

Answers:

VARC	LRDI	Quant
1.B	27.C	51.C
2.D	28.B	52.C
3.D	29.A	53.B
4.D	30.C	54.40
5.C	31.A	55.A
6.A	32.C	56.A
7.A	33.D	57.18
8.D	34.C	58.C
9.D	35.C	59.B
10.A	36.A	60.252
11.D	37.A	61.D
12.C	38.B	62.3
13.A	39.B	63.16000
14.B	40.A	64.C
15.B	41.A	65.D
16.B	42.4	66.C
17.D	43.4	67.6
18.D	44.2	68.A

19.2431	45.1	69.B
20.4123	46.A	70.A
21.3	47.C	71.A
22.3	48.A	72.28
23.C	49.42	73.A
24.B	50.20	74.C
25.B		75.24
26.3142		76.D

Explanations:

VARC

1. B

The aspects that guided/influenced the understanding of feminist scholars who examined Victorian women's travelling experiences need to be found out. We understand that the attempt made by feminist scholars was to "challenge the masculinist history of geography by (1) questioning who and what are relevant subjects of geographic study, and (2) what counts as geographic knowledge itself." And considering the role of women in travel writing during the Victorian era enabled these scholars to inspect new perspectives and achieve the aforementioned objectives {"...such questions are worked through ideological constructs that posit men as explorers and women as travelers—or, conversely, men as travelers and women as tied to the home..."[Option C]. The varied viewpoints offered by women during this period originated from the difference in the gendered identities, implicitly indicating that the presence of an inequality/inequity in the gender roles [Option A]. Additionally, studies concerning the manner in which travel altered a woman's gendered identities were also available; this further shaped the feminist scholars' understanding of the travelling

experiences of Victorian women [Option D]. It has not been presented or implied that the knowledge of "class" tensions, as stated in Option B, was an imperative element that influenced scholars' understanding. Hence, Option B is the correct answer.

2. D

We can zero-in on the answer based on the following excerpt: {...The completion of the first U.S. transcontinental highway during the 1920s... for example, inaugurated a new genre of travel literature about the United States—the automotive or road narrative. Such narratives highlight the experiences of mostly male protagonists "discovering themselves" on their journeys, emphasizing the independence of road travel and the value of rural folk traditions...}

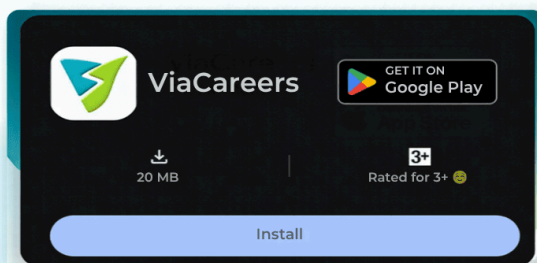
Option A: talks about participation in local traditions which is not mentioned or implied.

Option B: is a distorted comment that does not align with the idea discussed. The author states that road journeys enabled the male protagonist's experience of "discovering themselves"; the phrase "desire for independence" would be incorrect in this regard.

Option C: is not even remotely discussed/implied.

Option D: It is mentioned that the inauguration of a transcontinental highway during the 1920s paved the way for a new genre that emphasised the freedom attached to such road travelling enterprises. Hence, it implicitly depicted travel as an experience celebrating an individual's independence {...emphasizing the independence...}.

Hence, of the given options, Option D aptly captures the characteristics of American travel literature of the 1920s.



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3. D

The question requires us to probe the reason behind why the scholars argue that Victorian women experienced self-development through their travels. Let us pay heed to the following segment from the passage: {...Many studies from the 1970s onward demonstrated the ways in which women's gendered identities were negotiated differently "at home" than they were "away," thereby showing women's self-development through travel...}. It is highlighted that travelling {being "away"} enabled women's identities to be "negotiated differently" {highlighting transformation/reconfiguration}, which in turn was the cause of their self-development. Option D is closest to this understanding. Options A, B and C fail to present the reason and are invalid statements/inferences.

4. D

A direct inference from the excerpt: {...Said's work became a model for demonstrating cultural forms of imperialism in travel texts, showing how the political, economic, or administrative fact of dominance relies on legitimating discourses such as those articulated through travel writing...}. It is stated that Said's work rendered scholars with an understanding of "cultural imperialism" and the manner in which it was used to justify colonial domination {or similar pursuits thereof}. Option B aptly captures this aspect. Options A, B and C either diverge from the discussion or are distorted comments.

5. C

Since travel writing involves the presentation and recounting of personal travel experiences and/or perspective of the world, the closest category to this would be autobiographical writing [Option C]. Political journalism and feminist writing can be hurled out the window. Associating travel literature to historical fiction would be inappropriate as well. Hence, of the given choices, Option C is the correct answer.

6. A

We need to find a viewpoint that is presented in the passage. Let us inspect the individual options:

Option A: The introductory lines of the passage helps us infer this: {...Although one of

the most contested concepts in political philosophy, human nature is something on which most people seem to agree. By and large, according to Rutger Bregman in his new book Humankind, we have a rather pessimistic view - not of ourselves exactly, but of everyone else. We see other people as selfish, untrustworthy and dangerous and therefore we behave towards them with defensiveness and suspicion...}



Option B: The author calls the viewpoints of Hobbes and Rousseau as polar opposites {"Hobbes and Rousseau are seen as the two poles of the human nature argument"} and does not present a similarity, especially any comment of the form: "both believed in the need for a strong state." Thus, we can eliminate this option.

Option C: No such view has been presented.

Option D: The author's opinion of Frans de Waal's "Veneer theory" is not evident/not highlighted. Hence, we can eliminate this option.

Thus, of the given statements, Option A is the correct answer.

7. A

Bregman considers the aftermath of civilizational collapse as a period that allows for certain changes or alterations in the society {..."Civilisation has become synonymous with peace and progress and wilderness with war and decline," writes Bregman. "In reality, for most of human existence, it was the other way around." Whereas traditional history depicts the collapse of civilisations as "dark ages" in which everything gets worse, modern scholars, he claims, see them more as a reprieve, in which the enslaved gain their freedom and culture flourishes...}. Option A correctly captures this point. Options B, C and D are either not stated or distorted interpretations.

8. D

Bregman disagrees with Hobbes' standpoint of humans being inherently selfish or bestial and instead takes Rousseau's side. He asserts that civilizational progress caused by the post-agricultural setup is responsible for the negative/undesired circumstances. In this regard, he presents the contrasting picture of pre and post-agricultural societies {attaches the image of "a prelapsarian idyll" to the nomadic lifestyle, while considers the discovery of agriculture as a misadventure}. Thus, this depiction supplements his argument that people are basically decent, but progress as we know it can make them selfish." **Option D** is the appropriate answer.

Option A: The aspect of complexity is not the primary focal point. Thus, this option can be eliminated.

Option B: This diverges from the discussion onto a new line of discussion: "impact that settled farming had on population growth." Hence, we can discard this choice as well.

Option C: Again, the focus is not on the environment; hence, we can scrap off this option.

9. D

At the end of the passage, the author states the following: {... There's a great deal of reassuring human decency to be taken from this bold and thought-provoking book and a wealth of evidence in support of the contention that the sense of who we are as a species has been deleteriously distorted. But it seems equally misleading to offer the false choice of Rousseau and Hobbes when, clearly, humanity encompasses both...} Thus, he does not truly agree with Bregman's portrayal of the civilized society. **Option D** correctly captures this disagreement.

10. A

This is a direct inference question that requires minimal effort and can be accurately answered using the option-elimination mechanism. The first sentence of the passage is as follows: "...I've been following the economic crisis for more than two years now...". It is evident that the author has been following {events/information associated with} the economic crisis for at least two years if not more. Thus, **Option A** is a sensible inference

to draw from this statement. Options B, C and D are inane interpretations of the same and can be effortlessly eliminated.

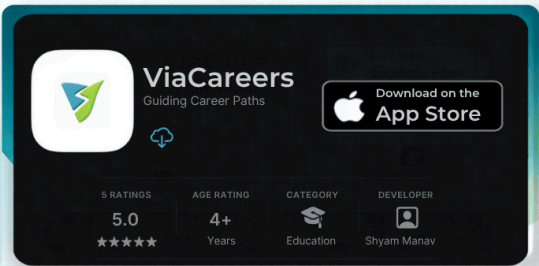
11.D

In the final paragraph, the author highlights the crisis as an ironical situation: a group of individualistic entities facing an issue with collective impact and thereby, needs to be dealt with "together" or by shifting from the existing self-centred setup {...That's one of the strangest ironies of this story: after decades in which the ideology of the Western world was personally and economically individualistic, we've suddenly been hit by a crisis which shows in the starkest terms that whether we like it or not—and there are large parts of it that you would have to be crazy to like—we're all in this together....}. Option D is the closest choice that captures this element. Option A is contrary to the point presented in the concluding para. Options B and C are either divergent to the point made or merely distorted comments. Hence, Option D is the correct answer.

12.C

A predominant idea discussed by the author is regarding the lack of financial literacy that could be truly beneficial to our understanding of the world. This is emphasised via the following excerpt:

{...It seems to me that there is a much bigger gap between the world of finance and that of the general public and that there is a need to narrow that gap, if the financial industry is not to be a kind of priesthood, administering to its own mysteries and feared and resented by the rest of us. Many bright, literate people have no idea about all sorts of economic basics, of a type that financial insiders take as elementary facts of how the



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world works. I am an outsider to finance and economics, and my hope is that I can talk across that gulf....} Option C aligns with this concern and is, consequently, an idea that

the author is bound to support. Option B appears as another likely candidate; however, economic research is not one of the focal points mentioned. Options A and D contain elements that are not discussed or are opposite to the author's ideas. Hence, Option C is a programme that the author is most likely to be supportive of.

13.A

Let us inspect the individual options:

Option A: If true, this statement could be antithetical to the point put forth in the concluding paragraph: the author believes that an individualistic ideology isn't the right way forward; instead, we need to deal with such crises collectively. Thus, this is a conflicting viewpoint and thereby, the correct answer.

Option B: If true, aligns with the author's point in the first paragraph: {...It seems to me that there is a much bigger gap between the world of finance and that of the general public and that there is a need to narrow that gap, if the financial industry is not to be a kind of priesthood, administering to its own mysteries and feared and resented by the rest of us...}

Options C and D: If true, this is in tune with the author's claim {made in the final segment} about dealing with such crises together.

Hence, of the given statements, Option A deviates from the author's argument and thus, is the correct answer.

14.B

On skimming through the statements, it is evident that Options A and D do very little, if at all anything, to support the author's claim. Option C, in its current form, aligns with the author's assertion; however, if false, it is opposite to the author's argument about financial literacy {on negating the statement, it indicates that most people do have an understanding of the workings of the financial world}. Option B, if false, is in line with the assertions made in the concluding paragraph.

15.B

Option A: This author will agree with this assertion. It has been mentioned in the third

para: {... For some kids, there is premature thinning of their cerebral cortex...}.

Option B: Reduction in human contact or social engagement is one of the negative impacts of screen time that the author highlights in the passage. Option B is antithetical to this presentation and is, hence, not a claim that the author is likely to endorse.

Option C: The author states this element in the third para: {... In adults, one study found an association between screen time and depression...}

Option D: A point along similar lines has been presented in the fifth para: {... There are fleets of psychologists and neuroscientists on staff at big tech companies working to hook eyes and minds to the screen as fast as possible and for as long as possible. And so human contact is rare...}

Hence, Option B is the correct answer.

16. B

At the very beginning, the author highlights the disparity in the screen time with regard to the wealthy and the common masses: {...As more screens appear in the lives of the poor, screens are disappearing from the lives of the rich. The richer you are, the more you spend to be off-screen...}. The statement in Option B supplements this assertion by further highlighting this observed difference in activity between the rich and the common: {...As more screens appear in the lives of the poor, screens are disappearing from the lives of the rich. The richer you are, the more you spend to be off-screen...}. None of the other options can be attached to the given statements.

Hence, Option B is the correct answer.

17.D

The following excerpt from the fourth paragraph throws light into this matter: {...Tech companies worked hard to get public schools to buy into programs that required schools to have one laptop per student, arguing that it would better prepare children for their screen-based future. But this idea isn't how the people who actually build the screen-based future raise their own children...}. It is understood that though tech companies manipulate public schools into engaging in a process involving more screen time, they avoid a similar course of activity when it comes to their own children {whom

they subject to a screen-free education and upbringing}. Option D aptly captures this two-facedness. Option B is a distorted interpretation, while Options A and C cannot be inferred from the passage.

Hence, Option D is the correct answer.

18.D

Option A: The author has already discussed a point along similar lines towards the end of the passage: {...There is also the reality that in our culture of increasing isolation, in which so many of the traditional gathering places and social structures have disappeared, screens are filling a crucial void...}. Hence, the author definitely considers this as one of the causes behind the increase in screen time.

Option B: The discussion in passage 4 and 5 highlights how the tech companies have {perhaps successfully} convinced schools to integrate a screen-based educational culture to prepare students for a "screen-based future". Thus, this is another factor that the author attributes to the rise in screen time.

Option C: This aspect has been discussed towards the end of the passage: {...There is a small movement to pass a "right to disconnect" bill, which would allow workers to turn their phones off, but for now, a worker can be punished for going offline and not being available...}. Hence, the author considers this as another factor contributing to the increase in screen time.

Option D: There is no discussion mentioning or detailing the elements presented in D. Thus, we cannot conclusively comment on whether the author is likely to agree with this point.

Hence, Option D is the correct answer.



19.2431

Statement (2) introduces us to certain evolutionary influences in the bodily mechanisms of animals, especially mammals (bats). Statement (4) continues on the observed influence on the various apparatuses in mammals, specifically in the case of the most complex human organ: the central nervous system (CNS). The author mentions that the example of exaptation and Russian dolls serve to assist in our understanding of this complex organ (CNS). The significance of the Russian dolls is elaborated in Statement (3), specifically with regard to its structural implications: "smaller structures are contained within larger ones in multiple layers"—this portrays the presence of some structural hierarchy that can be observed in such complex apparatuses. Statement (1) highlights how the complex elements in the CNS are organised in a "nested hierarchic criterion", thereby, serving as a continuation to (3). Therefore, (2)-(4)-(3)-(1) forms a coherent paragraph.

20.4123

Statement (4) opens the discussion by mentioning an "antitrust law" and a few essential features attached to it. Statement (1) further describes this provision {"...It advocated..."}; the move to support an efficient market and curb anti-competitive practices. Statement (2) then elaborates on the latter point of anticompetitive practices and subsequently, highlights the relevance of this provision. Statement (3) further emphasises the necessity of "new legal solutions" to deal with the elements discussed earlier {in (2) and (3)}. Hence, (4)-(1)-(2)-(3) forms a logical arrangement.

21.3

On reading the statements, the arrangement (2)-(4)-(1)-(5) can be linked to form a paragraph, while Statement (3) stands out. Statements (2) and (4) talk about hate

speech detection and the algorithms involved, while Statements (1) and (5) indicate the issue associated with the aforementioned algorithms. Hence, (3) is the odd one out.

22.3

Statement (1) talks about how the "logic" of determining a woman's inner quality boiled down to the distinction between the perception of "being a woman and being feminine". Statement (5) highlights the difference in this understanding: the former being a 'biological category' and latter being a 'process'. Statement (2) continues on the manner in which the measure of "feminine ideal" was dependent on a woman's appearance. Statement (4) continues on this line by presenting how the incapacity to meet up to this ideal led to the denigration of working-class women and women of colour. We notice that Statement (3) is the odd one out here.

23.C

One predominant viewpoint: language originated to exchange factual information
An alternative viewpoint: language originated to facilitate social bonding and consequently, to ensure human survival. The summary needs to highlight these two core viewpoints. Option C does this without deviating from the discussion.

Option A: The evolution of language is not the focal point here; the views held in this regard are. {"language has been continuously evolving to higher forms"} Thus, we can eliminate this option since it comes across as a misrepresentation.

Option B: This is a trap wherein the statement captures both the core viewpoints but there is a distortion involved: "...From the belief ..." to "...scholars now..." indicates a shift in the viewpoint. However, this is not the case - the author simply states two prevalent perspectives on the subject.

Option D: is again a distortion since experts are not "challenging any views; the author simply highlights the presence of two viewpoints {no conflict presented}

Hence, Option C is the correct answer.

24.B

The paragraph discusses two essential elements: it begins by presenting the facet of

autonomy enjoyed by the representative in Aesthetic political representation and then highlights the cultivation of "disinterestedness" in this regard. Additionally, the author distinctly identifies the aforementioned concept as being not the same as that of "indifference". Post this, towards the end. The author presents the reason behind this assertion. Option B correctly captures these two aspects without distorting the overall meaning.

Option A: The author does not claim that the autonomy "manifested" through disinterestedness.

Option C: The statement here contains added elements which cannot be inferred from the passage.

Option D: This alternative fails to capture the essence of the discussion and describes a single component. {'political representation' might again be incorrect}

Hence, of the given summaries, Option B aptly captures the substance of the passage.



25.B

There are two key points discussed in the passage:

1. The prospect of "metabolic theory" being foundational to the field of ecology; the same as is the case in (2)
2. Genetic theory being the conceptual basis of evolutionary biology {given the diverse and extensive theoretical approaches and models available}.

Thus, the summary needs to capture both these points. Option B fulfils this requirement.

Option A: is a distorted claim since it is not implied in the passage; the author does not

assert that "metabolic theory need not evolve in a similar manner".

Option C: is again a misinterpretation because the author does not claim that metabolic theory "must" contribute in a similar fashion. Instead, the focus is on the "potential" of this theory.

Option D: is divergent since the author does not discuss the "success" of a theory.

Hence, Option B is the correct answer.

26.3142

Statement (3) opens the paragraph by introducing the subject: seven popular Japanese deities who bring good luck. Statement (1) then comments on the aspect of good fortune followed by statements (4) and (2).

Statement (4) clarifies how only two of these seven entities qualify as indigenous Japanese gods while

Statement (2) comments on the origin/background of the rest. Hence, (3)-(1)-(4)-(2) forms a coherent arrangement.

LRDI

Explanation [27 - 30]:

The patients in

Vial A: 9, 10, 11, 12, 13, 14, 15, 16

Vial B: 1, 2, 3, 4, 5, 6, 7, 8.

Vial C: 5, 6, 7, 8, 13, 14, 15, 16

Vial D: 1, 2, 3, 4, 9, 10, 11, 12

Vial E: 3, 4, 7, 8, 11, 12, 15, 16

Vial F: 1, 2, 5, 6, 9, 10, 13, 14

Vial G: 2, 4, 6, 8, 10, 12, 14, 16

Vial H: 1, 3, 5, 7, 9, 11, 13, 15

27. C

If vial C tests positive and vials A, E and H test negative then Patient 6 must have disease as all other patients in vial C except patient 6 are present in at least one of A, E, H.

28. B

Suppose vial A tests positive and vials D and G test negative then the patient who tested positive must be one of patient 13 or 15.

Patient 13 or 15 are not present in vial B. So, A is not the answer.

Both patients present in vial C. Even if tested positive or negative we can't know who has got the disease. So, C is not the answer.

Both patients present in vial H. Even if tested positive or negative we can't know who has got the disease. So, H is not the answer.

Only patient 15 is present in vial E, if tested positive then patient 15 has the disease else patient 13 has disease.

Hence Option 2 is correct.

29. A

If vials C and D negative then no patient could test negative. Hence A is correct answer.

30. C

Let one of the patients, patient 1 or patient 16 has the disease and his blood is mixed with other then all 8 vials will test positive. $\Rightarrow$ 8 has to be one of the answers.

If patient 2 and patient 16's blood is mixed if one of them has the disease then 7 of the 8 vials will test positive. So 7 has to be there in the option.

If 1 has the disease and 1,7 are mixed then 6 out the 8 vials tests positive.

If 1 has the disease and 1,9 are mixed then 5 of the 8 vials tests positive.

Now, let us assume that patient 1 has the disease if his blood is not mixed, then 4 vials

will definitely show positive.

Hence 3 is the correct answer.

Explanation [31 - 34]:

The cumulative orders booked by 19th are 337 and that of 18th are 332 => No. orders booked on 19th are 5.

Similarly we can find the orders booked on that day till 14th.

Number of orders lost that were booked on 12th = Cumulative orders lost till 14th - Cumulative orders lost till 13th = 92 - 91 = 1.

Similarly, the number of orders lost till 17th can be found out.

31. A

Number of orders delivered on 13th are 11 out of which 4 are orders which were booked in 11th so, 7 must be the orders which were booked on 12th.

Similarly, we can find the orders which took 1 day and 2 days to get delivered till 17th.



Date	Order Placed	1-day Delivery	2-day Delivery	Lost	Delivery done on the date
11			4		
12	14	7	6	1	
13	31	21	8	2	11
14	30	15	3	12	27
15	28	8	8	12	23
16	25	13	10	2	11
17	25	3	13	9	21
18	5	1			13
19	5				14

Now, total number of orders booked on 12th will be $7 + 6 + 1 = 14$

Fraction of orders booked on 15th that were lost = $12/28$

Fraction of orders booked on 16th that were lost = $2/25$

Fraction of orders booked on 13th that were lost = $2/31$

Fraction of orders booked on 14th that were lost = $8/30$.

∴ Option A is correct answer.

32. C

Number of orders delivered on 13th are 11 out of which 4 are orders which were booked in 11th so, 7 must be the orders which were booked on 12th.

Similarly, we can find the orders which took 1 day and 2 days to get delivered till 17th.

Date	Order Placed	1-day Delivery	2-day Delivery	Lost	Delivery done on the date
11			4		
12	14	7	6	1	
13	31	21	8	2	11
14	30	15	3	12	27
15	28	8	8	12	23
16	25	13	10	2	11
17	25	3	13	9	21
18	5	1			13
19	5				14

Now, total number of orders booked on 12th will be $7 + 6 + 1 = 14$.

The total number of orders placed on 13th = $21 + 8 + 2 = 31$.

From the table we can determine that among options, number of orders booked on 13th are maximum.

33. D

Number of orders delivered on 13th are 11 out of which 4 are orders which were booked on 11th so, 7 must be the orders which were booked on 12th.

Similarly, we can find the orders which took 1 day and 2 days to get delivered till 17th.

Date	Order Placed	1-day Delivery	2-day Delivery	Lost	Delivery done on the date
11			4		
12	14	7	6	1	
13	31	21	8	2	11
14	30	15	3	12	27
15	28	8	8	12	23
16	25	13	10	2	11
17	25	3	13	9	21
18	5	1			13
19	5				14

Now, total number of orders booked on 12th will be $7+6+1=14$.

From the table we can determine that among options, number of orders booked on 13th

are maximum.

For 15 the delivery ratio = $8/8 = 1$

For 16 the delivery ratio = $13/10 = 1.3$

For 13 the delivery ratio = $21/8 = 2.625$

For 14 the delivery ratio = $15/3 = 5$

Hence Option D



34. C

Number of orders delivered on 13th are 11 out of which 4 are orders which were booked on 11th so, 7 must be the orders which were booked on 12th.

Similarly, we can find the orders which took 1 day and 2 days to get delivered till 17th.

Date	Order Placed	1-day Delivery	2-day Delivery	Lost	Delivery done on the date
11			4		
12	14	7	6	1	
13	31	21	8	2	11
14	30	15	3	12	27
15	28	8	8	12	23
16	25	13	10	2	11
17	25	3	13	9	21
18	5	1			13
19	5				14

Now, total number of orders booked on 12th will be $7+6+1=14$.

From the table we can determine that among options, number of orders booked on 13th

are maximum.

Average time can be calculated as follows:

	x	y	x+2y	x+y	$(x+2y)/(x+y)$
13	21	8	37	29	1.275862069
14	15	3	21	18	1.166666667
15	8	8	24	16	1.5
16	13	10	33	23	1.434782609

14 is the least

35. C

There are 12 plots and each of them got even number of plots. So, possible cases are 4,4,2,2 or 6,2,2,2.

From 4, A and B got more plots than D. So, the only possible case is A, B each got 4 and C, D each got 2.

From 6, D has to get two adjacent plots and From 8, plots of C, D are not adjacent to each other => D must have got plots in X3, X4.

C already has two plots in X1, Z2. So, the corner plot Z4 should belong to B.

From 7, B has a plot in each row and each column. So, X2 should belong to B.

Now, out of the remaining Y2, Y3, Y4 and Z3 three plots belong to A and one belongs to B.

Till now B hasn't got any plot in third column and 2nd row.

So, Y3 belongs to B and Y2, Y4, Z3 belongs to A.

Let the number of trees in Y4 be $4x$ from 3, number of trees in Y3, Y2 will be $2x$, x

respectively.

The number of teak trees = $7x+21$

∴ Number of mango trees = $14x+42$

The table now looks like:

	1	2	3	4	
X	12 C				$14x+42$
Y	21 A	x A	2x B	4x A	$7x+21$
Z			9 A	28 B	



Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees and from 2, B didn't have the largest number of trees in a plot $\Rightarrow x < 8$.

x can't be 7,5,3,2,1 as for these cases at least one of x,2x,4x is neither multiple of 3 or 4.

x can be 6 or 4.

If $x=6$, number of Teak trees will be 63 and Mango trees will be 126 $\Rightarrow$ Number of Pine trees = $205-126-63=16$ but number of trees in $Z3+Z4>16$ so, $x\neq 6$.

If $x=4$, Number of Teak trees=49 and Mango trees=98 $\Rightarrow$ Number of Pine trees=58. Valid case.

Number of trees with $A=30+5x=50$.

From 1, number of trees with C, D=30, 56 respectively.

So, number of trees in $Z2=18$.

$\therefore$ Number of trees with $B=205-50-30-56=69$.

From 2, largest number of trees in a plot is 32. They can be in the plot of either B or D. If they are from B, they have to be from $X2$ but in that case number of trees in $Z1=1$ which is neither a multiple of 3 or 4.

So, highest number of trees in a plot are with D and it is 32 $\Rightarrow$ number of trees in $X3, X4$ are 32, 24 in any order.

So, number of trees in $X2 = 98-56-12=30$

$\therefore$ Number of trees in $Z1=69-30-28-8=3$.

The final table will look like:

	1	2	3	4	
X	12 C	30 B	32/24 D	24/32 D	98
Y	21 A	4 A	8 B	16 A	49
Z	3 B	18 C	9 A	28 B	58

∴ Number of Mango trees=98.

36. A

There are 12 plots and each of them got even number of plots. So, possible cases are 4,4,2,2 or 6,2,2,2.

From 4, A and B got more plots than D. So, the only possible case is A, B each got 4 and C,D each got 2.

From 6, D has to get two adjacent plots and From 8, plots of C, D are not adjacent to each other => D must have got plots in X3, X4.

C already has two plots in X1, Z2. So, the corner plot Z4 should belong to B.

From 7, B has a plot in each row and each column. So, X2 should belong to B.

Now, out of the remaining Y2, Y3, Y4 and Z3 three plots belong to A and one belongs to B.

Till now B hasn't got any plot in third column and 2nd row.

So, Y3 belongs to B and Y2, Y4, Z3 belongs to A.

Let the number of trees in Y4 be $4x$ from 3, number of trees in Y3, Y2 will be $2x$, x respectively.

The number of teak trees = $7x + 21$

∴ Number of mango trees = $14x + 42$

The table now looks like:

	1	2	3	4	
X	12 C				$14x + 42$
Y	21 A	x A	$2x$ B	$4x$ A	$7x + 21$
Z			9 A	28 B	

Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees and from 2, B didn't have the largest number of trees in a plot $\Rightarrow x < 8$.

x can't be 7, 5, 3, 2, 1 as for these cases at least one of $x, 2x, 4x$ is neither multiple of 3 or 4.

x can be 6 or 4.

If $x = 6$, number of Teak trees will be 63 and Mango trees will be 126 $\Rightarrow$ Number of Pine

trees = $205 - 126 - 63 = 16$ but number of trees in $Z3 + Z4 > 16$ so, $x \neq 6$.

If $x = 4$, Number of Teak trees = 49 and Mango trees = 98 $\Rightarrow$ Number of Pine trees = 58. Valid case.

Number of trees with $A = 30 + 5x = 50$.

From 1, number of trees with C, D = 30, 56 respectively.

So, number of trees in $Z2 = 18$.

$\therefore$ Number of trees with $B = 205 - 50 - 30 - 56 = 69$.

From 2, largest number of trees in a plot is 32. They can be in the plot of either B or D. If they are from B, they have to be from $X2$ but in that case number of trees in $Z1 = 1$ which is neither a multiple of 3 or 4.



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So, highest number of trees in a plot are with D and it is 32 $\Rightarrow$ number of trees in $X3, X4$ are 32, 24 in any order.

So, number of trees in $X2 = 98 - 56 - 12 = 30$

$\therefore$ Number of trees in $Z1 = 69 - 30 - 28 - 8 = 3$.

The final table will look like:

	1	2	3	4	
X	12 C	30 B	32/24 D	24/32 D	98
Y	21 A	4 A	8 B	16 A	49
Z	3 B	18 C	9 A	28 B	58

37. A

There are 12 plots and each of them got even number of plots. So, possible cases are 4,4,2,2 or 6,2,2,2.

From 4, A and B got more plots than D. So, the only possible case is A, B each got 4 and C, D each got 2.

From 6, D has to get two adjacent plots and From 8, plots of C, D are not adjacent to each other => D must have got plots in X3, X4.

C already has two plots in X1, Z2. So, the corner plot Z4 should belong to B.

From 7, B has a plot in each row and each column. So, X2 should belong to B.

Now, out of the remaining Y2, Y3, Y4 and Z3 three plots belong to A and one belongs to B.

Till now B hasn't got any plot in third column and 2nd row.

So, Y3 belongs to B and Y2, Y4, Z3 belongs to A.

Let the number of trees in Y4 be $4x$ from 3, number of trees in Y3, Y2 will be $2x$, x respectively.

The number of teak trees = $7x + 21$

∴ Number of mango trees = $14x + 42$

The table now looks like:



	1	2	3	4	
X	12 C				$14x + 42$
Y	21 A	x A	$2x$ B	$4x$ A	$7x + 21$
Z			9 A	28 B	



Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees and from 2, B didn't have the largest number of trees in a plot $\Rightarrow x < 8$.

x can't be 7, 5, 3, 2, 1 as for these cases at least one of $x, 2x, 4x$ is neither multiple of 3 or 4.

x can be 6 or 4.

If $x = 6$, number of Teak trees will be 63 and Mango trees will be 126 $\Rightarrow$ Number of Pine trees = $205 - 126 - 63 = 16$ but number of trees in $Z3 + Z4 > 16$ so, $x \neq 6$.

If $x=4$, Number of Teak trees=49 and Mango trees=98 $\Rightarrow$ Number of Pine trees=58. Valid case.

Number of trees with A= $30+5x=50$.

From 1, number of trees with C, D=30, 56 respectively.

So, number of trees in Z2=18.

$\therefore$ Number of trees with B= $205-50-30-56=69$.

From 2, largest number of trees in a plot is 32. They can be in the plot of either B or D. If they are from B, they have to be from X2 but in that case number of trees in Z1=1 which is neither a multiple of 3 or 4.

So, highest number of trees in a plot are with D and it is 32 $\Rightarrow$ number of trees in X3, X4 are 32, 24 in any order.

So, number of trees in Y2= $98-56-12=30$

$\therefore$ Number of trees in Z1= $69-30-28-8=3$

The final table will look like:

	1	2	3	4	
X	12 C	30 B	32/24 D	24/32 D	98
Y	21 A	4 A	8 B	16 A	49
Z	3 B	18 C	9 A	28 B	58

Number of Pine trees received by Chitra = 18.

38. B

There are 12 plots and each of them got even number of plots. So, possible cases are 4,4,2,2 or 6,2,2,2.

From 4, A and B got more plots than D. So, the only possible case is A, B each got 4, and C, D each got 2.

From 6, D has to get two adjacent plots and From 8, plots of C, D are not adjacent to each other => D must have got plots in X3, X4.

C already has two plots in X1, Z2. So, the corner plot Z4 should belong to B.

From 7, B has a plot in each row and each column. So, X2 should belong to B.

Now, out of the remaining Y2, Y3, Y4 and Z3 three plots belong to A and one belongs to B.

Till now B hasn't got any plot in Third column and 2nd row.

So, Y3 belongs to B and Y2, Y4, Z3 belongs to A.

Let the number of trees in Y4 be $4x$ from 3, number of trees in Y3, Y2 will be $2x$, x respectively.

The number of teak trees = $7x + 21$

∴ Number of mango trees = $14x + 42$

The table now looks like:

	1	2	3	4	
X	12 C				$14x + 42$
Y	21 A	x A	$2x$ B	$4x$ A	$7x + 21$
Z			9 A	28 B	

Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees and from 2, B didn't have the largest number of trees in a plot $\Rightarrow x < 8$.

x can't be 7, 5, 3, 2, 1 as for these cases at least one of $x, 2x, 4x$ is neither multiple of 3 or 4.

x can be 6 or 4.

If $x = 6$, number of Teak trees will be 63 and Mango trees will be 126 $\Rightarrow$ Number of Pine

trees=205-126-63=16 but number of trees in $Z_3+Z_4>16$ so, $x\neq 6$.

If $x=4$, Number of Teak trees=49 and Mango trees=98 $\Rightarrow$ Number of Pine trees=58. Valid case.

Number of trees with $A=30+5x=50$.

From 1, number of trees with C, D=30, 56 respectively.

So, number of trees in $Z_2=18$.

$\therefore$ Number of trees with $B=205-50-30-56=69$.

From 2, largest number of trees in a plot is 32. They can be in the plot of either B or D. If they are from B, they have to be from X_2 but in that case number of trees in $Z_1=1$ which is neither a multiple of 3 or 4.

So, highest number of trees in a plot are with D and it is 32 $\Rightarrow$ number of trees in X_3, X_4 are 32, 24 in any order.

So, number of trees in $X_2=98-56-12=30$

$\therefore$ Number of trees in $Z_1=69-30-28-8=3$.

The final table will look like:

	1	2	3	4	
X	12 C	30 B	32/24 D	24/32 D	98
Y	21 A	4 A	8 B	16 A	49
Z	3 B	18 C	9 A	28 B	58

∴ Number of trees per plot is least for Benna=3.

39. B

There are 12 plots and each of them got even number of plots. So, possible cases are 4,4,2,2 or 6,2,2,2.

From 4, A and B got more plots than D. So, the only possible case is A, B each got 4 and C,D each got 2.

From 6, D has to get two adjacent plots and From 8, plots of C, D are not adjacent to each other => D must have got plots in X3, X4.

C already has two plots in X1, Z2. So, the corner plot Z4 should belong to B.

From 7, B has a plot in each row and each column. So, X2 should belong to B.

Now, out of the remaining Y2, Y3, Y4 and Z3 three plots belong to A and one belongs to B.

Till now B hasn't got any plot in Third column and 2nd row.

So, Y3 belongs to B and Y2, Y4, Z3 belongs to A.

Let the number of trees in Y4 be $4x$ from 3, number of trees in Y3, Y2 will be $2x$, x respectively.

The number of teak trees = $7x + 21$

∴ Number of mango trees = $14x + 42$

The table now looks like:

	1	2	3	4	
X	12 C				$14x + 42$
Y	21 A	x A	$2x$ B	$4x$ A	$7x + 21$
Z			9 A	28 B	

Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees and from 2, B didn't have the largest number of trees in a plot $\Rightarrow x < 8$.

x can't be 7, 5, 3, 2, 1 as for these cases at least one of $x, 2x, 4x$ is neither multiple of 3 or 4.

x can be 6 or 4.

If $x = 6$, number of Teak trees will be 63 and Mango trees will be 126 $\Rightarrow$ Number of Pine

trees = $205 - 126 - 63 = 16$ but number of trees in $Z_3 + Z_4 > 16$ so, $x \neq 6$.

If $x = 4$, Number of Teak trees = 49 and Mango trees = 98 $\Rightarrow$ Number of Pine trees = 58. Valid case.

Number of trees with A = $30 + 5x = 50$.

From 1, number of trees with C, D = 30, 56 respectively.

So, number of trees in $Z_2 = 18$.

$\therefore$ Number of trees with B = $205 - 50 - 30 - 56 = 69$.

From 2, largest number of trees in a plot is 32. They can be in the plot of either B or D. If they are from B, they have to be from X_2 but in that case number of trees in $Z_1 = 1$ which is neither a multiple of 3 or 4.

So, highest number of trees in a plot are with D and it is 32 $\Rightarrow$ number of trees in X_3, X_4 are 32, 24 in any order.

So, number of trees in $X_2 = 98 - 56 - 12 = 30$.

$\therefore$ Number of trees in $Z_1 = 69 - 30 - 28 - 8 = 3$.

The final table will look like:

	1	2	3	4	
X	12 C	30 B	32/24 D	24/32 D	98
Y	21 A	4 A	8 B	16 A	49
Z	3 B	18 C	9 A	28 B	58

Bina got 28 pine trees, Option B is correct answer.

40. A

There are 12 plots and each of them got even number of plots. So, possible cases are 4,4,2,2 or 6,2,2,2.

From 4, A and B got more plots than D. So, the only possible case is A, B each got 4 and C,D each got 2.

From 6, D has to get two adjacent plots and From 8, plots of C, D are nit adjacent to each other => D must have got plots in X3, X4.

C already has two plots in X1, Z2. So, the corner plot Z4 should belong to B.

From 7, B has a plot in each row and each column. So, X2 should belong to B.

Now, out of the remaining Y2, Y3, Y4 and Z3 three plots belong to A and one belongs to B.

Till now B hasn't got any plot in Third column and 2nd row.

So, Y3 belongs to B and Y2, Y4, Z3 belongs to A.

Let the number of trees in Y4 be $4x$ from 3, number of trees in Y3, Y2 will be $2x$, x respectively.

The number of teak trees = $7x + 21$

∴ Number of mango trees = $14x + 42$

The table now looks like:

	1	2	3	4	
X	12 C				$14x + 42$
Y	21 A	x A	$2x$ B	$4x$ A	$7x + 21$
Z			9 A	28 B	

Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees and from 2, B didn't have the largest number of trees in a plot $\Rightarrow x < 8$.

x can't be 7, 5, 3, 2, 1 as for these cases at least one of $x, 2x, 4x$ is neither multiple of 3 or 4.

x can be 6 or 4.

If $x = 6$, number of Teak trees will be 63 and Mango trees will be 126 $\Rightarrow$ Number of Pine

trees = $205 - 126 - 63 = 16$ but number of trees in $Z3 + Z4 > 16$ so, $x \neq 6$.

If $x = 4$, Number of Teak trees = 49 and Mango trees = 98 $\Rightarrow$ Number of Pine trees = 58. Valid case.

Number of trees with A = $30 + 5x = 50$.

From 1, number of trees with C, D = 30, 56 respectively.

So, number of trees in $Z2 = 18$.

$\therefore$ Number of trees with B = $205 - 50 - 30 - 56 = 69$.

From 2, largest number of trees in a plot is 32. They can be in the plot of either B or D. If they are from B, they have to be from $X2$ but in that case number of trees in $Z1 = 1$ which is neither a multiple of 3 or 4.

So, highest number of trees in a plot are with D and it is 32 $\Rightarrow$ number of trees in $X3, X4$ are 32, 24 in any order.

So, number of trees in $X2 = 98 - 56 - 12 = 30$.

$\therefore$ Number of trees in $Z1 = 69 - 30 - 28 - 8 = 3$.

The final table will look like:

	1	2	3	4	
X	12 C	30 B	32/24 D	24/32 D	98
Y	21 A	4 A	8 B	16 A	49
Z	3 B	18 C	9 A	28 B	58

Column 1,2,3,4 have 36, 52, 49, 68 trees respectively.

Hence A is correct answer.

Explanation [41 - 46]:

Let 'H' represents Hi and 'L' represents Lo.

Given if they bid

Case 1: HHHH then all players gets -1 points.

Case 2: HHHL => H gets +1 and L gets -3.

Case 3: HHLL => H gets +2 and L gets -2.

Case 4: HLLL => H gets +3 and L gets -1.

Case 5: LLLL => every player gets +1.

From the given information we can draw the following table:

	R1	R2	R3	T1	R4	R5	R6	T2
A				6				7
B				-2				-1
C				-2				-5
D	D1	D3	D2	2				-1

T1 is the cumulative of points till Round 3 and T2 is sum of points till round 6.

Arun, Bankim, Charu, and Dipak are represented by A, B, C, D respectively.

From point 3, $D1 > D2 > D3$

D scored 2 points till round R3 and $D1 > D3 > D2$ the possible scenarios are:

Case D1: 3,2,-3

In this case the points of A in R1, R2 will be -1,2/-2,1 in any possible combination the sum will not be 6. So, this case is invalid.

Case D2: 2,1,-1

In this case the points of A in R1, R3, R2 will be 2/-2, 1/-3, -1/3 so, if the points in R1, R3, R2 are 2,1,3 the case is valid and no other cases are possible.

Case D3: 3,1,-2

In this case the points of A in R1, R3, R2 will be -1, 1/-3/1, 2/-2 in any possible combination the sum will not be 6. So, this case is invalid.

∴ Points of A,D in (R1,R2,R3) are (2,3,1) and (2,-1,1) respectively.

Since A got +3 in R2, he is only the one to bid H in R2 and points of B and C in round 2 are -1,-1 i.e the bid L, L.

Since A and D got 2 points each in R1, C and B must have got -2 each in R1 i.e. the bid L,

L.

Since A and D got 1 point in R3, C and B must also have got 1 in R3 i.e. they bid L, L.

With this data, the table now looks like:

	R1	R2	R3	T1	R4	R5	R6	T2
A	2 H	3 H	1 L	6				7
B	-2 L	-1 L	1 L	-2				-1
C	-2 L	-1 L	1 L	-2				-5
D	2 H	-1 L	1 L	2				-1

No information is given about the individual scores in R4, R5, R6.

Given in Exactly two out of the six rounds, Arun was the only player who bid Hi.

Let R.x, R.y, R.z represent R4, R5, R6 in any order.

Let A bid H in R.x => B,C,D bid L.

The table now looks like:

	R1	R2	R3	T1	R.x	R.y	R.z	T2
A	2 H	3 H	1 L	6	3 H			7
B	-2 L	-1 L	1 L	-2	-1 L			-1
C	-2 L	-1 L	1 L	-2	-1 L			-5
D	2 H	-1 L	1 L	2	-1 L			-1

For A, $R.x + R.y + R.z = 1 \Rightarrow R.y + R.z = -2$

For B, $R.x + R.y + R.z = 1 \Rightarrow R.y + R.z = 2$

For C, $R.x + R.y + R.z = -3 \Rightarrow R.y + R.z = -2$

For D, $R.x + R.y + R.z = -3 \Rightarrow R.y + R.z = -2$

(R.y, R.z) for A can be (-3,1) or (-1,-1)

Case A1:

If for A, (R.y, R.z) = (-3,1)

Since for both C,D: $R.y + R.z = -2$

We can't get any combination such that the total points of B,C,D are obtained.

Case A2:

41. A

If for A, (R.y, R.z) = (-1,-1). The (R.y, R.z) of B,C,D can be (-3,-1), (-1,-1), (-1,-1) and they must have bid (H,H), (L,H), (L,H) respectively while A must have bid (L,H).

Hence this case is valid.

The final table looks like:

	R1	R2	R3	T1	R.x	R.y	R.z	T2
A	2 H	3 H	1 L	6	3 H	-1 L	-1 H	7
B	-2 L	-1 L	1 L	-2	-1 L	3 H	-1 H	-1
C	-2 L	-1 L	1 L	-2	-1 L	-1 L	-1 H	-5
D	2 H	-1 L	1 L	2	-1 L	-1 L	-1 H	-1

The bids by Arun, Bankim, Charu and Dipak, respectively in the first round are HLLH.

Hence Option A is correct.

42. 4

If for A, $(R.y, R.z) = (-1, -1)$. The $(R.y, R.z)$ of B, C, D can be $(3, -1)$, $(-1, -1)$, $(-1, -1)$ and they must have bid (H,H), (L,H), (L,H) respectively while A must have bid (L,H).

Hence this case is valid.

The final table looks like:

	R1	R2	R3	T1	R.x	R.y	R.z	T2
A	2 H	3 H	1 L	6	3 H	-1 L	-1 H	7
B	-2 L	-1 L	1 L	-2	-1 L	3 H	-1 H	-1
C	-2 L	-1 L	1 L	-2	-1 L	-1 L	-1 H	-5
D	2 H	-1 L	1 L	2	-1 L	-1 L	-1 H	-1

Arun bid high in R1, R2, R.x, R.z hence, 4 is correct answer.

43. 4

Let 'H' represents Hi and 'L' represents Lo.

Given if they bid

Case 1: HHHH then all players gets -1 points.

Case 2: HHHL => H gets +1 and L gets -3.

Case 3: HHLL => H gets +2 and L gets -2.

Case 4: HLLL => H gets +3 and L gets -1.

Case 5: LLLL => every player gets +1.

From the given information we can draw the following table.

	R1	R2	R3	T1	R4	R5	R6	T2
A				6				7
B				-2				-1
C				-2				-5
D	D1	D3	D2	2				-1

T1 is the cumulative of points till Round 3 and T2 is sum of points till round 6.

Arun, Bankim, Charu, and Dipak are represented by A, B, C, D respectively.

From point 3, $D1 > D2 > D3$

D scored 2 points till round R3 and $D1 > D3 > D2$ the possible scenarios are:

Case D1: 3,2,-3

In this case the points of A in R1, R3, R2 will be -1, 2/-2, 1 in any possible combination the sum will not be 6. So, this case is invalid.

Case D2: 2,1,-1

In this case the points of A in R1, R3, R2 will be 2/-2, 1/-3, -1/3 so, if the points in R1, R3, R2 are 2,1,3 the case is valid and no other cases are possible.

Case D3: 3,1,-2

In this case the points of A in R1, R3, R2 will be -1, 1/-3/1, 2/-2 in any possible combination the sum will not be 6. So, this case is invalid.

∴ Points of A,D in (R1,R2,R3) are (2,3,1) and (2,-1,1) respectively.

Since A got +3 in R2, he is only the one to bid h in R2 and points of B and C in round 2 are -1,-1 i.e they bid L, L.

Since A and D got 2 points each in R1, C and B must have got -2, -2 i.e they bid L, L.

Since A and D got 1 point in R3, C and B must also have got 1 in R3 i.e they bid L, L.

With this data, the table now looks like:

	R1	R2	R3	T1	R4	R5	R6	T2
A	2 H	3 H	1 L	6				7
B	-2 L	-1 L	1 L	-2				-1
C	-2 L	-1 L	1 L	-2				-5
D	2 H	-1 L	1 L	2				-1

No information is given about the individual scores in R4, R5, R6.

Given In exactly two out of the six rounds, Arun was the only player who bid Hi.

Let R.x, R.y, R.z represent R4, R5, R6 in any order.

Let A bid H in R.x=> B,C,D bid L.

The table now looks like:

	R1	R2	R3	T1	R.x	R.y	R.z	T2
A	2 H	3 H	1 L	6	3 H			7
B	-2 L	-1 L	1 L	-2	-1 L			-1
C	-2 L	-1 L	1 L	-2	-1 L			-5
D	2 H	-1 L	1 L	2	-1 L			-1

For A, $R.x + R.y + R.z = 1 \Rightarrow R.y + R.z = -2$

For B, $R.x + R.y + R.z = 1 \Rightarrow R.y + R.z = 2$

For C, $R.x + R.y + R.z = -3 \Rightarrow R.y + R.z = -2$

For D, $R.x + R.y + R.z = -3 \Rightarrow R.y + R.z = -2$

(R.y, R.z) for A can be (-3,1) or (-1,-1)

Case A1:

If for A, (R.y, R.z) = (-3,1)

Since for both C,D: $R.y + R.z = -2$

We can't get any combination such that the total points of B,C,D are obtained.

Case A2:

If for A, (R.y, R.z) = (-1,-1). The (R.y, R.z) of B,C,D can be (3,-1), (-1,-1), (-1,-1) and they must have bid (H,H), (L,H), (L,H) respectively while A must have bid (L,H)

Hence this case is valid.

The final table looks like:

	R1	R2	R3	T1	R.x	R.y	R.z	T2
A	2 H	3 H	1 L	6	3 H	-1 L	-1 H	7
B	-2 L	-1 L	1 L	-2	-1 L	3 H	-1 H	-1
C	-2 L	-1 L	1 L	-2	-1 L	-1 L	-1 H	-5
D	2 H	-1 L	1 L	2	-1 L	-1 L	-1 H	-1

Bikram bid Lo in R1,R2,R3,R.x. Hence 4 is correct answer.

44. 2

If for A, (R.y, R.z) = (-1,-1). The (R.y, R.z) of B,C,D can be (3,-1), (-1,-1), (-1,-1) and they must have bid (H,H), (L,H), (L,H) respectively while A must have bid (L,H)

Hence this case is valid.

The final table looks like:

	R1	R2	R3	T1	R.x	R.y	R.z	T2
A	2 H	3 H	1 L	6	3 H	-1 L	-1 H	7
B	-2 L	-1 L	1 L	-2	-1 L	3 H	-1 H	-1
C	-2 L	-1 L	1 L	-2	-1 L	-1 L	-1 H	-5
D	2 H	-1 L	1 L	2	-1 L	-1 L	-1 H	-1

All the players made identical bids in R3 and R.z

45. 1

If for A, $(R.y, R.z) = (-1, -1)$. The $(R.y, R.z)$ of B,C,D can be $(3, 1)$, $(-1, -1)$, $(-1, -1)$ and they must have bid (H,H), (L,H), (L,H) respectively while A must have bid (L, H)

Hence this case is valid.

The final table looks like:

	R1	R2	R3	T1	R.x	R.y	R.z	T2
A	2 H	3 H	1 L	6	3 H	-1 L	-1 H	7
B	-2 L	-1 L	1 L	-2	-1 L	3 H	-1 H	-1
C	-2 L	-1 L	1 L	-2	-1 L	-1 L	-1 H	-5
D	2 H	-1 L	1 L	2	-1 L	-1 L	-1 H	-1

Deepak got exactly one point in only R3.

Hence 1 is correct answer.

46. A

If for A, $(R.y, R.z) = (-1, -1)$. The $(R.y, R.z)$ of B,C,D can be $(3, 1)$, $(-1, -1)$, $(1, -1)$ and they must

have bid (H,H), (L,H), (L,H) respectively while A must have bid (L, H)

Hence this case is valid.

The final table looks like:

	R1	R2	R3	T1	Rx	Ry	Rz	T2
A	2 H	3 H	1 L	6	3 H	-1 L	-1 H	7
B	-2 L	-1 L	1 L	-2	-1 L	3 H	-1 H	-1
C	-2 L	-1 L	1 L	-2	-1 L	-1 L	-1 H	-5
D	2 H	-1 L	1 L	2	-1 L	-1 L	-1 H	-1

R2 is correct answer.

47. C

Let the number of schools with exactly three of the facilities was the same irrespective of which three were considered be x .

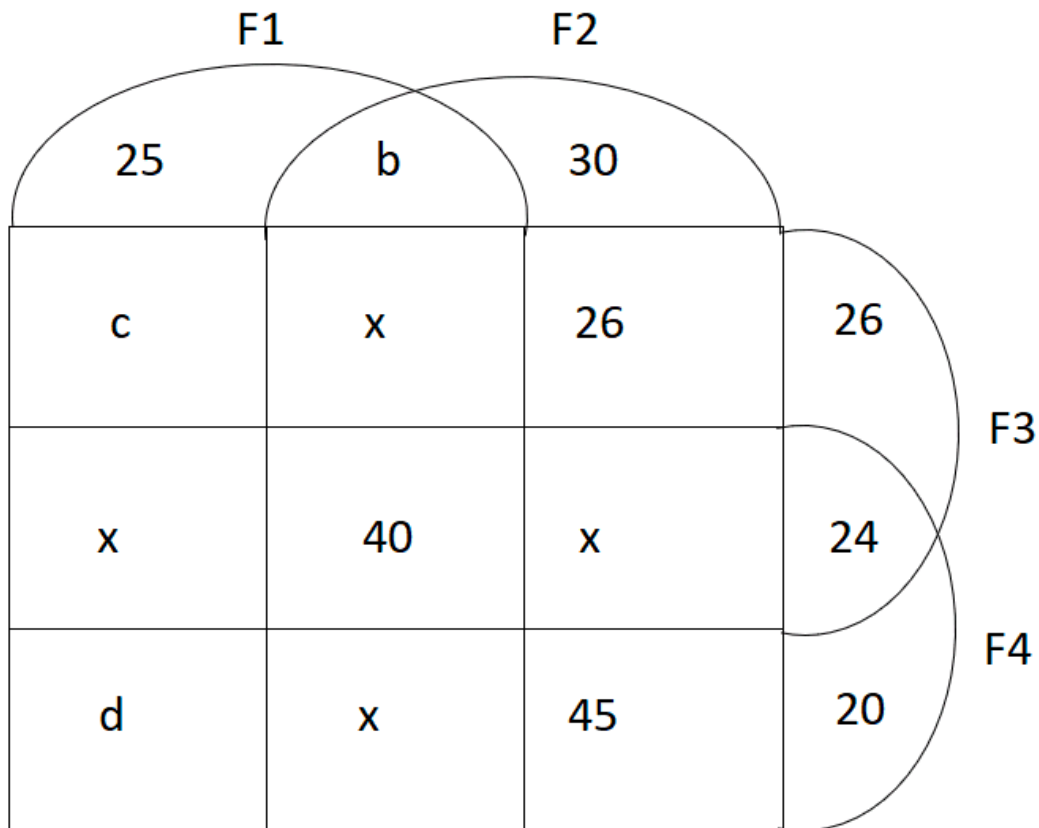
Number of schools with none of the facilities be ' n ' from 1, $n=80$.

Number of schools with only F1 and F2 be ' b '

Number of schools with only F1 and F3 be ' c '

Number of schools with only F1 and F4 be ' d '

From the information given in the question we will get the following Venn diagram.



From 5, $b+14+3x=313 \Rightarrow b+3x=172$(i)

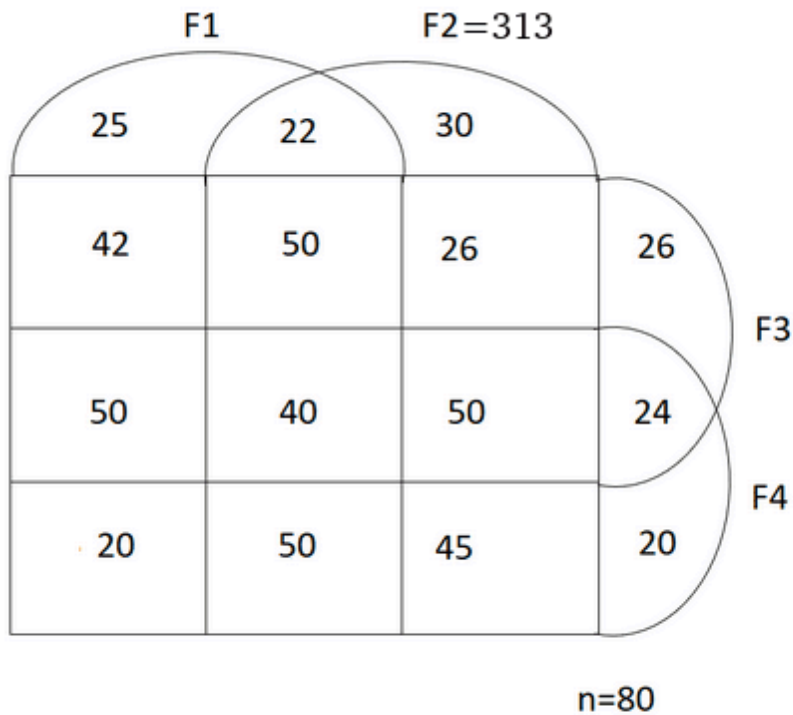
From 8, $b+x+40+x=162 \Rightarrow b+2x=122$(ii)

(ii)-(i) gives $x=50 \Rightarrow b=22$

From 9, $237+3x+c+d=279+3x \Rightarrow c+d=42$

Total number of schools=600 $\Rightarrow 313+25+c+x+d+26+24+20+80=600 \Rightarrow d=20$.

The final table looks like:



The total number of schools with exactly three of the four facilities = $4x=200$.

48. A

Let the number of schools with exactly three of the facilities was the same irrespective of which three were considered be x .

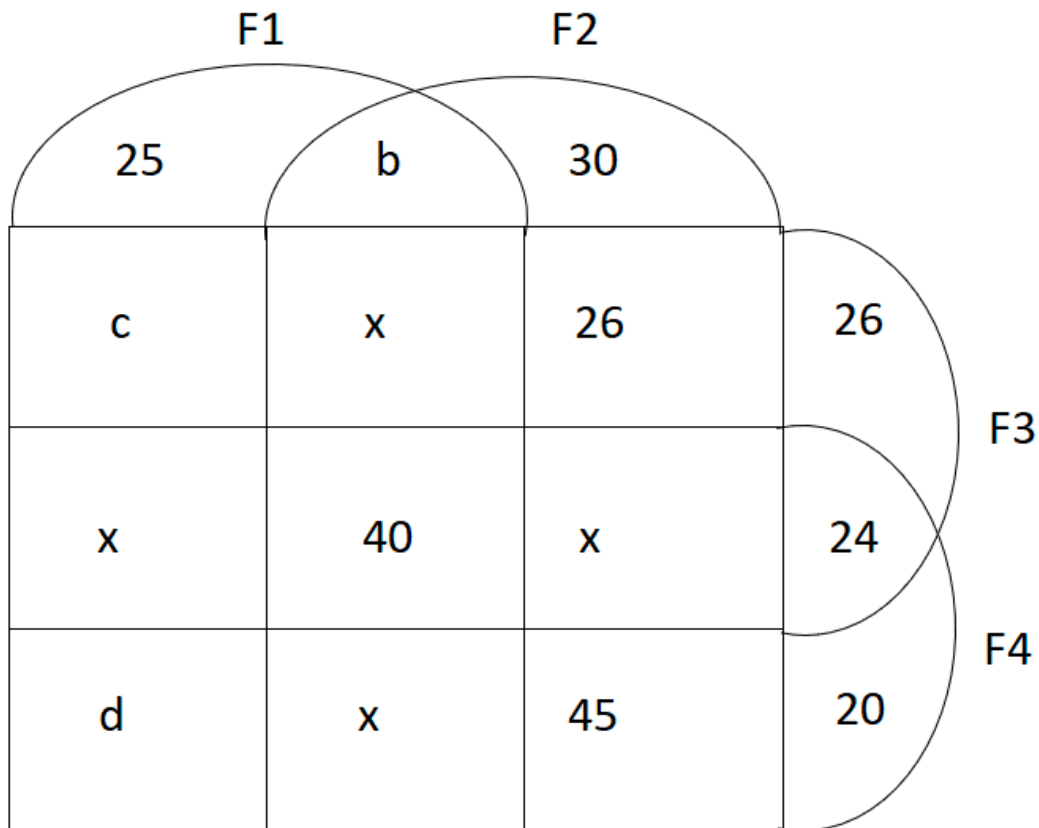
Number of schools with none of the facilities be ' n ' from 1, $n=80$.

Number of schools with only F1 and F2 be ' b '

Number of schools with only F1 and F3 be ' c '

Number of schools with only F1 and F4 be ' d '

From the information given in the question we will get the following Venn diagram.



From 5, $b+14+3x=313 \Rightarrow b+3x=172 \dots (i)$

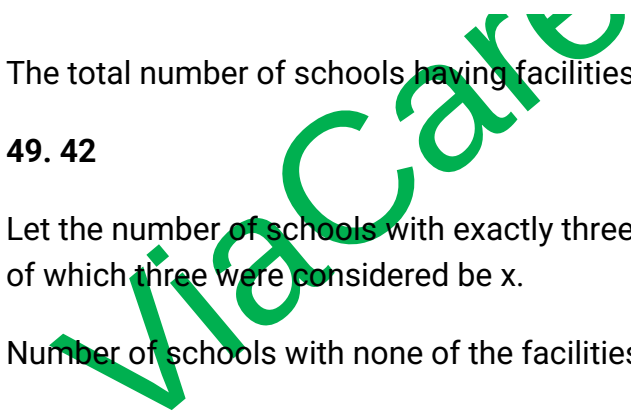
From 8, $b+x+40+x=162 \Rightarrow b+2x=122 \dots (ii)$

(ii)-(i) gives $x=50 \Rightarrow b=22$

From 9, $237+3x+c+d=279+3x=d \Rightarrow c=42$

Total number of schools = 600 $\Rightarrow 313+25+c+x+d+26+24+20+80=600 \Rightarrow d=20$.

The final table looks like:

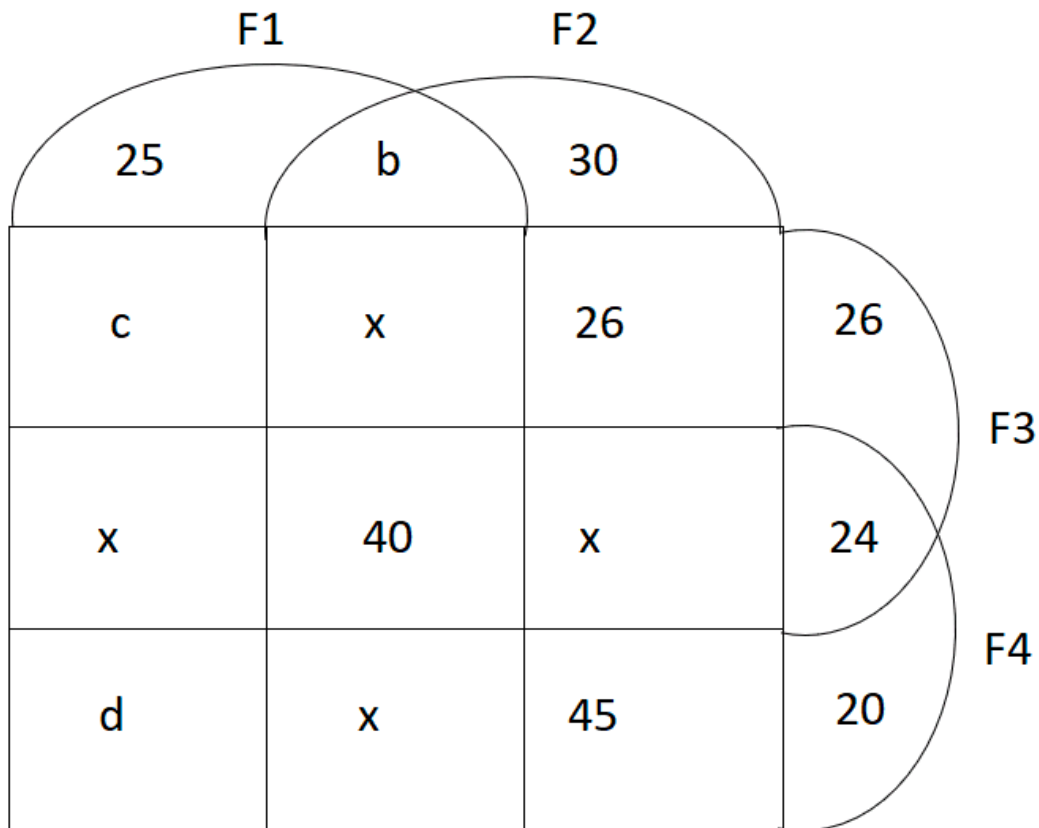


49. 42

Number of schools with none of the facilities be 'n' from 1, n=80.

Number of schools with only F1 and F3 be 'c'

From the information given in the question we will get the following Venn diagram.



From 5, $b+14+3x=313 \Rightarrow b+3x=172$(i)

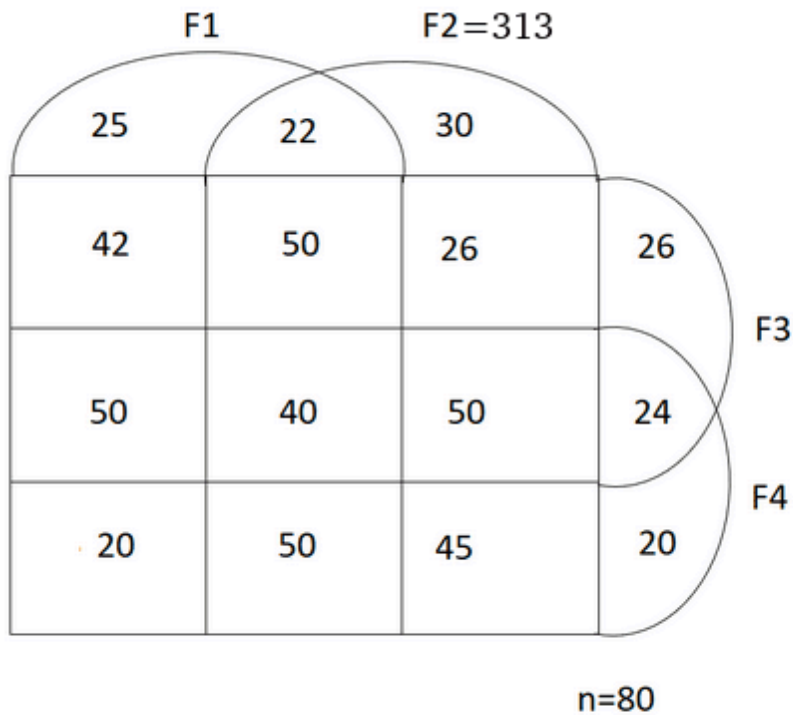
From 8, $b+x+40+x=162 \Rightarrow b+2x=122$(ii)

(ii)-(i) gives $x=50 \Rightarrow b=22$

From 9, $237+3x+c+d=279+3x=d \Rightarrow c=42$

Total number of schools=600 $\Rightarrow 313+25+c+x+d+26+24+20+80=600 \Rightarrow d=20$.

The final table looks like:



The total number of schools having only F1 and F3= $c=42$

50. 20

Let the number of schools with exactly three of the facilities was the same irrespective of which three were considered be x .

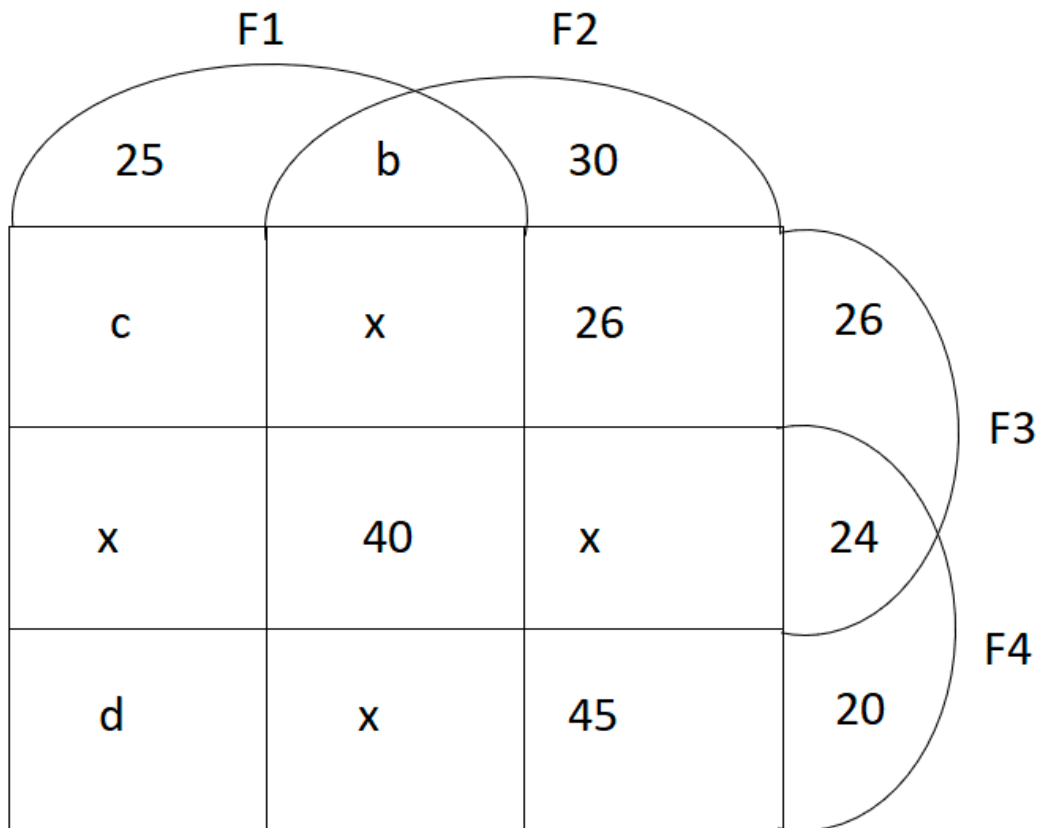
Number of schools with none of the facilities be ' n ' from 1, $n=80$.

Number of schools with only F1 and F2 be ' b '

Number of schools with only F1 and F3 be ' c '

Number of schools with only F1 and F4 be ' d '

From the information given in the question we will get the following Venn diagram.



From 5, $b+14+3x=313 \Rightarrow b+3x=172$(i)

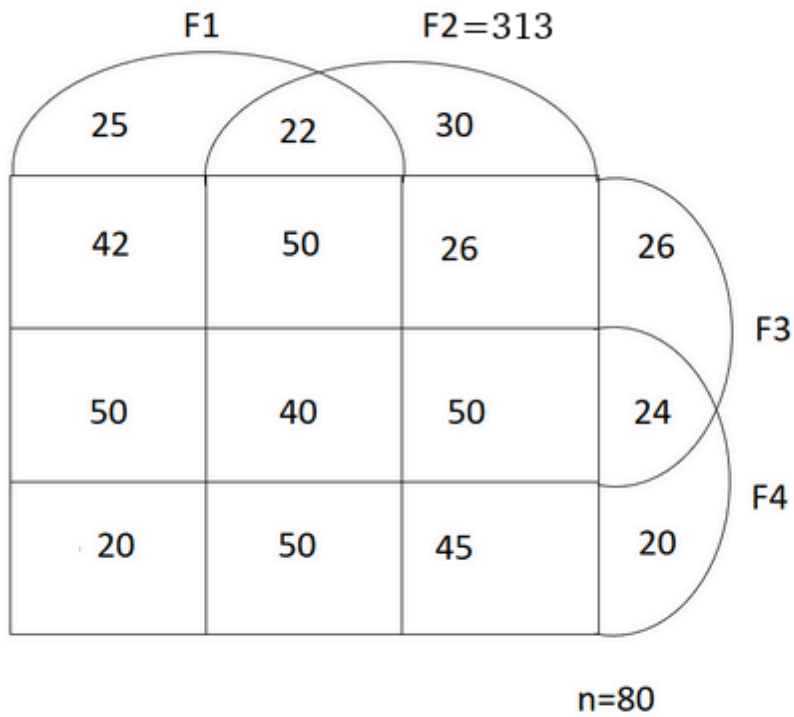
From 8, $b+x+40+x=162 \Rightarrow b+2x=122$(ii)

(ii)-(i) gives $x=50 \Rightarrow b=22$

From 9, $237+3x+c+d=279+3x=d \Rightarrow c=42$

Total number of schools=600 $\Rightarrow 313+25+c+x+d+26+24+20+80=600 \Rightarrow d=20$.

The final table looks like:



The total number of schools having only F1 and F4=20.

Quant

51. C

Initially let's consider A and B as one component

The volume of the mixture is doubled by adding A(60% alcohol) i.e they are mixed in 1:1 ratio and the resultant mixture has 72% alcohol.

Let the percentage of alcohol in component 1 be 'x'.

Using allegations, $\frac{(72-60)}{x-72} = \frac{1}{1} \Rightarrow x = 84$

Percentage of alcohol in A = 60% $\Rightarrow$ Let's percentage of alcohol in B = x%

The resultant mixture has 84% alcohol. ratio = 1:3

Using allegations, $\frac{(x-84)}{84-60} = \frac{1}{3}$

$\Rightarrow x = 92\%$

52. C

Given, $\frac{\text{sum of scores in } n \text{ matches} + 38 + 15}{n+2} = 29$

Given, $\frac{\text{sum of scores in } n \text{ matches}}{n} = 30$

$\Rightarrow 30n + 53 = 29(n+2) \Rightarrow n=5$

Sum of the scores in 5 matches = $29 \times 7 - 38 - 15 = 150$

Since the batsmen scored less than 38, in each of the first 5 innings. The value of x will be minimum when remaining four values are highest

$\Rightarrow 37 + 37 + 37 + 37 + x = 150$

$\Rightarrow x = 2$

53. B

To have real roots the discriminant should be greater than or equal to 0.

So, $m^2 - 8n \geq 0$ & $4n^2 - 4m \geq 0$

$\Rightarrow m^2 \geq 8n$ & $n^2 \geq m$

Since m,n are positive integers the value of m+n will be minimum when m=4 and n=2.

$\therefore m+n=6$.

54. 40

Let the desired efficiency of each worker '6x' per day.

$$140 \cdot 6x \cdot 200 = 6 \text{ km} \dots (i)$$

In 60 days $60/200 \cdot 6 = 1.8$ km of work is to be done but actually 1.5km is only done.

$$\text{Actual efficiency 'y'} = 1.5/1.8 \cdot 6x = 5x.$$

Now, left over work = 4.5km which is to be done in 140 days with 'n' workers whose efficiency is 'y'.

$$\Rightarrow n \cdot 5x \cdot 140 = 4.5 \dots (ii)$$

(i)/(ii) gives,

$$\frac{(140 \cdot 6x \cdot 200)}{(n \cdot 5x \cdot 140)} = \frac{6}{4.5}$$

$$\Rightarrow n = 180.$$

∴ Extra $180 - 140 = 40$ workers are needed.

55. A

$$x_1 = -1$$

$$x_1 = x_2 + 2 \Rightarrow x_2 = x_1 - 2 = -3$$

Similarly,

$$x_3 = x_1 - 5 = -6$$

$$x_4 = -10$$

.

.

The series is -1, -3, -6, -10, -15.....

When the differences are in AP, then the nth term is $-\frac{n(n+1)}{2}$

$$x_{100} = -\frac{100(100+1)}{2} = -5050$$

56. A

$$\log_a 30 = A \text{ or } \log_a 5 + \log_a 2 + \log_a 3 = A \dots\dots\dots(1)$$

$$\log_a \left(\frac{5}{3}\right) = -B \text{ or } \log_a 3 - \log_a 5 = B \dots\dots\dots(2)$$

$$\text{and finally } \log_a 2 = 3$$

$$\text{Substituting this in (1) we get } \log_a 5 + \log_a 3 = A - 3$$

Now we have two equations in two variables (1) and (2) . On solving we get

$$\log_a 3 = \frac{(A+B-3)}{2} \text{ or } \log_3 a = \frac{2}{A+B-3}$$

57. 18

Let tom's age = x

$$\Rightarrow \text{Dick} = 3x$$

$$\Rightarrow \text{harry} = 6x$$

Given,

$$3x+1 = (x+3x+6x)/3 \Rightarrow x = 3$$

Hence, Harry's age = 18 years

58. C

Let distance = d

$$\text{Given, } \frac{d}{35} - \frac{d}{40} = \frac{6}{60}$$

$$\Rightarrow d = 28\text{km}$$

The actual time taken to travel 28km = $28/40 = 7/10$ hours = 42 min.

Given time taken to travel $58/3$ km = $1/3 * 42 = 14$ min.

Then a break of 8 min.

To reach on time, he should cover remaining $28/3$ km in 20 min $\Rightarrow \text{Speed} = \frac{\left(\frac{28}{3}\right)}{\frac{20}{60}} = 28 \text{ km/hr}$

59. B

$$0.2 < \frac{n}{11} < 0.5$$

$$\Rightarrow 2.2 < n < 5.5$$

Since n is an even natural number, the value of $n = 4$

$$0.2 < \frac{m}{20} < 0.5 \Rightarrow 4 < m < 10. \text{ Possible values of } m = 5, 6, 7, 8, 9$$

Since $0.2 < \frac{n}{m} < 0.5$, the only possible value of m is 9

$$\text{Hence } m - 2n = 9 - 8 = 1$$

60. 252

Total number of numbers from 100 to 999 = 900

The number of three digits numbers with unique digits:

The hundredth's place can be filled in 9 ways (Number 0 cannot be selected)

Ten's place can be filled in 9 ways

One's place can be filled in 8 ways

Total number of numbers = $9 \times 9 \times 8 = 648$

Number of integers in the set $\{100, 101, 102, \dots, 999\}$ have at least one digit repeated = $900 - 648 = 252$

61. D

Let the total marks be $100x$

Marks obtained by Bishnu = $52x$

Marks obtained by Asha = $64x$

Marks obtained by Ramesh = $52x+23$

Marks obtained by Ramesh = $64x-34$

$$\Rightarrow 52x+23 = 64x-34$$

$$\Rightarrow x = \frac{19}{4}$$

Marks obtained by Geeta = $84x = 84 \cdot 19/4 = 399$

62. 3

Let $14^a = 36^b = 84^c = k$

$$\Rightarrow a = \log_{14} k, b = \log_{36} k, c = \log_{84} k$$

$$6b\left(\frac{1}{c} - \frac{1}{a}\right) = 6 \cdot \frac{1}{2} \log_6 k (\log_k 84 - \log_k 14) = 3$$

63. 16000

Given,

Rate of interest = 10%

Since it is compounded half yearly, $R=5\%$

$n=3$

$$\text{We know, } A = P \left(1 + \frac{R}{100}\right)^n$$

$$18522 = P (1 + 0.05)^3$$

$$\Rightarrow P = 16000$$

64. C

Let the cost price of 1kg of sugar = Rs 100

The total cost price of 35 Kg = Rs3500

Marked up price per kg = Rs 120

Given, the final profit is 15% $\Rightarrow$ Final SP of 35 kg = $3500 \times 1.15 = \text{Rs } 4025$

First 5 kg's are sold at 20% marked up price $\Rightarrow (\text{SP}_1 = 5 \times 100 \times 1.2 = \text{Rs } 600)$

Next 15 kgs are sold after giving 10% discount $\Rightarrow (\text{SP}_2 = 15 \times 100 \times 1.2 \times 0.9 = 1620)$

3kgs of sugar got wasted

$\Rightarrow$ 23 kg of sugar was sold at Rs $(600+1620) = \text{Rs } 2220$

Remaining 12kg should be sold at Rs $4025 - 2220 = \text{Rs } 1805$

$\Rightarrow$ SP of 1kg = $1805/12 \simeq 150$

Hence, the seller should further mark up by $\frac{(150-120)}{120} \cdot 100 = 25\%$

65. D

The midpoints of two diagonals of a parallelogram are the same

Hence the midpoint of (2,1) and (-3,-4) lie on $x + 9y + c = 0$

midpoint of (2,1) and (-3,-4) = $(\frac{2-3}{2}, \frac{1-4}{2}) = (-1/2, -3/2)$

Keeping this coordinates in the above line equation, we get $c = 14$

66. C

The distance travelled by A between 9:00 Am and 10:30 Am is $3/2 \times 40 = 60$ km.

Now they are separated by 30 km

Let the time taken to meet = t

Distance travelled by A in time t + Distance travelled by B in time $t = 30$

$$40t + 20t = 30 \Rightarrow t = 1/2 \text{ hour}$$

Hence they meet at 11:00 AM

67. 6

Possible values of $x = 3, 4, 5, 6, 7, 8, 9$

When $x = 3$, there is no possible value of y

When $x = 4$, the possible values of $y = 22$

When $x = 5$, the possible values of $y = 21, 22$

When $x = 6$, the possible values of $y = 20, 21, 22$

When $x = 7$, the possible values of $y = 19, 20, 21, 22$

When $x = 8$, the possible values of $y = 18, 19, 20, 21, 22$

When $x = 9$, the possible values of $y = 17, 18, 19, 20, 21, 22$

The unique values of $N = 26, 27, 28, 29, 30, 31$

68. A

Two linear equations $ax+by=c$ and $dx+ey=f$ have a unique solution if $\frac{a}{d} \neq \frac{b}{e}$

Therefore, $\frac{k}{4} \neq \frac{1}{k} \Rightarrow k^2 \neq 4$

$\Rightarrow k \neq \pm 2$

69. B

The number of multiples of 2 between 1 and 120 = 60

The number of multiples of 5 between 1 and 120 which are not multiples of 2 = 12

The number of multiples of 7 between 1 and 120 which are not multiples of 2 and 5 = 7

Hence, number of the integers 1, 2, ..., 120, are divisible by none of 2, 5 and 7 = $120 - 60 -$

$$12 - 7 = 41$$

70. A

$$ab = 4^{2017} = 2^{4034}$$

The total number of factors = 4035.

out of these 4035 factors, we can choose two numbers a, b such that $a < b$ in $[4035/2] = 2017$.

And since the given number is a perfect square we have one set of two equal factors.

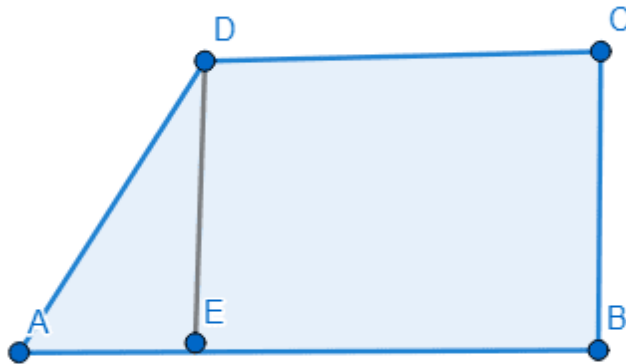
∴ many pairs (a, b) of positive integers are there such that $a \leq b$ and $ab = 4^{2017} = 2018$.

71. A

Anil and Sunil will meet at a first point after $\text{LCM} \left(\frac{3}{15}, \frac{3}{10} \right) = 3/5$ hr

In the mean time, distance travelled by ravi = $8 * 3/5 = 4.8$ km

72. 28



Given, $BC = DE = 4$

$CD = BE = 5$

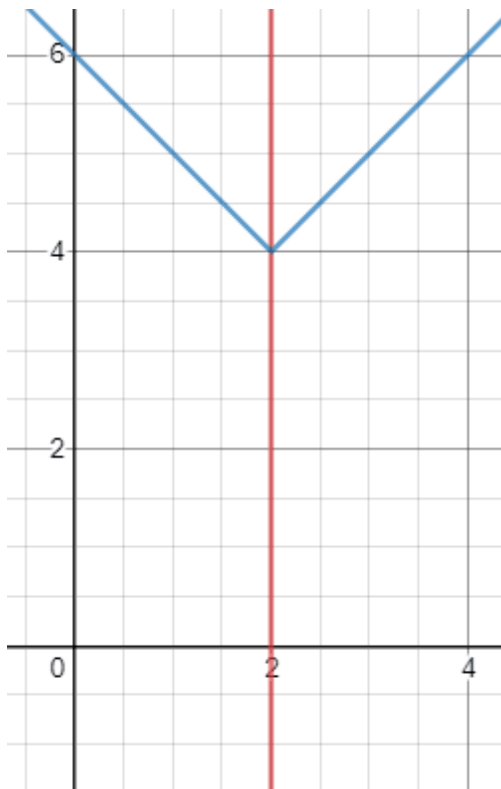
In triangle ADE, $\angle EAD = 45^\circ$

$$\tan 45^\circ = \frac{DE}{AE} \Rightarrow AE = 4$$

Area of trapezium = Area of rectangle BCDE + Area of triangle AED

$$= 20 + 8 = 28$$

73. A



The required figure is a trapezium with vertices $A(0,0)$, $B(2,0)$, $C(2,4)$ and $D(0,6)$

$AB = 2$, $BC = 4$ and $AD = 6$

$$\text{Area of trapezium} = \frac{1}{2} (\text{sum of the opposite sides}) \cdot \text{height} = \frac{1}{2} (4 + 6) \cdot 2 = 10$$

74. C

The given function is equivalent to $f(x) = a^x$

Given, $f(5) = 4$

$$\Rightarrow a^5 = 4 \Rightarrow a = 4^{\frac{1}{5}}$$

$$\Rightarrow f(x) = 4^{\frac{x}{5}}$$

$$f(10) - f(-10) = 16 - 1/16 = 15.9375$$

75. 24

$$\frac{(2 \cdot 4 \cdot 8 \cdot 16)}{(\log_2 2^2)^2 \cdot (\log_2 2^3)^3 \cdot (\log_2 2^4)^4} \cdot$$

$$= \frac{2^{10}}{4 \cdot \left(\frac{3}{2}\right)^3 \cdot \left(\frac{4}{3}\right)^4} = 24$$

76. D

Equation of circle $x^2 + y^2 + 2gx + 2fy + c = 0$

It passes through (0,0), (4,0) and (3,9). Substitute each point in the above equation:

$\Rightarrow$ On substituting the value (0,0) in the above equation, we obtain: $c = 0$

$\Rightarrow$ On substituting the value (4,0) in the above equation, we obtain: $16 + 0 + 8g + 0 = 0 ; g = -2$

$\Rightarrow$ On substituting the value (3,9) in the above equation, we obtain: $9 + 81 - 12 + 18f = 0 ; f = -13/3$

$$\text{Radius of the circle } r = \sqrt{g^2 + f^2 - c} \Rightarrow r^2 = \frac{205}{9}$$

$$\text{Therefore, Area} = \pi r^2 = \frac{205\pi}{9}$$

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