
⇒ (x, y) are (6, 5) or (9, 4)
Total of Packaging is 29 with all distinct ratings ⇒ 29 = 9 + 8 + 7 + 5
Hygiene also has distinct ratings with a total of 26.
Now 26 = 9 + 8 + 7 + 2 or 9 + 8 + 6 + 3 or 9 + 8 + 5 + 4 or 8 + 7 + 6 + 5
Point 4 says that Chirag gave highest rating to hygiene, and also rating of Chirag as per point 3 is same for packaging & hygiene. So Chirag cannot give rating 9 to packaging as Bihari is the one giving highest rating to packaging.
∴ Chirag will give highest rating of 8 to hygiene and therefore 26 = 8 + 7 + 6 + 5

Using the point 5, the partial table can be as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7			x	
Bihari	6	9		y	
Chirag	6	8	8	y	
Deepak	5			y	
Total		9	26	21	

Point 6 says that Atal's Rank in Packaging & hygiene is same. So it can be rank 3 or 4 and the same is true for Deepak also.

Two cases arise here:
Case I:- If Atal's rank is 3rd in packaging and hygiene.
In this case Atal's rating in packaging will be 7 and in hygiene will be 6 Deepak will be ranked 4 in these parameters with ratings 5 each.
Also taking the possible values of timeliness, the table will look like as follows

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	7	6	6/9	26/29
Bihari	6	9	7	5/4	27/26
Chirag	6	8	8	5/4	27/26
Deepak	5	5	5	5/4	20/19
Total		29	26	21	

In this case Ravi will get bonus of Rs 20 each from Atal, Bihari & Chirag. From Deepak he can get maximum Rs 50 as tip. So his total will not be Rs 120 therefore, this case is wrong.

Case II:- If Atal's rank is 4th in packaging and hygiene. In this case Atal's ratings in these two parameters will be 5 each and Deepak's rank will be third with ratings of 7 & 6 respectively in packaging and hygiene respect.
We get the first table as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	9	26
Bihari	6	9	7	4	26
Chirag	6	8	8	4	26
Deepak	5	7	6	4	22

In this case again he will get Rs 20 bonus from Atal, Bihari & Chirag, so his total cannot be Rs 120. Hence this case is not valid.

If we take the second case of timeliness, then the table will be

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	6	23
Bihari	6	9	7	5	27

Chirag	6	8	8	5	27
Deepak	5	7	6	5	23
Total		29	26		

In this case Ravi can get tip from Atal & Deepak & will get bonus from Bihari & Chirag. Atal & Deepak can give tip of Rs 30 & Rs 50 in any order.
So he will get 120 = 20 + 20 + 30 + 50.

Minimum rating given is 5

QNo:- 34 ,Correct Answer:- D

Explanation:- *The total tip received is Rs. 120*
Now 120 = 20 + 20 + 30 + 50 or 20 + 50 + 50 + 0 or 30 + 30 + 30 + 30
It is given that in Timeliness, Ravi received a total of 21 points. As per point 1, let Atal gave x points then Bihari, Chirag and Deepak will give y each, s.t. x > y & x + 3y = 21
$\Rightarrow$ *(x, y) are (6, 5) or (9, 4)*
Total of Packaging is 29 with all distinct ratings $\Rightarrow$ *29 = 9 + 8 + 7 + 5*
Hygiene also has distinct ratings with a total of 26.
Now 26 = 9 + 8 + 7 + 2 or 9 + 8 + 6 + 3 or 9 + 8 + 5 + 4 or 8 + 7 + 6 + 5
Point 4 says that Chirag gave highest rating to hygiene, and also rating of Chirag as per point 3 is same for packaging & hygiene. So Chirag cannot give rating 9 to packaging as Bihari is the one giving highest rating to packaging.
$\therefore$ *Chirag will give highest rating of 8 to hygiene and therefore 26 = 8 + 7 + 6 + 5*
Using the point 5, the partial table can be as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7			x	
Bihari	6	9		y	
Chirag	6	8	8	y	
Deepak	5			y	
Total		9	26	21	

Point 6 says that Atal's Rank in Packaging & hygiene is same. So it can be rank 3 or 4 and the same is true for Deepak also.

Two cases arise here:
Case I:- If Atal's rank is 3rd in packaging and hygiene.
In this case Atal's rating in packaging will be 7 and in hygiene will be 6 Deepak will be ranked 4 in these parameters with ratings 5 each.
Also taking the possible values of timeliness, the table will look like as follows

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	7	6	6/9	26/29
Bihari	6	9	7	5/4	27/26
Chirag	6	8	8	5/4	27/26
Deepak	5	5	5	5/4	20/19
Total		29	26	21	

In this case Ravi will get bonus of Rs 20 each from Atal, Bihari & Chirag. From Deepak he can get maximum Rs 50 as tip. So his total will not be Rs 120 therefore, this case is wrong.

Case II:- If Atal's rank is 4th in packaging and hygiene. In this case Atal's ratings in these two parameters will be 5 each and Deepak's rank will be third with ratings of 7 & 6 respectively in packaging and hygiene respect.
We get the first table as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	9	26
Bihari	6	9	7	4	26
Chirag	6	8	8	4	26
Deepak	5	7	6	4	22

In this case again he will get Rs 20 bonus from Atal, Bihari & Chirag, so his total cannot be Rs 120. Hence this case is not valid.

If we take the second case of timeliness, then the table will be

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	6	23
Bihari	6	9	7	5	27
Chirag	6	8	8	5	27
Deepak	5	7	6	5	23
Total		29	26		

In this case Ravi can get tip from Atal & Deepak & will get bonus from Bihari & Chirag. Atal & Deepak can give tip of Rs 30 & Rs 50 in any order.
So he will get 120 = 20 + 20 + 30 + 50.

Bihari & Chirag gave maximum 27 points

QNo:- 35 ,Correct Answer:- 6

Explanation:- The total tip received is Rs. 120
Now 120 = 20 + 20 + 30 + 50 or 20 + 50 + 50 + 0 or 30 + 30 + 30 + 30
It is given that in Timeliness, Ravi received a total of 21 points. As per point 1, let Atal gave x points then Bihari, Chirag and Deepak will give y each, s.t. $x > y$ & $x + 3y = 21$
⇒ (x, y) are (6, 5) or (9, 4)
Total of Packaging is 29 with all distinct ratings ⇒ 29 = 9 + 8 + 7 + 5
Hygiene also has distinct ratings with a total of 26.
Now 26 = 9 + 8 + 7 + 2 or 9 + 8 + 6 + 3 or 9 + 8 + 5 + 4 or 8 + 7 + 6 + 5
Point 4 says that Chirag gave highest rating to hygiene, and also rating of Chirag as per point 3 is same for packaging & hygiene. So Chirag cannot give rating 9 to packaging as Bihari is the one giving highest rating to packaging.
∴ Chirag will give highest rating of 8 to hygiene and therefore 26 = 8 + 7 + 6 + 5
Using the point 5, the partial table can be as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7			x	
Bihari	6	9		y	
Chirag	6	8	8	y	
Deepak	5			y	

Total	9	26	21

Point 6 says that Atal's Rank in Packaging & hygiene is same. So it can be rank 3 or 4 and the same is true for Deepak also.

Two cases arise here:
Case I:- If Atal's rank is 3rd in packaging and hygiene.
In this case Atal's rating in packaging will be 7 and in hygiene will be 6 Deepak will be ranked 4 in these parameters with ratings 5 each.
Also taking the possible values of timeliness, the table will look like as follows

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	7	6	6/9	26/29
Bihari	6	9	7	5/4	27/26
Chirag	6	8	8	5/4	27/26
Deepak	5	5	5	5/4	20/19
Total		29	26	21	

In this case Ravi will get bonus of Rs 20 each from Atal, Bihari & Chirag. From Deepak he can get maximum Rs 50 as tip. So his total will not be Rs 120 therefore, this case is wrong.

Case II:- If Atal's rank is 4th in packaging and hygiene. In this case Atal's ratings in these two parameters will be 5 each and Deepak's rank will be third with ratings of 7 & 6 respectively in packaging and hygiene respect.
We get the first table as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	9	26
Bihari	6	9	7	4	26
Chirag	6	8	8	4	26
Deepak	5	7	6	4	22

In this case again he will get Rs 20 bonus from Atal, Bihari & Chirag, so his total cannot be Rs 120. Hence this case is not valid.

If we take the second case of timeliness, then the table will be

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	6	23
Bihari	6	9	7	5	27
Chirag	6	8	8	5	27
Deepak	5	7	6	5	23
Total		29	26		

In this case Ravi can get tip from Atal & Deepak & will get bonus from Bihari & Chirag. Atal & Deepak can give tip of Rs 30 & Rs 50 in any order.
So he will get 120 = 20 + 20 + 30 + 50.

Atal gave rating of 6 on timeliness

QNo:- 36 ,Correct Answer:- C

Explanation:- The total tip received is Rs. 120
Now 120 = 20 + 20 + 30 + 50 or 20 + 50 + 50 + 0 or 30 + 30 + 30 + 30
It is given that in Timeliness, Ravi received a total of 21 points. As per point 1, let Atal gave x points then Bihari, Chirag and Deepak will give y each, s.t. $x > y$ & $x + 3y = 21$
$\Rightarrow$ (x, y) are (6, 5) or (9, 4)
Total of Packaging is 29 with all distinct ratings $\Rightarrow$ 29 = 9 + 8 + 7 + 5
Hygiene also has distinct ratings with a total of 26.
Now 26 = 9 + 8 + 7 + 2 or 9 + 8 + 6 + 3 or 9 + 8 + 5 + 4 or 8 + 7 + 6 + 5
Point 4 says that Chirag gave highest rating to hygiene, and also rating of Chirag as per point 3 is same for packaging & hygiene. So Chirag cannot give rating 9 to packaging as Bihari is the one giving highest rating to packaging.
∴ Chirag will give highest rating of 8 to hygiene and therefore 26 = 8 + 7 + 6 + 5
Using the point 5, the partial table can be as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7			x	
Bihari	6	9		y	
Chirag	6	8	8	y	
Deepak	5			y	
Total		9	26	21	

Point 6 says that Atal's Rank in Packaging & hygiene is same. So it can be rank 3 or 4 and the same is true for Deepak also.

Two cases arise here:
Case I:- If Atal's rank is 3rd in packaging and hygiene.
In this case Atal's rating in packaging will be 7 and in hygiene will be 6 Deepak will be ranked 4 in these parameters with ratings 5 each.
Also taking the possible values of timeliness, the table will look like as follows

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	7	6	6/9	26/29
Bihari	6	9	7	5/4	27/26
Chirag	6	8	8	5/4	27/26
Deepak	5	5	5	5/4	20/19
Total		29	26	21	

In this case Ravi will get bonus of Rs 20 each from Atal, Bihari & Chirag. From Deepak he can get maximum Rs 50 as tip. So his total will not be Rs 120 therefore, this case is wrong.

Case II:- If Atal's rank is 4th in packaging and hygiene. In this case Atal's ratings in these two parameters will be 5 each and Deepak's rank will be third with ratings of 7 & 6 respectively in packaging and hygiene respect.
We get the first table as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	9	26
Bihari	6	9	7	4	26
Chirag	6	8	8	4	26

Deepak	5	7	6	4	22

In this case again he will get Rs 20 bonus from Atal, Bihari & Chirag, so his total cannot be Rs 120. Hence this case is not valid.

If we take the second case of timeliness, then the table will be

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	6	23
Bihari	6	9	7	5	27
Chirag	6	8	8	5	27
Deepak	5	7	6	5	23
Total		29	26		

In this case Ravi can get tip from Atal & Deepak & will get bonus from Bihari & Chirag. Atal & Deepak can give tip of Rs 30 & Rs 50 in any order.
So he will get 120 = 20 + 20 + 30 + 50.

Deepak can give a tip of Rs 30 or 50

QNo:- 37 ,Correct Answer:- D

Explanation:-   The total tip received is Rs. 120
Now 120 = 20 + 20 + 30 + 50 or 20 + 50 + 50 + 0 or 30 + 30 + 30 + 30
It is given that in Timeliness, Ravi received a total of 21 points. As per point 1, let Atal gave x points then Bihari, Chirag and Deepak will give y each, s.t. $x > y$ & $x + 3y = 21$
⇒ (x, y) are (6, 5) or (9, 4)
Total of Packaging is 29 with all distinct ratings ⇒ 29 = 9 + 8 + 7 + 5
Hygiene also has distinct ratings with a total of 26.
Now 26 = 9 + 8 + 7 + 2 or 9 + 8 + 6 + 3 or 9 + 8 + 5 + 4 or 8 + 7 + 6 + 5
Point 4 says that Chirag gave highest rating to hygiene, and also rating of Chirag as per point 3 is same for packaging & hygiene. So Chirag cannot give rating 9 to packaging as Bihari is the one giving highest rating to packaging.
∴ Chirag will give highest rating of 8 to hygiene and therefore 26 = 8 + 7 + 6 + 5
Using the point 5, the partial table can be as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7			x	
Bihari	6	9		y	
Chirag	6	8	8	y	
Deepak	5			y	
Total		9	26	21	

Point 6 says that Atal's Rank in Packaging & hygiene is same. So it can be rank 3 or 4 and the same is true for Deepak also.

Two cases arise here:
Case I:- If Atal's rank is 3rd in packaging and hygiene.
In this case Atal's rating in packaging will be 7 and in hygiene will be 6 Deepak will be ranked 4 in these parameters with ratings 5 each.

Also taking the possible values of timeliness, the table will look like as follows

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	7	6	6/9	26/29
Bihari	6	9	7	5/4	27/26
Chirag	6	8	8	5/4	27/26
Deepak	5	5	5	5/4	20/19
Total		29	26	21	

In this case Ravi will get bonus of Rs 20 each from Atal, Bihari & Chirag. From Deepak he can get maximum Rs 50 as tip. So his total will not be Rs 120 therefore, this case is wrong.

Case II:- If Atal's rank is 4th in packaging and hygiene. In this case Atal's ratings in these two parameters will be 5 each and Deepak's rank will be third with ratings of 7 & 6 respectively in packaging and hygiene respect.
We get the first table as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	9	26
Bihari	6	9	7	4	26
Chirag	6	8	8	4	26
Deepak	5	7	6	4	22

In this case again he will get Rs 20 bonus from Atal, Bihari & Chirag, so his total cannot be Rs 120. Hence this case is not valid.

If we take the second case of timeliness, then the table will be

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	6	23
Bihari	6	9	7	5	27
Chirag	6	8	8	5	27
Deepak	5	7	6	5	23
Total		29	26		

In this case Ravi can get tip from Atal & Deepak & will get bonus from Bihari & Chirag. Atal & Deepak can give tip of Rs 30 & Rs 50 in any order.
So he will get 120 = 20 + 20 + 30 + 50.

Atal gave maximum points in behaviour

QNo:- 38 ,Correct Answer:- A

Explanation:-   The total tip received is Rs. 120
Now 120 = 20 + 20 + 30 + 50 or 20 + 50 + 50 + 0 or 30 + 30 + 30 + 30
It is given that in Timeliness, Ravi received a total of 21 points. As per point 1, let Atal gave x points then Bihari, Chirag and Deepak will give y each, s.t. $x > y$ & $x + 3y = 21$
$\Rightarrow$ (x, y) are (6, 5) or (9, 4)
Total of Packaging is 29 with all distinct ratings $\Rightarrow$ 29 = 9 + 8 + 7 + 5
Hygiene also has distinct ratings with a total of 26.

Now 26 = 9 + 8 + 7 + 2 or 9 + 8 + 6 + 3 or 9 + 8 + 5 + 4 or 8 + 7 + 6 + 5

Point 4 says that Chirag gave highest rating to hygiene, and also rating of Chirag as per point 3 is same for packaging & hygiene. So Chirag cannot give rating 9 to packaging as Bihari is the one giving highest rating to packaging.

∴ Chirag will give highest rating of 8 to hygiene and therefore 26 = 8 + 7 + 6 + 5

Using the point 5, the partial table can be as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7			x	
Bihari	6	9		y	
Chirag	6	8	8	y	
Deepak	5			y	
Total		9	26	21	

Point 6 says that Atal's Rank in Packaging & hygiene is same. So it can be rank 3 or 4 and the same is true for Deepak also.

Two cases arise here:

Case I:- If Atal's rank is 3rd in packaging and hygiene.

In this case Atal's rating in packaging will be 7 and in hygiene will be 6 Deepak will be ranked 4 in these parameters with ratings 5 each.

Also taking the possible values of timeliness, the table will look like as follows

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	7	6	6/9	26/29
Bihari	6	9	7	5/4	27/26
Chirag	6	8	8	5/4	27/26
Deepak	5	5	5	5/4	20/19
Total		29	26	21	

In this case Ravi will get bonus of Rs 20 each from Atal, Bihari & Chirag. From Deepak he can get maximum Rs 50 as tip. So his total will not be Rs 120 therefore, this case is wrong.

Case II:- If Atal's rank is 4th in packaging and hygiene. In this case Atal's ratings in these two parameters will be 5 each and Deepak's rank will be third with ratings of 7 & 6 respectively in packaging and hygiene respect.

We get the first table as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	9	26
Bihari	6	9	7	4	26
Chirag	6	8	8	4	26
Deepak	5	7	6	4	22

In this case again he will get Rs 20 bonus from Atal, Bihari & Chirag, so his total cannot be Rs 120. Hence this case is not valid.

If we take the second case of timeliness, then the table will be

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	6	23

Bihari	6	9	7	5	27
Chirag	6	8	8	5	27
Deepak	5	7	6	5	23
Total		29	26		

In this case Ravi can get tip from Atal & Deepak & will get bonus from Bihari & Chirag. Atal & Deepak can give tip of Rs 30 & Rs 50 in any order.
So he will get 120 = 20 + 20 + 30 + 50.

Deepak gave rating of 7 on packaging

QNo:- 39 ,Correct Answer:- B

Explanation:- *Since, Bharat value o9 = 10 and Elsie value o10 = 10, they definitely receive so*
Also, three people value their bundle = 16 and no value could be greater than 16
(Except Disha as she values her bundle as odd, number)
The other object of Bharat must be o7 = 6 to make it total = 16 (even)
And the other object of Elsie must be either o1 or o5
Now if Amar value his bundle = 16, objects received o2 or o3 = 9 and o5 or o8 = 7
Let say combination is o2 and o5, in that case Elsie must get o1
Then Charles get either o3 or o8 along with o6, total value = 12,
But Charles with those objects and score will not envy Amar as his bundle value is either equal or greater than Amar.
Likewise, in other cases as well, Charles bundle value cannot be 12
So, Charles bundle value must be = 16 and Amar bundle value must be = 12
Rest of the information can be gathered as follows

	Amar	Barat	Charles	Disha	Elise
o1	×	×	×	o1 = 8	×
o2	o2/o3 = 9	×	o2/o3 = 8	×	×
o3		×		×	×
o4	×	×	×	o4 = 5	×
o5	×	×	×	×	o5 = 6
o6	o6 = 3	×	×	×	×
o7	×	o7 = 6	×	×	×
o8	×	×	o8 = 8	×	×
o9	×	o9 = 10	×	×	×
o10	×	×	×	×	o10 = 10
Bundle Value	12	16	16	13	16

Now question can be answered using the above table

o8 was given to Charles

QNo:- 40 ,Correct Answer:- D

Explanation:- Since, Bharat value o9 = 10 and Elsie value o10 = 10, they definitely receive so
Also, three people value their bundle = 16 and no value could be greater than 16
(Except Disha as she values her bundle as odd, number)
The other object of Bharat must be o7 = 6 to make it total = 16 (even)
And the other object of Elsie must be either o1 or o5
Now if Amar value his bundle = 16, objects received o2 or o3 = 9 and o5 or o8 = 7
Let say combination is o2 and o5, in that case Elsie must get o1
Then Charles get either o3 or o8 along with o6, total value = 12,
But Charles with those objects and score will not envy Amar as his bundle value is either equal or greater than Amar.
Likewise, in other cases as well, Charles bundle value cannot be 12
So, Charles bundle value must be = 16 and Amar bundle value must be = 12
Rest of the information can be gathered as follows

	Amar	Barat	Charles	Disha	Elise
o1	×	×	×	o1 = 8	×
o2	o2/o3 = 9	×	o2/o3 = 8	×	×
o3		×		×	×
o4	×	×	×	o4 = 5	×
o5	×	×	×	×	o5 = 6
o6	o6 = 3	×	×	×	×
o7	×	o7 = 6	×	×	×
o8	×	×	o8 = 8	×	×
o9	×	o9 = 10	×	×	×
o10	×	×	×	×	o10 = 10
Bundle Value	12	16	16	13	16

Now question can be answered using the above table

Amar with 12 bundle value envies others with bundle value 16

QNo:- 41 ,Correct Answer:- 12

Explanation:- Since, Bharat value o9 = 10 and Elsie value o10 = 10, they definitely receive so
Also, three people value their bundle = 16 and no value could be greater than 16
(Except Disha as she values her bundle as odd, number)
The other object of Bharat must be o7 = 6 to make it total = 16 (even)
And the other object of Elsie must be either o1 or o5
Now if Amar value his bundle = 16, objects received o2 or o3 = 9 and o5 or o8 = 7
Let say combination is o2 and o5, in that case Elsie must get o1
Then Charles get either o3 or o8 along with o6, total value = 12,
But Charles with those objects and score will not envy Amar as his bundle value is either equal or greater than Amar.
Likewise, in other cases as well, Charles bundle value cannot be 12
So, Charles bundle value must be = 16 and Amar bundle value must be = 12
Rest of the information can be gathered as follows

	Amar	Barat	Charles	Disha	Elise
o1	×	×	×	o1 = 8	×
o2	o2/o3 = 9	×	o2/o3 = 8	×	×
o3		×		×	×
o4	×	×	×	o4 = 5	×
o5	×	×	×	×	o5 = 6
o6	o6 = 3	×	×	×	×
o7	×	o7 = 6	×	×	×
o8	×	×	o8 = 8	×	×
o9	×	o9 = 10	×	×	×
o10	×	×	×	×	o10 = 10
Bundle Value	12	16	16	13	16

Now question can be answered using the above table

Amar's bundle value = 12

QNo:- 42 ,Correct Answer:- D

Explanation:- Since, Bharat value o9 = 10 and Elsie value o10 = 10, they definitely receive so
Also, three people value their bundle = 16 and no value could be greater than 16
(Except Disha as she values her bundle as odd, number)
The other object of Bharat must be o7 = 6 to make it total = 16 (even)
And the other object of Elsie must be either o1 or o5
Now if Amar value his bundle = 16, objects received o2 or o3 = 9 and o5 or o8 = 7
Let say combination is o2 and o5, in that case Elsie must get o1
Then Charles get either o3 or o8 along with o6, total value = 12,
But Charles with those objects and score will not envy Amar as his bundle value is either equal or greater than Amar.
Likewise, in other cases as well, Charles bundle value cannot be 12
So, Charles bundle value must be = 16 and Amar bundle value must be = 12
Rest of the information can be gathered as follows

	Amar	Barat	Charles	Disha	Elise
o1	×	×	×	o1 = 8	×
o2	o2/o3 = 9	×	o2/o3 = 8	×	×
o3		×		×	×
o4	×	×	×	o4 = 5	×
o5	×	×	×	×	o5 = 6
o6	o6 = 3	×	×	×	×
o7	×	o7 = 6	×	×	×
o8	×	×	o8 = 8	×	×
o9	×	o9 = 10	×	×	×
o10	×	×	×	×	o10 = 10
Bundle Value	12	16	16	13	16

Now question can be answered using the above table

o4 was given to Disha

QNo:- 43 ,Correct Answer:- B

Explanation:- Since, Bharat value o9 = 10 and Elsie value o10 = 10, they definitely receive so
Also, three people value their bundle = 16 and no value could be greater than 16
(Except Disha as she values her bundle as odd, number)
The other object of Bharat must be o7 = 6 to make it total = 16 (even)
And the other object of Elsie must be either o1 or o5
Now if Amar value his bundle = 16, objects received o2 or o3 = 9 and o5 or o8 = 7
Let say combination is o2 and o5, in that case Elsie must get o1
Then Charles get either o3 or o8 along with o6, total value = 12,
But Charles with those objects and score will not envy Amar as his bundle value is either equal or greater than Amar.
Likewise, in other cases as well, Charles bundle value cannot be 12
So, Charles bundle value must be = 16 and Amar bundle value must be = 12
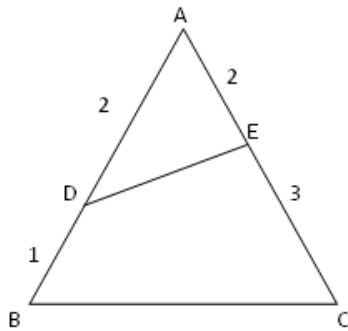Rest of the information can be gathered as follows

	Amar	Barat	Charles	Disha	Elise
o1	×	×	×	o1 = 8	×
o2	o2/o3 = 9	×	o2/o3 = 8	×	×
o3		×		×	×
o4	×	×	×	o4 = 5	×
o5	×	×	×	×	o5 = 6
o6	o6 = 3	×	×	×	×
o7	×	o7 = 6	×	×	×
o8	×	×	o8 = 8	×	×
o9	×	o9 = 10	×	×	×
o10	×	×	×	×	o10 = 10
Bundle Value	12	16	16	13	16

Now question can be answered using the above table

o5 was given to Elise

QNo:- 44 ,Correct Answer:- C

Explanation:- Since, Bharat value o9 = 10 and Elsie value o10 = 10, they definitely receive so
Also, three people value their bundle = 16 and no value could be greater than 16
(Except Disha as she values her bundle as odd, number)
The other object of Bharat must be o7 = 6 to make it total = 16 (even)
And the other object of Elsie must be either o1 or o5
Now if Amar value his bundle = 16, objects received o2 or o3 = 9 and o5 or o8 = 7
Let say combination is o2 and o5, in that case Elsie must get o1
Then Charles get either o3 or o8 along with o6, total value = 12,
But Charles with those objects and score will not envy Amar as his bundle value is either equal or greater than Amar.
Likewise, in other cases as well, Charles bundle value cannot be 12
So, Charles bundle value must be = 16 and Amar bundle value must be = 12
Rest of the information can be gathered as follows

	Amar	Barat	Charles	Disha	Elise
o1	×	×	×	o1 = 8	×
o2	o2/o3 = 9	×	o2/o3 = 8	×	×
o3		×		×	×
o4	×	×	×	o4 = 5	×
o5	×	×	×	×	o5 = 6
o6	o6 = 3	×	×	×	×
o7	×	o7 = 6	×	×	×
o8	×	×	o8 = 8	×	×
o9	×	o9 = 10	×	×	×
o10	×	×	×	×	o10 = 10
Bundle Value	12	16	16	13	16

Now question can be answered using the above table

o1 was given to Disha

Section : Quantitative Ability

QNo:- 45 ,Correct Answer:- 30

Explanation:- Let $AD = 2x, BD = x$
$AE = 2y, EC = 3y$
Area of $\Delta AED = 8$

$\Rightarrow 1/2 \times 2x \times 2y \times SinA = 8$
$\Rightarrow 2xy\, Sin\, A = 8$
$\Rightarrow xy\, Sin\, A = 4$ ----(i)
Area of $\Delta ABC = 1/2 \times 3x \times 5y\, Sin\, A$
$= 1/2 \times 15 \times xy\, Sin\, A$
$= 1/2 \times 15 \times 4 = 30$ Sq unit

QNo:- 46 ,Correct Answer:- A

Explanation:- Let the speeds of trains A and B is 5x & 3x respectively and their lengths be l1 & l2 respectively.
In the first case, distance travelled will be equal to length of train B
$\therefore \dfrac{l_2}{8x} = 46 \Rightarrow l2 = 46 \times 8x$
In the second case, distance travelled will be equal to length of train A.
$\therefore \dfrac{l_1}{8x} = 69 \Rightarrow l1 = 8x \times 69$
$\therefore$ Required ratio $= \dfrac{l_1}{l_2} = \dfrac{8x \times 69}{46 \times 8x} = \dfrac{3}{2}$

QNo:- 47 ,Correct Answer:- C

Explanation:- Here the investment of Anil is 70% of the total investment. Now his share of profit decreased by Rs 420 when the profit decreased from 18% to 15%. So 70% of (decreased profit) = 420
$\Rightarrow$ Decreased profit = 420/0.7 = Rs 600.
Therefore, 3% of total investment = 600 $\Rightarrow$ Total investment = Rs 20000
So, Anil's investment is 70% of 20000 = Rs 14000.
Now Chintu's profit increased by Rs 80 when the profit increases from 15% to 17%.
Therefore, 2% of Chintu's investment = 80 $\Rightarrow$ Chintu's investment = 80/0.02 = Rs 4000
Hence, Bobby's investment = 20000 – (14000 + 4000) = Rs 2000.

QNo:- 48 ,Correct Answer:- D

Explanation:- Join AP
Here in ΔADP & ΔBPC,
AD = BP, DP = PC
∠BPC = ∠PBA = ∠ADP
⇒ Δs ADP & BPC are congruent
Also AP is diagonal of parallelogram ABPD
∴ Ar (ΔADP) = Ar (ΔABP)
Let Ar (ΔADP) = x = Ar (ΔABP) = Ar (ΔBPC)
∴ Area of trapezium ABCD = 3x
Now given that 2x - x = 10 ⇒ x = 10
∴ Area of trapezium = 10 × 3 = 30cm^2
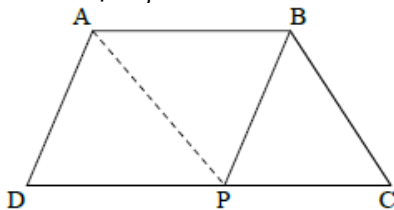
QNo:- 49 ,Correct Answer:- A

Explanation:- Let the quantitites bought are 6kg, 9kg & 15kg respectively.
Total cost = 6 × 800 + 500 × 9 + 300 × 15 = Rs 13800
Total SP = 13800 × 1.5 = Rs 20700
SP of 5kg = 5 × 700 = Rs 3500
Remaining SP = Rs 17200
∴ SP/kg = $\dfrac{17200}{25}$ = Rs. 688

QNo:- 50 ,Correct Answer:- B

Explanation:- Area of rhombus = 12
⇒ 1/2 d1 × d2 = 12
d1 × d2 = 24
Also $\dfrac{d_1^2}{4} + \dfrac{d_2^2}{4} = 25$ ⇒ d12 + d22 = 100
Now (d1 + d2)2 = d12 + d22 + 2d1d2 = 100 + 48 = 148
⇒ d1 + d2 = $2\sqrt{37}$ ---(1)
Again (d1 - d2)2 = d12 + d22 - 2d1d2 = 100 - 48 = 52
⇒ d1 - d2 = $2\sqrt{13}$ ---(2)
(1) + (2) ⇒ 2d1 = $2\left(\sqrt{37} + \sqrt{13}\right)$ ⇒ $d_1 = \sqrt{37} + \sqrt{13}$
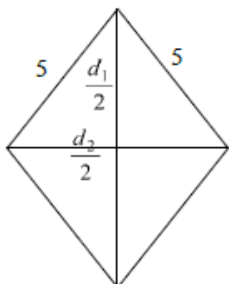
QNo:- 51 ,Correct Answer:- A

Explanation:- Here x, y, 7 are in AP

$\Rightarrow y = \dfrac{x+z}{2}$ $\Rightarrow x + z = 2y$

Now   xyz = 5 (x + y + z)

$\Rightarrow$ xyz = 5 × (2y + y)

$\Rightarrow$ xyz = 5 × 3y

$\Rightarrow$ xz = 15

Now (x, z) can be (3, 5) & (1, 15)

But if x & z are 3 & 5 then y - x is no greater than 2 $\Rightarrow$ x = 1, z = 15 and y = 8

$\Rightarrow$ z - x = 14.

QNo:- 52 ,Correct Answer:- 4195

Explanation:- Let the number is abcd

Given the   a + b + c = 14   -----(1)

              b + c + d = 15   -----(2)

              & c = d + 4   -----(3)

(2) - (1) $\Rightarrow$ d - a = 1 $\Rightarrow$ a = d - 1   -----(4)

As highest number is asked $\Rightarrow$ a should be max. So (4) $\Rightarrow$ d should be maximum, or (3) $\Rightarrow$ c should be maximum $\Rightarrow$ c = 9 $\Rightarrow$ d = 5

$\therefore$ (4) $\Rightarrow$ a = 4 & (1) $\Rightarrow$ 4 + b + 9 = 14 $\Rightarrow$ b = 1

$\therefore$ Number is 4195.

QNo:- 53 ,Correct Answer:- 1000

Explanation:- We have 15 identical ballons, 6 identical pencils and 3 identical erasers. Let the children are A, B and C. Now every child should get four balloons and one pencil. So first dstribute 4 balloons and one pencil to A, B and C. We are left with 3 balloons, 3 pencils and 3 erasers.

3 balloons can be distributed to A, B, C in 3 + 3- 1C3 – 1 Or 5C2 = 10 ways.

Similarly, 3 pencils can & 3 erasers can be distributed in 10 ways each.

$\therefore$ Total ways = 10 × 10 × 10 = 1000

QNo:- 54 ,Correct Answer:- 7

Explanation:- Given that 2.25 ≤ 2 + 2n+2 ≤ 202

$\Rightarrow$ 2 + 0.25 ≤ 2 + 2n+2 ≤ 2 + 128 < 202

$\Rightarrow$ 2 + 2-2 ≤ 2 + 2n+2 ≤ 2 + 27

$\therefore$ - 2 ≤ n + 2 ≤ 7 $\Rightarrow$ - 4 ≤ n ≤ 5

$\therefore$ n = - 4, -3, -2, -1, 0, 1, 2, 3, 4, 5

Now for n = -1, 0, 1, 2, 3, 4, 5, 3 + 3n+1 is an integer.

Therefore total '7' values of 'n' are possible.

QNo:- 55 ,Correct Answer:- A

Explanation:- Let the loss incurred in first year is x%
As the balance is more than 5000 ⇒ x < 50%
Profit in the next year = 5x & overall profit is 35%

$$\Rightarrow 5x - x + \frac{5x(-x)}{100} = 35$$

$$\Rightarrow 4x - \frac{x^2}{20} = 35$$

⇒ x² - 80x + 700 = 0
⇒ (x - 70) (x - 10) = 0
⇒ x = 10, 70

As x < 50% ⇒ x = 10%

QNo:- 56 ,Correct Answer:- B

Explanation:- In the first case A worked for 8 hours and B worked for 7 hours.
In the second case A worked for 4 hours and B worked for 2 hours.
∴ If B worked 5 hours less then time saved for A = 4 hour
B does not work then time saved for A = 4/5 × 7 = 5.6 hours
So in this A would have filled the tank in 8 - 5.6 = 2.4 hour or 144 minutes.

QNo:- 57 ,Correct Answer:- 250

Explanation:- Let the metallic white and metallic black balls are x each.
Now 40% of white balls = x ⇒ white balls = 2.5x
& 50% of black balls = x ⇒ Total black balls = 2x
Now 2.5x + 2x = 450 ⇒ 4.5x = 450 ⇒ x = 100
∴ Number of non-metallic white & non metallic black balls = 1.5x + x = 2.5x = 2.5 × 100 = 250

QNo:- 58 ,Correct Answer:- B

Explanation:- Let $\dfrac{x^2 + 2x + 4}{2x^2 + 4x + 9} = k$

⇒ x2 + 2x + 4 = 2kx2 + 4kx + 9k
⇒ (2k - 1)x2 + (4k - 2)x + (9k - 4) = 0
As x is real ⇒ D ≥ 0
⇒ (4k - 2)2 - 4 (2 k - 1) (9k - 4) ≥ 0
⇒ (2k - 1)2 - (2k - 1) (9k - 4) ≥ 0
⇒ (2k - 1) [2k - 1 - 9k + 4] ≥ 0
⇒ (2k - 1) (-7k + 3) ≥ 0
⇒ (2k - 1) (7k - 3) ≤ 0
⇒ $\dfrac{3}{7} \le k \le \dfrac{1}{2}$
∴ option 2 is the best choice

QNo:- 59 ,Correct Answer:- 5

Explanation:- Here log2 [3 + log3 {4 + log4 (x-1)}] - 2 = 0
$\Rightarrow$ log2 [3 + log3 {4 + log4 (x-1)}] = 2
$\Rightarrow$ 3 + log3 {4 + log4 (x-1)} = 4
$\Rightarrow$ log3 [4 + log4 (x-1)] = 1
$\Rightarrow$ 4 + log4 (x-1) = 3
$\Rightarrow$ log4 (x-1) = - 1 $\Rightarrow$ x - 1 = $\dfrac{1}{4}$ $\Rightarrow$ x = 5/4
Now 4x = $4 \times \dfrac{5}{4} = 5$

QNo:- 60 ,Correct Answer:- A

Explanation:- We have x2 - xy - x = 22   ---(1)
        y2 - xy + y = 34   ---(2)
Add the equation (1) & (2), we get
        x2 + y2 - 2xy - (x - y) = 56
        $\Rightarrow$ (x - y)2 - (x - y) = 56
        $\Rightarrow$ (x - y) (x - y - 1) = 56
As (x - y) and (x - y - 1) are consecutive numbers and their product is 56 $\Rightarrow$ x - y = 8 & x - y - 1 = 7.
$\therefore$ x - y = 8

QNo:- 61 ,Correct Answer:- B

Explanation:- Here x1 - x2 + x3 - x4 + ------- + (- 1)n + 1 x4 = n2 + 2n
n = 1 $\Rightarrow$ x1 = 1 + 2 = 3
n = 2 $\Rightarrow$ x1 - x2 = 8 $\Rightarrow$ x2 = - 5
n = 3 $\Rightarrow$ x1 - x2 + x3 = 15 $\Rightarrow$ x3 = 7
n = 4 $\Rightarrow$ x1 - x2 + x3 - x4 = 24 $\Rightarrow$ x4 = - 9 and so on
Now here x1 + x2 = - 2, x3 + x4 = -2 and so on, so x49 + x50 = - 2

QNo:- 62 ,Correct Answer:- 45

Here $\dfrac{\text{milk}}{\text{Total vol}} = \dfrac{16}{25} = \left(\dfrac{4}{5}\right)^2$

$\therefore \dfrac{1}{5}$ of total mixture is taken out every time

Explanation:- $\therefore \dfrac{1}{5} \times T = 9 \Rightarrow T = 45l$

QNo:- 63 ,*Correct Answer:-* A

Explanation:- Here |3x - 20| + |3x - 40| = 20   ---(1)

Case I: If $x < \dfrac{20}{3}$,   (1) $\Rightarrow -(3x - 20) - (3x - 40) = 20$

$\Rightarrow -3x + 20 - 3x + 40 = 20$

$\Rightarrow -6x = -40 \Rightarrow x = \dfrac{20}{3}$, but $x = \dfrac{20}{3}$

∴ This is not possible

Case II: If $\dfrac{20}{3} \le x < \dfrac{40}{3}$, (1) $\Rightarrow 3x - 20 - 3x + 40 = 20 \Rightarrow 20 = 20$ which is true

∴ $\dfrac{20}{3} \le x < \dfrac{40}{3}$.

Case III: If $x \ge \dfrac{40}{3}$, $\Rightarrow 3x - 20 + 3x - 40 = 20 \Rightarrow 6x = 80 \Rightarrow x = \dfrac{40}{3}$

Combining the case II & III, we have $\dfrac{20}{3} \le x \le \dfrac{40}{3}$ or $6.67 \le x \le 13.33$

Therefore, option (1) satisfies.

QNo:- 64 ,*Correct Answer:-* 10

Explanation:- Let the original matches be 'n' and original goals be 'x'
Now (n + 10) × 0.15 = x + 1
$\Rightarrow 0.15 n + 1.5 = x + 1$ ---(1)
& (n + 10) × 0.2 = x + 2
$\Rightarrow 0.2n + 2 = x + 2$ ---(2)
(2) - (1) $\Rightarrow 0.05 n + 0.5 = 1 \Rightarrow 0.05n = 0.5 \Rightarrow n = \dfrac{0.5}{0.05} = 10$

QNo:- 65 ,*Correct Answer:-* B

Explanation:- Given equation is $ax^2 - bx + c = 0$

Its one root is $2 + \sqrt{3}$, so second root will $2 - \sqrt{3}$,

Sum of roots = $\dfrac{b}{a} = 2 + \sqrt{3} + 2 - \sqrt{3} = 4$

∴ $\dfrac{b}{a} = 4$ ---(1)

Product of roots = $\dfrac{c}{a} = \left(2 + \sqrt{3}\right)\left(2 - \sqrt{3}\right) = 1$

$\Rightarrow \dfrac{c}{a} = 1$ ---(2)

(1) / (2) $\Rightarrow \dfrac{b}{c} = 4 \Rightarrow b = 4c$ ---(3)

Also $b = c^3$, (3) $\Rightarrow c^3 = 4c \Rightarrow c^2 = 4 \Rightarrow c = 2, -2$
If $c = 2 \Rightarrow b = 8$

Now $\dfrac{b}{a} = 4 \Rightarrow \dfrac{8}{a} = 4 \Rightarrow a = 2 \Rightarrow |a| = 2$

If $c = -2, b = -8$ & $\dfrac{b}{a} = 4 \Rightarrow -\dfrac{8}{a} = 4 \Rightarrow a = a = -2 =. |a| = 2$

QNo:- 66 ,Correct Answer:- A

Explanation:- *Let the total work is 420 units*
A can do 7 units/d, B can do 5 units / day
Let C can do x units/d
∴ 7 × 24 + 5 × 14 + x × 14 = 420 ⇒ 14x + 238 = 420 ⇒ 14x = 182 ⇒ x = 13
Work done by A = 168 units
Work done by B = 70 units
Work done by C = 182 units
∴ Ratio of work done by A, B & C is 168 : 70 : 182 or 84 : 35 : 91

$$\therefore \text{Amount given to C} = \frac{91}{210} \times 21000 = \text{Rs } 9100$$

Directions of Test

Test Name	Actual CAT 2021 Slot III	Total Questions	66	Total Time	180 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	24	1:0(h:m)	3	1/3
DI & Reasoning	20	1:0(h:m)	3	1/3
Quantitative Ability	22	1:0(h:m)	3	1/3

Section : Verbal Ability

QNo:- 1 ,Correct Answer:- B

Explanation:-   Q is "Which one of the following scenarios, **if false**, could be seen as supporting the passage?" which means we are looking for an option which in its current form contradicts the passage

In para 2, the author says that the Nano-sentinels **won't** be used invade our bodies and turn us into robots,

QNo:- 2 ,Correct Answer:- D

Explanation:-
The entire passage is about nano robots and how they are now a reality. The first line of second para states it clearly.

QNo:- 3 ,Correct Answer:- B

Explanation:-
Refer to the lines, 'some of them could one day swim through our bloodstream to heal us.

QNo:- 4 ,Correct Answer:- D

Explanation:-
The first para is about the battle between Nano sentinels and X-men.

QNo:- 5 ,Correct Answer:- A

Explanation:-
The author uses this example to clarify the relationship between accuracy and entropy.

QNo:- 6 ,Correct Answer:- B

Explanation:-
The price paid is not the heat, but the increased entropy.

QNo:- 7 ,Correct Answer:- C

Explanation:-
Option 3 is the best set of words as it's about the relationship between entropy and accuracy in the context of measuring time.

QNo:- 8 ,Correct Answer:- B

Explanation:-
Q is "**None** of the following statements can be inferred from the passage **EXCEPT** that:" i.e. we are looking for an option which can be inferred
Option B can be inferred as the passage states that the quantum computers emphasise on accuracy and accuracy leads to more heat and more entropy.
For option C refer lines:
"The relationship that the researchers found is a limit on the accuracy of a clock, so it **doesn't** mean that a clock that creates the most possible entropy would be maximally accurate –hence a large, inefficient grandfather clock isn't more precise than an atomic clock."

QNo:- 9 ,Correct Answer:- D

Explanation:-
Option 2 and 1 can be drawn from the second para" The vocabulary concerning the soul and the mind increased enormously in the course of the nineteenth century. The enrichments of literary and intellectual language led to an altered understanding of the meanings that underlie time-honoured expressions and traditional catchwords. At the same time, once coined, powerful new ideas attracted to themselves a whole host of seemingly unrelated issues, practices, and experiences, creating a peculiar network of preoccupations that as a group had not existed before. "Also, option 1 further can be drawn from last para.
Option 3 can be drawn from the 3rd para "Thus, before 1790, few if any spoke, in medical terms, of the affinity between creative genius and the hallucinations of the insane"

QNo:- 10 ,Correct Answer:- B

Explanation:-
The passage talks about The collating of diverse ideas under the single term: unconscious.
The passage throughout talks about vocabulary/language/concept and unconscious

It can be seen in the 2nd para and final para of the passage "Striving vaguely and independently to give expression to a latent conception, various lines of thought can be brought together by some novel term. The new concept then serves as a kind of resting place or stocktaking in the development of ideas, giving satisfaction and a stimulus for further discussion or speculation. Thus, the massive introduction of the term unconscious by Hartmann in 1869 appeared to focalize many stray thoughts, affording a temporary feeling that a crucial step had been taken forward, a comprehensive knowledge gained, a knowledge that required only further elaboration, explication, and unfolding in order to bring in a bounty ofhigher understanding."

QNo:- 11 ,Correct Answer:- A

Explanation:-
The enrichments of literary and intellectual language led to an altered understanding of the meanings that underlie time-honoured expressions and traditional catchwords."
So option 1 which is The meanings of time-honoured expressions were changed by innovations in literary and intellectual language is apt.
Option 2 goes in a different direction and states language was altered
Option 4 does not mention about alteration/change in meanings rather talks about enrichment/defining the term better.

QNo:- 12 ,Correct Answer:- A

Explanation:-
Main sets of words closest to mapping the main arguments of the passage are Language; Unconscious; Psychoanalysis. They form the basis of the passage and present from the start of the passage till the end. "The "unconscious" burst the shell of conventional language, coined as it had been to embody the fleeting ideas and the shifting conceptions of several generations until, finally, it became fixed and defined in specialized terms within the realm of medical psychology and Freudian psychoanalysis." Para 2 explains these points in detail.

QNo:- 13 ,Correct Answer:- D

Explanation:-
It is mentioned in para 3 "Unlike Mr. Chomsky, Mr. Pinker firmly places the wiring of the brain for language within the framework of Darwinian natural selection and evolution. He effectively disposes of all claims that intelligent nonhuman primates like chimps have any abilities to learn and use language. Itis not those chimps lack the vocal apparatus to speak; it is just that their brains are unable to produce or use grammar."

QNo:- 14 ,Correct Answer:- A

Explanation:-
It is mentioned in the 3rd para
" He effectively disposes of all claims that intelligent nonhuman primates like chimps have any abilities to learn and use language. Itis not those chimps lack the vocal apparatus to speak; it is just that their brains are unable to produce or use grammar. On the other hand, the "language instinct," when it first appeared among our most distant hominid ancestors, must have given them a selective reproductive advantage over their competitors'

For option 3 refer lines "A half-century ago, this would have been pooh-poohed as a "black box" theory, since one could not actually pinpoint this grammatical faculty in a specific part of the brain, or describe its functioning. **But now things are different. Neurosurgeons [have now found that this] "black box" is situated in and around Broca's area, on the left side of the forebrain. .** . "

For option 4 refer lines "On the other hand, the "language instinct," when it first appeared among o**ur most distant hominid ancestors, must have given them a selective reproductive advantage over their competitors** (including the ancestral chimps). "

QNo:- 15 ,Correct Answer:- B

Explanation:-
For option 2 refer lines
"**So according to Mr. Pinker,** the roots of language must be in the genes, but there cannot be a "grammar gene" any more than there can be a gene for the heart or any other complex body structure. **This proposition will undoubtedly raise the hackles of some behavioral psychologists** and anthropologists,"
Also, it is mentioned in the 1st para ". In "The Language Instinct" he has gathered persuasive data from such diverse fields as cognitive neuroscience, developmental psychology and speech therapy to make his points, and when he disagrees with Mr. Chomsky he tells you so." So, we cannot infer behavior psychology.

OPtion 1 can be inferred from "Since this message was couched in terms of Chomskyan theoretical linguistics, in discourse so opaque that it was nearly incomprehensible even to some scholars, many people did not hear it. Now, in a brilliant, witty and altogether satisfying book, Mr. Chomsky's colleague Steven Pinker . . . has brought Mr. Chomsky's findings to everyman."
*Options C and D can also be drawn from "Now, in a brilliant, witty and altogether satisfying book, Mr. Chomsky's colleague Steven Pinker . . . **has brought Mr. Chomsky's findings to everyman.** In "The Language Instinct" he has gathered persuasive data from such diverse fields as cognitive neuroscience, developmental psychology and speech therapy to make his points, and **when he disagrees with Mr. Chomsky he tells you so**. . . ."*

QNo:- 16 ,Correct Answer:- B

Explanation:-
It is mentioned in the last para that " Racial differences are literally only "skin deep." The fundamental unity of humanity is the theme of Mr. Chomsky's universal grammar, and of this exciting book."

OPtion 4 is incorrect because of it's not about 'anatomical' developments or 'voice' box or 'language acquisition' (Refer line 1- Language is innate)

QNo:- 17 ,Correct Answer:- D

Explanation:-
The clue limes are 'Brazil's growth rate has been low, yet most Brazilians say their financial situation has improved, and they expect it to get even better & "But despite recent improvements the Brazilian economy is still painfully unequal, with poor Brazilian spaying the biggest share of their income in taxes and getting the least back in government services'. There is no mention of impending problems from rising inequality. There is no mention of 'most Brazilians being misled or even guided by the progress in the economy of the nation. This could be an inference and not the summary that unfair taxation of the poor that is likely to destabilise the Brazilian economy in the next few years.

QNo:- 18 ,Correct Answer:- 3412

Explanation:-
The question has presented views on threat to the employement by politicians & economists. The opening sentence is 3 as it introduces the theme of the discussion. It is countered by 4 as the real problem ,as stated by economists, is 'automation'. This has been futher explained by 1. After this 2 will come as it counters 1 as it's not just manual labour where robotic employees are helpful in increasing efficiency and productivity but now, computers are rapidly handling some white-collar and service-sector work, which explains increasing unemployment owing to automation

QNo:- 19 ,Correct Answer:- 4

Explanation:- Other sentences talk about technology sector but 4 talks about workplace in general.
3152
3 opens the argument
3-152 152 give an example and explain stt 3
1-5 are linked by 'reflect their interests.' in 1 and 'reflects the perspectives of the male stereotype' in 5
5-2 are linked by diversity

QNo:- 20 ,Correct Answer:- 3214

Explanation:-
The context talks about returninmg the artefacts to the countries they belong and challenges & apprehensions involved.
The opening sentence is 3 as it introduces the topic under discussion.
'this' in 2 in what has been said in 3.
After this 1 will come as it talks about the legal hurdles in this process.
The legal context has been further extended by 4 and will the conclude the context by stating the politicians stand on the issue.

QNo:- 21 ,Correct Answer:- D

Explanation:-
The clue lines are 'Work has become a way for them to keep busy, even though many find their work meaningles' & 'hard work has made us prosperous'. Also the line 'has also brought innovation'.
OPtion 1 is incorrect as author states both positives and negatives of vieweing hard work as virtuous but never goes on to say 'hard work is essential'
OPtion2 is incorrect as glorification of hard work has 'led to greater idleness' isn't implied

QNo:- 22 ,Correct Answer:- 3

Explanation:-
The sentences talk about the Chinese business schools and inspite of looking like their western rival, they are somewhat distinct in terms of what they offer. 3 is focusing on what western schools are doing and not actions of Chinese schools

QNo:- 23 ,Correct Answer:- C

Explanation:-
The clue lines are 'Intuition draws from that deep memory well to inform our decisions going forward. In other words, intuitive decisions are based on data, and not contrary to data as many would like to assume' & 'subconsciously spot patterns, the body starts firing neuro chemicals in both the brain and gut'.
Option 1 is incorrect because of words 'may not be related to data' whichc contradicts 'In other words, intuitive decisions are based on data, and not contrary to data as many would like to assume'
Option 2 is incorrect as it focuses lot more on big data than the para. Also, 'accomplishes more than what big data can' is different from big data not being able to draw on qualitative factors like sight, sounds etc {'our intuition draws from decades of diverse qualitative experience(sights, sounds, interactions, etc.) – a wholly human feature that big data alone could never accomplish.'}
Option D is incomplete as it leaves out the 1st half completely. Also, it's not just speed that makes intuition better 'Not only are these automatic processes faster than rational thought, but our intuition draws from decades of diverse qualitative experience(sights, sounds, interactions, etc.) '

QNo:- 24 ,Correct Answer:- 2314

Explanation:-
The context moves around what constitutes the understanding of relationships other than what is generally perceived. The opening sentence is 2 as it talks about what scholars should attend to while establishing the realtionships. 3 & 4 talk about the 'approach' that goes beyond the macro level in establishing the relationship in true essence. 1 further explains this approach and its ability to sustain truth.

Section : DI & Reasoning

QNo:- 25 ,Correct Answer:- C

Explanation:-
The given information can be gathered as follows

Phase 1											
Rank	P1	P2	P3	P4	P5	P6	P7	P8		P9	P10
Round 1 score	82.9	0	81.5	0	86.4	82.5	87.2	0		84.1	0
Rank	P4	P7	P6	P8	P2	P5	P1	P9		P3	P10
Round 2 score	0	0	0	0	0	0	0	82.5 < < 84.1	0	82.5 < < 87.6
Maximum	82.9	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P5	P9	P8	P10	P3	P7	P2	P6		P4	P1*
Round 3 score	88.6	0	79.0	0	0	0	0	0		81.4	0
Maximum	88.6	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P3	P6		P5	P2

*After solving the whole data, the possibility of having double is for P8 and P10
So, P10 in round 2 being last, scores maximum in round 3 being first, and, P8 scoring last in round 3 would have 1st turn in round 1 as in phase 2, last rank throws 1st and rest of the data can be arranged as follows

Phase 2										
Round 4 score	NA	-	-	-	NA	-	88.4	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	88.4	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P2	P6	P5	P3
Round 5 score	NA	-	-	-	NA	-	89.6	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P4	-	P1	P6	P5	P3
Round 6 score	NA	-	-	-	87.6	-	NA	NA	NA	NA
Maximum	88.6	-	-	-	87.6	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P3	-	P1	P6	P5	P4
	Silver	-	-	-	Bronze	-	Gold	-	-	-

Since P1, P2 and P4 never gets a double,
Hence, eliminating the options, it must be P8 and P10

QNo:- 26 ,Correct Answer:- D

Explanation:-
The given information can be gathered as follows

Phase 1										
Rank	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Round 1 score	82.9	0	81.5	0	86.4	82.5	87.2	0	84.1	0
Rank	P4	P7	P6	P8	P2	P5	P1	P9	P3	P10
Round 2 score	0	0	0	0	0	0	0	82.5 < < 84.1	0	82.5 < < 87.6
Maximum	82.9	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P5	P9	P8	P10	P3	P7	P2	P6	P4	P1*
Round 3 score	88.6	0	79.0	0	0	0	0	0	81.4	0
Maximum	88.6	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P3	P6	P5	P2

*After solving the whole data, the possibility of having double is for P8 and P10
So, P10 in round 2 being last, scores maximum in round 3 being first, and, P8 scoring last in round 3 would have 1ˢᵗ
turn in round 1 as in phase 2, last rank throws 1ˢᵗ and rest of the data can be arranged as follows

Phase 2										
Round 4 score	NA	-	-	-	NA	-	88.4	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	88.4	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P2	P6	P5	P3
Round 5 score	NA	-	-	-	NA	-	89.6	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P4	-	P1	P6	P5	P3
Round 6 score	NA	-	-	-	87.6	-	NA	NA	NA	NA
Maximum	88.6	-	-	-	87.6	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P3	-	P1	P6	P5	P4
	Silver	-	-	-	Bronze	-	Gold	-	-	-

P1

QNo:- 27 ,Correct Answer:- A

Explanation:-
The given information can be gathered as follows

Phase 1										
Rank	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Round 1 score	82.9	0	81.5	0	86.4	82.5	87.2	0	84.1	0
Rank	P4	P7	P6	P8	P2	P5	P1	P9	P3	P10
Round 2 score	0	0	0	0	0	0	0	82.5 < < 84.1	0	82.5 < < 87.6
Maximum	82.9	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P5	P9	P8	P10	P3	P7	P2	P6	P4	P1*
Round 3 score	88.6	0	79.0	0	0	0	0	0	81.4	0
Maximum	88.6	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P3	P6	P5	P2

After solving the whole data, the possibility of having double is for P8 and P10
So, P10 in round 2 being last, scores maximum in round 3 being first, and, P8 scoring last in round 3 would have 1st turn in round 1 as in phase 2, last rank throws 1st and rest of the data can be arranged as follows

Phase 2										
Round 4 score	NA	-	-	-	NA	-	88.4	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	88.4	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P2	P6	P5	P3
Round 5 score	NA	-	-	-	NA	-	89.6	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P4	-	P1	P6	P5	P3
Round 6 score	NA	-	-	-	87.6	-	NA	NA	NA	NA
Maximum	88.6	-	-	-	87.6	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P3	-	P1	P6	P5	P4
	Silver	-	-	-	Bronze	-	Gold	-		-	-

P7 (who won gold)

QNo:- 28 ,Correct Answer:- C

Explanation:-
The given information can be gathered as follows

Phase 1										
Rank	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Round 1 score	82.9	0	81.5	0	86.4	82.5	87.2	0	84.1	0
Rank	P4	P7	P6	P8	P2	P5	P1	P9	P3	P10
Round 2 score	0	0	0	0	0	0	0	82.5 < < 84.1	0	82.5 < < 87.6
Maximum	82.9	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P5	P9	P8	P10	P3	P7	P2	P6	P4	P1*
Round 3 score	88.6	0	79.0	0	0	0	0	0	81.4	0
Maximum	88.6	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P3	P6	P5	P2

After solving the whole data, the possibility of having double is for P8 and P10
So, P10 in round 2 being last, scores maximum in round 3 being first, and, P8 scoring last in round 3 would have 1st turn in round 1 as in phase 2, last rank throws 1st and rest of the data can be arranged as follows

Phase 2										
Round 4 score	NA	-	-	-	NA	-	88.4	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	88.4	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P2	P6	P5	P3
Round 5 score	NA	-	-	-	NA	-	89.6	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P4	-	P1	P6	P5	P3
Round 6 score	NA	-	-	-	87.6	-	NA	NA	NA	NA
Maximum	88.6	-	-	-	87.6	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P3	-	P1	P6	P5	P4
	Silver	-	-	-	Bronze	-	Gold	-	-	-

88.6

QNo:- 29 ,Correct Answer:- D

Explanation:-
The given information can be gathered as follows

Phase 1										
Rank	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Round 1 score	82.9	0	81.5	0	86.4	82.5	87.2	0	84.1	0
Rank	P4	P7	P6	P8	P2	P5	P1	P9	P3	P10
Round 2 score	0	0	0	0	0	0	0	82.5 < < 84.1	0	82.5 < < 87.6
Maximum	82.9	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P5	P9	P8	P10	P3	P7	P2	P6	P4	P1*
Round 3 score	88.6	0	79.0	0	0	0	0	0	81.4	0
Maximum	88.6	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P3	P6	P5	P2

After solving the whole data, the possibility of having double is for P8 and P10
So, P10 in round 2 being last, scores maximum in round 3 being first, and, P8 scoring last in round 3 would have 1st turn in round 1 as in phase 2, last rank throws 1st and rest of the data can be arranged as follows

Phase 2										
Round 4 score	NA	-	-	-	NA	-	88.4	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	88.4	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P2	P6	P5	P3
Round 5 score	NA	-	-	-	NA	-	89.6	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P4	-	P1	P6	P5	P3
Round 6 score	NA	-	-	-	87.6	-	NA	NA	NA	NA
Maximum	88.6	-	-	-	87.6	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P3	-	P1	P6	P5	P4
	Silver	-	-	-	Bronze	-	Gold	-	-	-

82.5 < P8 < 84.1, so 82.7 is possible score among given options

QNo:- 30 ,Correct Answer:- D

Explanation:-
The given information can be gathered as follows

Phase 1										
Rank	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Round 1 score	82.9	0	81.5	0	86.4	82.5	87.2	0	84.1	0
Rank	P4	P7	P6	P8	P2	P5	P1	P9	P3	P10
Round 2 score	0	0	0	0	0	0	0	82.5 < < 84.1	0	82.5 < < 87.6
Maximum	82.9	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P5	P9	P8	P10	P3	P7	P2	P6	P4	P1*
Round 3 score	88.6	0	79.0	0	0	0	0	0	81.4	0
Maximum	88.6	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P3	P6	P5	P2

*After solving the whole data, the possibility of having double is for P8 and P10
So, P10 in round 2 being last, scores maximum in round 3 being first, and, P8 scoring last in round 3 would have 1st turn in round 1 as in phase 2, last rank throws 1st and rest of the data can be arranged as follows*

Phase 2										
Round 4 score	NA	-	-	-	NA	-	88.4	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	88.4	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P2	P6	P5	P3
Round 5 score	NA	-	-	-	NA	-	89.6	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P4	-	P1	P6	P5	P3
Round 6 score	NA	-	-	-	87.6	-	NA	NA	NA	NA
Maximum	88.6	-	-	-	87.6	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P3	-	P1	P6	P5	P4
	Silver	-	-	-	Bronze	-	Gold	-		-	-

89.6 - 87.2 = 2.4

QNo:- 31 ,Correct Answer:- 3,3,3,1,4

Explanation:-
The information can be gathered as follows

Created by				Reviewed by			Status
SME	Amal	Bimal	Komal	Amal	Bimal	Komal	
		Q01				✓	Accepted
Q02				✓/×	×/✓	×	Rejected
		Q03		✓		×	Accepted
Q04				✓/×	×/✓	✓	Accepted
		Q05				✓	Accepted
Q06			Q06	×	×		Rejected
	Q07				×	✓	Accepted
Q08				✓/×	×/✓	✓	Accepted
	Q09				×	×	Rejected
			Q10	✓			Accepted
		Q11		×		×	Rejected
	Q12				×	×	Rejected
Q13			Q13	✓/×	✓		Accepted

✓ means approved and × means disapproved

Amal definitely created 3 questions Q07, Q09, Q12

QNo:- 32 ,Correct Answer:- 1

Explanation:-
The information can be gathered as follows

	Created by			Reviewed by			Status
SME	Amal	Bimal	Komal	Amal	Bimal	Komal	
			Q01			✓	Accepted
Q02				✓/×	×/✓	×	Rejected
		Q03		✓		×	Accepted
Q04				✓/×	×/✓	✓	Accepted
			Q05			✓	Accepted
Q06			Q06	×	×		Rejected
	Q07				×	✓	Accepted
Q08				✓/×	×/✓	✓	Accepted
	Q09				×	×	Rejected
			Q10	✓			Accepted
		Q11		×		×	Rejected
	Q12				×	×	Rejected
Q13			Q13	✓/×	✓		Accepted

✓ means approved and × means disapproved

Komal definitely created 1 question Q10

QNo:- 33 ,Correct Answer:- 3

Explanation:-
The information can be gathered as follows

	Created by			Reviewed by			Status
SME	Amal	Bimal	Komal	Amal	Bimal	Komal	
			Q01			✓	Accepted
Q02				✓/×	×/✓	×	Rejected
		Q03		✓		×	Accepted
Q04				✓/×	×/✓	✓	Accepted
			Q05			✓	Accepted
Q06			Q06	×	×		Rejected
	Q07				×	✓	Accepted
Q08				✓/×	×/✓	✓	Accepted
	Q09				×	×	Rejected
			Q10	✓			Accepted
		Q11		×		×	Rejected
	Q12				×	×	Rejected
Q13			Q13	✓/×	✓		Accepted

✓ means approved and × means disapproved

SME definitely created 3 questions Q02, Q04 and Q08

QNo:- 34 ,Correct Answer:- 4

Explanation:-
The information can be gathered as follows

	Created by			Reviewed by			Status
SME	Amal	Bimal	Komal	Amal	Bimal	Komal	
			Q01			✓	Accepted
Q02				✓/×	×/✓	×	Rejected
		Q03		✓		×	Accepted
Q04				✓/×	×/✓	✓	Accepted
			Q05			✓	Accepted
Q06			Q06	×	×		Rejected
	Q07				×	✓	Accepted
Q08				✓/×	×/✓	✓	Accepted
	Q09				×	×	Rejected
			Q10	✓			Accepted
		Q11		×		×	Rejected
	Q12				×	×	Rejected
Q13			Q13	✓/×	✓		Accepted

✓ means approved and × means disapproved

Bimal definitely disapproved 4 questions Q06, Q07, Q09 and Q12

QNo:- 35 ,Correct Answer:- A

Explanation:-
The information can be gathered as follows

	Created by			Reviewed by			Status
SME	Amal	Bimal	Komal	Amal	Bimal	Komal	
		Q01				✓	Accepted
Q02				✓/×	×/✓	×	Rejected
		Q03		✓		×	Accepted
Q04				✓/×	×/✓	✓	Accepted
		Q05				✓	Accepted
Q06			Q06	×	×		Rejected
	Q07				×	✓	Accepted
Q08				✓/×	×/✓	✓	Accepted
	Q09				×	×	Rejected
			Q10	✓			Accepted
		Q11		×		×	Rejected
	Q12				×	×	Rejected
Q13			Q13	✓/×	✓		Accepted

✓ means approved and × means disapproved

Amal reviewed 8 questions, among them he approved at least 2 questions Q03, Q10 and maximum Amal can approve 6 questions Q02, Q03, Q04, Q08, Q10 and Q13
Approval ratio of Amal lies between 2/8 = 0.25 and 6/8 = 0.75

QNo:- 36 ,Correct Answer:- A

Explanation:-
The information can be gathered as follows

	Created by			Reviewed by			Status
SME	Amal	Bimal	Komal	Amal	Bimal	Komal	
			Q01			✓	Accepted
Q02				✓/×	×/✓	×	Rejected
		Q03		✓		×	Accepted
Q04				✓/×	×/✓	✓	Accepted
			Q05			✓	Accepted
Q06			Q06	×	×		Rejected
	Q07				×	✓	Accepted
Q08				✓/×	×/✓	✓	Accepted
	Q09				×	×	Rejected
			Q10	✓			Accepted
		Q11		×		×	Rejected
	Q12				×	×	Rejected
Q13			Q13	✓/×	✓		Accepted

✓ means approved and × means disapproved

For Amal, Q07, Q09 and Q12 or for Bimal Q03 and Q11 are disapproved by at least one of the other reviewers, total = 5 questions

QNo:- 37 ,Correct Answer:- B

Explanation:-
The given information can be gathered as follows

	Abani	Bahni	Danni	Tinni	Total Employee-Month	Project Completion Index
Project 1	2 × 100%	2 × 100%	0	2 × 80%	6	560/6 = 93.33%
Project 2	0	0	3 × 90%	2 × 100%	5	470/5 = 94%
Project 3	2 × 100%	4 × 75%	3 × 100%	0	9	800/9 = 88.89%
Project 4	5 × 80%	0	2 × 100%	3 × 100%	10	900/10 = 90%
Project 5	0	3 × 90%	1 × 100%	2 × 100%	6	570/6 = 95%
Total Project-Month	9	9	9	9		
Employee Annual Completion Index	800/9 = 88.89%	770/9 = 85.56%	870/9 = 96.67%	860/9 = 95.56%		

From the above table, it is clear that
I: The total project-month was the same for the four employees = 9 is true
II: The total employee-month was the same for the five projects is not true
Only I is true

QNo:- 38 ,Correct Answer:- D

Explanation:-
The given information can be gathered as follows

	Abani	Bahni	Danni	Tinni	Total Employee-Month	Project Completion Index
Project 1	2 × 100%	2 × 100%	0	2 × 80%	6	560/6 = 93.33%
Project 2	0	0	3 × 90%	2 × 100%	5	470/5 = 94%
Project 3	2 × 100%	4 × 75%	3 × 100%	0	9	800/9 = 88.89%
Project 4	5 × 80%	0	2 × 100%	3 × 100%	10	900/10 = 90%
Project 5	0	3 × 90%	1 × 100%	2 × 100%	6	570/6 = 95%
Total Project-Month	9	9	9	9		
Employee Annual Completion Index	800/9 = 88.89%	770/9 = 85.56%	870/9 = 96.67%	860/9 = 95.56%		

By observation only Tinni worked in multiple projects, so Abani, Bahni and Danni did not work in multiple projects

QNo:- 39 ,Correct Answer:- C

Explanation:-
The given information can be gathered as follows

	Abani	Bahni	Danni	Tinni	Total Employee-Month	Project Completion Index
Project 1	2 × 100%	2 × 100%	0	2 × 80%	6	560/6 = 93.33%
Project 2	0	0	3 × 90%	2 × 100%	5	470/5 = 94%
Project 3	2 × 100%	4 × 75%	3 × 100%	0	9	800/9 = 88.89%
Project 4	5 × 80%	0	2 × 100%	3 × 100%	10	900/10 = 90%
Project 5	0	3 × 90%	1 × 100%	2 × 100%	6	570/6 = 95%
Total Project-Month	9	9	9	9		
Employee Annual Completion Index	800/9 = 88.89%	770/9 = 85.56%	870/9 = 96.67%	860/9 = 95.56%		

Again, by observation, project duration of
Project 1 = Jan to Mar = 3 months
Project 2 = Feb to Apr = 3 months
Project 3 = Apr to Aug = 5 months
Project 4 = Jul to Nov = 5 months
Project 5 = Sep to Dec = 4 months
Hence, project duration as per options, Project 3 and Project 4 is same

QNo:- 40 ,Correct Answer:- B

Explanation:-
The given information can be gathered as follows

	Abani	Bahni	Danni	Tinni	Total Employee-Month	Project Completion Index
Project 1	2 × 100%	2 × 100%	0	2 × 80%	6	560/6 = 93.33%
Project 2	0	0	3 × 90%	2 × 100%	5	470/5 = 94%
Project 3	2 × 100%	4 × 75%	3 × 100%	0	9	800/9 = 88.89%
Project 4	5 × 80%	0	2 × 100%	3 × 100%	10	900/10 = 90%
Project 5	0	3 × 90%	1 × 100%	2 × 100%	6	570/6 = 95%
Total Project-Month	9	9	9	9		
Employee Annual Completion Index	800/9 = 88.89%	770/9 = 85.56%	870/9 = 96.67%	860/9 = 95.56%		

From the above table, it is clear that in terms of Annual Completion Index
Danni > Tinni > Abani > Bahni

QNo:- 41 ,Correct Answer:- A

Explanation:-
Given, A = 0% I and 100% P
Let B = x% I and (100 − x)% P
Since they are mixed in equal quantity to detect the presence of I.
(0% I + x% I)/2 ≥ 10% Total, x% I ≥ 20% Total
Hence, x% I ≥ 20% of 50 ml = 10 ml

QNo:- 42 ,Correct Answer:- 1,2

Explanation:-
Since each bottle contains only P or only I
Take equal quantity from each bottle say 10 ml and mix them
Now, if at least any one of them will contain only I, then
I % = 10/40 × 100 = 25% > 10%, so impurity will be detected
And if all four bottles contain only P, then 0% I will be detected
Hence, minimum of 1 test required to ascertain that all of them contain only P

QNo:- 43 ,Correct Answer:- 2

Explanation:-
Since three bottles contains only P and one contains 80% P and 20% I
Taking equal quantity from each bottle say 10 ml and mixing them
I % = 2/40 × 100 = 5% < 10%, so only one test is not sufficient to detect the bottle
Let the bottles be B1, B2, B3 and B4 in any order
Now consider any two bottles (say B1 and B2) and take equal quantity from each bottle say 10 ml and mix them,
Case I, if I% = 0, then both the bottles are only P and now take any one bottle from either B1 or B2 and mix with either B3 or B4
if I% is still = 0, then the remaining bottle contains 20% I
and if I% = (0 + 20)/2 = 10, then the newly mixed bottle contains 20% I
Case II, if I% = 10, then remaining B3 and B4 are only P, now take either B1 or B2 and mix with B3 or B4
If I% = 0, then the other bottle among B1 or B2 contains 20% I
And if I% is still = 10, then the bottle taken among B1 or B2 contains 20% I
Hence, minimum of 2 tests required in either of the cases

QNo:- 44 ,Correct Answer:- B

Explanation:-
Case I, if only one bottle contains only P and remaining three bottles contains 15% I
Take equal quantity from each bottle and mix them
I% = (0 + 15 + 15 + 15)/4 = 11.25 > 10, so impurity will be detected
Case II, if two bottles contain only P and remaining two bottles contain 15% I
Take equal quantity from each bottle and mix them
I% = (0 + 0 + 15 + 15)/4 = 7.5 < 10, so impurity will not be detected
Hence, minimum of only 1 test ascertain the exact number of bottles containing only P

Section : Quantitative Ability

QNo:- 45 ,Correct Answer:- 3000,92,34

Explanation:-
Since money paid is in proportion to the work done
Let work = 24000 units (1 unit = 1 Re)
Anil's efficiency = 24000/12 = 2000 units/day
Barun's efficiency = 24000/16 = 1500 units/day
Together, Anil + Barun + Chandu = 24000/6 = 4000 units/day
Chandu's efficiency = 4000 – 2000 – 1500 = 500 units/day
Since Chandu worked for 6 days, money paid = 500 × 6 = Rs 3000

QNo:- 46 ,Correct Answer:- 92

Explanation:-
Sum (25 students) = 25 × 50 = 1250
Let the score of each topper = x, sum (5 toppers) = 5x
Remaining students = 20
To maximize the score of the topper, we have to minimize the remaining score with 30 being least and all distinct integer
Sum (20 students minimum) = 30 + 31 + 32 + … 20 values
= 20/2 (2 × 30 + 19 × 1) = 790
So, Sum (5 toppers) = 5x = 1250 – 790 = 460
Hence, the score of each topper (maximum) = 460/5 = 92

QNo:- 47 ,Correct Answer:- C

Explanation:-
Let the number of large size shirt = x and small size shirt = 64 – x
Let the price of the large shirt = P, then price of small shirt = P – 50
Given, P × x = 5000 and (P – 50)(64 – x) = 1800
64P – Px – 3200 + 50x = 1800
64P + 50x = 10000
32P + 25 (5000/P) = 5000
$32P^2 – 5000P + 125000 = 0$
$4P^2 – 625P + 15625 = 0$
$4P^2 – 500P – 125P + 15625 = 0$
(4P – 125)(P – 125) = 0
P = 125 (as P = 125/4 making P – 50 negative, so rejected)
Hence the price of large shirt and small shirt together
= P + (P – 50) = 200

QNo:- 48 ,Correct Answer:- D

Explanation:-
Given information can be gathered as follows

	Male	Female	Total
1970	m	f	100 (let)
1980	1.4m	1.2f	125

m + f = 100 and 1.4m + 1.2f = 1250
Solving, m = 25 and f = 75

	Male	Female	Total
1970	25	75	100
1980	35	90	125
1990	56.25	90 + 25/100 × 90 = 112.5	168.75

Required percentage increase = (168.75 − 100)/100 × 100 = 68.75%

QNo:- 49 ,Correct Answer:- 34,12

Explanation:-
Let the price of smallest cup = 2x, price of medium cup = 5x
And let the price of largest cup = p
Given, $2x \times 5x \times p = 800$, $p = 80/x^2$
Also, $(2x + 6) \times (5x + 6) \times p = 3200$
$(10x^2 + 42x + 36) \times p = 3200$
$10x^2 + 42x + 36 = 40x^2$, $5x^2 − 7x − 6 = 0$
$(5x + 3)(x − 2) = 0$, x = 2, p = 20
Required sum = 2x + 5x + p = 34

QNo:- 50 ,Correct Answer:- A

Explanation:-
Let the weight of the initial alloy = x kg and percentage of silver in the alloy = p%
Given, p% of x + 100% of 3 = 90% of (x + 3)
px + 300 = 90x + 270, 90x − px = 30
Also, p% of x + 90% of 2 = 84% of (x + 2)
px + 180 = 84x + 168, 84x − px = 12
Subtracting and solving, 6x = 18, x = 3 kg

QNo:- 51 ,Correct Answer:- 12,6

Explanation:-

There are two cases possible

Case I, $0 < 1 + mn < m + n < 5$	Case II, $-5 < m + n < 1 + mn < 0$
$mn - m - n + 1 < 0$	$mn - m - n + 1 > 0$
$(m - 1)(n - 1) < 0$	$(m - 1)(n - 1) > 0$
$m < 1$ or $n < 1$	$m > 1$ or $n > 1$
Also, $mn + 1 > 0, mn > -1$	Also, $mn + 1 < 0, mn < -1$
Only possible,	Again, only possible,
if either $m = 0, n = 2, 3, 4$	if either $m = 0, n = -2, -3, -4$
or $n = 0, m = 2, 3$ and 4	or $n = 0, m = -2, -3$ and -4

Total solutions = 12

QNo:- 52 ,Correct Answer:- C

Explanation:-

Total Expenses = Total Revenue – Total Profit
Also, Total Expenses (T) = Fixed Expenses (F) + Variable Expenses per boarder (V) × Number of boarder (n)
(1600 – 200) × 50 = 70000 = F + 50V
(1600 – 250) × 75 = 101250 = F + 75V
Solving, V = 1250 and F = 7500
Total Expenses (80 boarders) = 7500 + 80 × 1250 = 107500
Total Profit = 80 × 1600 – 107500 = 20500

QNo:- 53 ,Correct Answer:- B

Explanation:-
Given, AD = 10 cm and AC = 20 cm
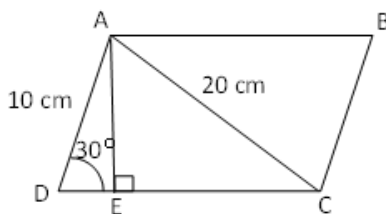
Also angle ADC = 30°
Drop perpendicular AE at DC
Triangle DAE becomes 30-60-90
Since, AD = 10 cm, AE = 5 cm
and DE = 5√3 cm
Also, in right angled triangle AEC
$AC^2 = AE^2 + EC^2$
$EC^2 = 400 - 25 = 375$, EC = 5√15 cm

Required Area = AE × (DE + EC) = 5 × (5√3 + 5√15) = 25 (√3 + √15) cm^2

QNo:- 54 ,Correct Answer:- A

Explanation:-
$f(g(x)) - 3x = f(x + 3) - 3x = (x + 3)^2 - 7(x + 3) - 3x = x^2 - 4x - 12$
The minimum value of above function is at $x = -(-4)/2 = 2$
Hence, required value $= 4 - 8 - 12 = -16$

QNo:- 55 ,Correct Answer:- 6,3500,8

Explanation:-
$(10)^{1/7} \times (10)^{2/7} \times ... \times (10)^{n/7} > 999$
$(10)^{1/7 + 2/7 + ... + n/7} > 999 \approx 10^3$
$(10)^{n(n+1)/14} \approx 10^3$
$n(n+1) \approx 42$, so for $n = 6$ satisfies the given in equation

QNo:- 56 ,Correct Answer:- A

Explanation:-
Matches played = 40, Won = 30% of 40 = 12
Let remaining matches = x, Win among them = 60% of x = 0.6
Overall win, $12 + 0.6x = 50\%$ of $(40 + x)$
Solving, x = 80 = remaining matches
Required value = 12 + 90% of 80 = 84

QNo:- 57 ,Correct Answer:- B

Explanation:-
Let L and B be the length and breadth of rectangular plot
One side cost = 200 be on one of the lengths and other three sides cost = 100
Total cost = 200L + 100L + 100B + 100B = 300L + 200B
The cost to be lowest possible, 300L = 200B = k
Area, L × B = 60000, k/300 × k/200 = 60000, k = 60000
Hence, L = 200 and B = 300
Required lowest cost = 300 × 200 + 200 × 300 = 120000

QNo:- 58 ,Correct Answer:- B

Explanation:-
Let R and G be the efficiencies respectively
Given, R × 8 + G × 6 = W (total work)   × 5
Also, R × 7.5 + G × 7.5 = W   × 4
Subtracting, 40R – 30R = W, R = W/10
Hence, Rahul alone would have taken 10 hours

QNo:- 59 ,Correct Answer:- D

Explanation:-
3x + 2|y| + y = 7 and x + |x| + 3y = 1

Case I, x > 0, y > 0	Case II, x > 0, y < 0
3x + 3y = 7	3x – y = 7
2x + 3y = 1	2x + 3y = 1
Solving, x = 6 and y = -11/3	Solving, x = 2 and y = -1
rejected as y > 0	So, x + 2y = 0
Case III, x < 0, y > 0	Case IV, x < 0, y < 0
3x + 3y = 7	3x – y = 7
3y = 1	3y = 1
Solving, x = 2 and y = 1/3	Solving, x = 22/9 and y = 1/3
rejected as x < 0	rejected as x and y < 0

Hence, only case II possible, x + 2y = 0

QNo:- 60 ,Correct Answer:- D

Explanation:-
Let the rate of interest at bank B = R%, then at bank C = 2R%
Let the principal invested by Raju at bank B = P
Amount accrued by Raju = P + PRT/100
= P(1 + (6/2)/100)$^{1×2}$
1 + RT/100 = (1.03)^2,
RT = 6.09,
Rupa invested Rs 10000 at twice the rate and twice the period
Rupa's interest = 10000 × 4RT/100 = Rs 2436

QNo:- 61 ,Correct Answer:- 3500

Explanation:-
Area of rhombus = 1/2 × d_1 × d_2 = 96, d_1 × d_2 = 192
Also, Perimeter (given) = 40 m, so side, a = 10 m
We know, $(d_1/2)^2$ + $(d_2/2)^2$ = a^2 = 100
Considering d_1 and d_2 to be integers, d_1 and d_2 = 12
and 16 satisfies the above triplet as well as 12 × 16 = 192
Hence required cost = (12 + 16) × 125 = Rs 3500

QNo:- 62 ,Correct Answer:- B

Explanation:-
Given, $x_1 = -1$
$x_2 = x_1 + 1 - 1 = -1$
$x_3 = x_2 + 2 - 1 = 0$
$x_4 = x_3 + 3 - 1 = 2$
$x_5 = x_4 + 4 - 1 = 5$
...
Sum $= x_1 + x_2 + x_3 + x_4 + x_5 + ... + x_n$
Sum $= -1 + -1 + 0 + 2 + 5 + ... + x_n$
Sum $= \qquad -1 + -1 + 0 + 2 + 5 + ... + x_{n-1} + x_n$
Subtracting,
$0 = -1 + 0 + 1 + 2 + 3 + ... + (n - 2) - x_n$
$x_n = n/2 (-1 + n - 2) = n(n - 3)/2$
$x_{100} = (100 \times 97)/2 = 4850$

QNo:- 63 ,Correct Answer:- 8,50

Explanation:-
Let the length of the track $= x$
Let the speed of Mira and Amal be m and a respectively
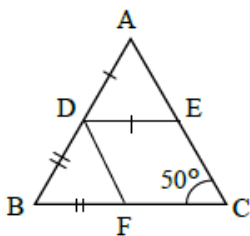If Amal completes 3 more round than Mira in 45 min walking in same direction,
$a - m = 3x/45 = x/15$
Also, when they walk in opposite direction, $a + m = x/3$
Solving, $a = x/5$ and $m = 2x/15 = x/7.5$
So, Mira walks one round in 7.5 mins
Hence number of rounds Mira walks in one hours $= 60/7.5 = 8$

QNo:- 64 ,Correct Answer:- D

Explanation:-
Given, angle BCA $= 50°$

AD = DE and BD = DF
Let angle DAE = angle DEA $= x$
So, angle ADE $= 180° - 2x$
Also let angle BDF = angle BFD $= y°$
So, angle BDF $= 180° - 2y$
Also, angle A + B + C $= 180°$
So, $x + y = 130°$
Again, angle ADE + angle BDF + angle FDE $= 180°$
$180° - 2x + 180° - 2y + $ angle FDE $= 180°$
Angle FDE $= 260° - 180° = 80°$

QNo:- 65 ,Correct Answer:- C

Explanation:-
$(\log_{15} a + \log_{32} a)/(\log_{15} a)(\log_{32} a) = 4$
$[(\log a)/(\log 15) + (\log a)/(\log 32)]/[(\log a)/(\log 15) \times (\log a)/(\log 32)] = 4$
$\log 32 + \log 15 = 4 \log a$, $\log 480 = \log a^4$
Hence, $4 < a < 5$

QNo:- 66 ,Correct Answer:- 50

Explanation:-
Following cases are possible
(2, 3, 1, 1) can be arranged in $4!/2! = 12$ cases
(2, 3, 1, 2) can be arranged in $4!/2! = 12$ cases
(2, 3, 1, 3) can be arranged in $4!/2! = 12$ cases
(2, 3, 2, 2) can be arranged in $4!/3! = 4$ cases
(2, 3, 2, 3) can be arranged in $4!/2!2! = 6$ cases
(2, 3, 3, 3) can be arranged in $4!/3! = 4$ cases
Total = 50 cases