

Answers

VARC	DILR	QUANT
1. D	35. B	67. 3
2. B	36. C	68. 1900
3. A	37. B	69. B
4. C	38. A	70. C
5. B	39. C	71. B
6. A	40. D	72. C
7. C	41. D	73. B
8. B	42. A	74. A
9. B	43. C	75. A
10. D	44. 2	76. C
11. A	45. B	77. C
12. C	46. 20	78. B
13. C	47. D	79. A
14. D	48. 19	80. C
15. D	49. 3	81. B
16. C	50. D	82. C
17. C	51. 7	83. D
18. B	52. 4	84. 90
19. A	53. B	85. 200
20. D	54. B	86. 16

21. D	55. C	87. D
22. C	56. D	88. D
23. D	57. C	89. C
24. A	58. C	90. C
25. C	59. A	91. A
26. D	60. C	92. 3
27. C	61. D	93. 51
28. 25341	62. D	94. 3
29. 53421	63. 11	95. 6
30. 25431	64. C	96. 50
31. 43512	65. 15	97. 1
32. 2	66. C	98. D
33. 4		99. C
34. 1		100. A

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Explanations

VARC

1.D

In the paragraph starting with 'cities are true fronts of creativity', author mentions that cities have diverse population.

The author also mentions that cities provide the space where people can meet and share ideas. Then, the author discusses the financial and organizational infrastructure that cities provide for ideas to flourish. No where has it been mentioned that cities provide access to cultural activities. We cannot infer option D from

the passage.

Therefore, option D is the right answer.

2.B

'Irony' is a term used to define an activity defeating its very purpose. Therefore, the answer must be along similar lines - a method or activity that stifles its purpose.

In the passage (1968 survey), the author describes how schools and colleges, the institutions that were supposed to foster creativity, stifle it. Also, in the paragraph preceding the paragraph about survey, the author mentions explicitly that the institutes created to promote creativity stifle it. Therefore, option B is the right answer.

3.A

The entire passage revolves around how cities provide grounds for creativity to flourish and how our education system stifles it.

Option B states that creativity and ideas are gradually declining. But, in the last paragraph, the author mentions that 'Creativity itself is not in danger'. Therefore, we can rule out option B.

Option D states that more people must engage in creative jobs. But it cannot be said to be the central idea of the passage. As we have discussed, the passage revolves around social interaction and creativity divide.

Therefore, we can eliminate option D too.

Options A and C are close. But, the author describes creativity divide more as an effect than the problem itself. Barring the last 2 paragraphs, the author describes about the

importance of social interaction and how the lack of it kills creativity. Since the question is about the central idea, option A can be deemed a better fit than

option C.

Therefore, option A is the right answer.

4.C

In the passage, the author clearly describes that Jane Jacobs attributes creativity to the type of leaders. From the paragraph about 'squelchers', we can infer that Jane Jacobs holds leaders responsible for the creativity of the people. Therefore, option C is the right answer.

5.B

There has been no talk about technology in the entire passage. Therefore, we can eliminate option B straight away.



Also, option A states that children become more creative as they get older. However, the exact opposite has been discussed in the passage. Therefore, we can eliminate option A too.

Among options B and C, option C attributes reduction in creativity to learning more. But, in the paragraph about 'what stanches creativity', the author mentions that institutions that were created to promote creativity stifle it.

He then produces the 1968 study as a validation of the argument. Therefore, the author implies that schools and colleges stifle creativity.

Hence, option B is the right answer.

6.A

In the paragraph regarding creative cities, the author makes a remark that the creativity of only those people who work with their mind are utilized. Therefore, we can infer that the author thinks that the creativity of people who do not work with their minds (who work with their hands) is not utilized. Therefore, option A is the right answer.

7.C

The entire passage revolves around the effects of climate change on subnivium. We can eliminate option D directly as it talks about a small illustration. It cannot be said to be the purpose of the passage. Options A and B emphasize subnivium as the subject. However, the passage is about the effects of climate change on subnivium rather than subnivium itself. Throughout the passage, the author discusses the effects of various climatic changes and how it affects the subnivium. Therefore, option C is the right answer.

8.B

The author mentions that 'Both depth and density of snow are sensitive to temperature.' Therefore, we can easily eliminate option A.

Option C talks about the insulating properties of subnivium which has been explicitly mentioned in the passage

- 'Although that might still sound cold, a constant temperature of 32°F can often be 30 to 40 degrees warmer than the air temperature during the peak of winter.' Therefore, we can eliminate option C too.

Option D states that researchers have established the adverse effects of the dwindling snow cover in subnivium. From the line starting with 'research has shown that...', we can infer that the effects of the dwindling snow cover on subnivium has been established.

The entire passage does not discuss any positive effect of climate change on the subnivium. Therefore, we can say that option B is the right answer.

9.B

The author mentions in the passage that the quality of snow also plays a vital role.

Therefore, maintaining 8 inches of snow with a machine will not fix the problem. Moreover, the option feels too shallow and unsustainable. Therefore, we can eliminate option A. Option C also feels shallow and unrealistic. Moreover, it has not been mentioned that adding nutrients will fix the issue. Option D suggests planting shrubs. But, in the last paragraph the author mentions that the effects are multilayered and complex. Options A, C, and D try to address the symptom than attacking the cause. Option B offers a more viable solution and addresses the cause of the issue rather than its manifestation. Therefore, the author is most likely to agree with option B and hence, option B is the right answer.

10.D

The reason for the inclusion of the shrubs must be in line with the central idea of the passage. Options A and C are too general and hence, can be ruled out easily. Option B states that plants that tend to survive turn out to be shrubs. But, it has not been mentioned anywhere in the passage.

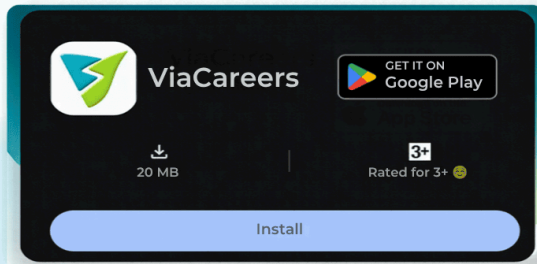
The last paragraph clearly mentions that the effects of colder subnivium are multilayered and interrelated. The shrubs tend to prove the point. The paragraph discusses the effect on the shrubs in detail, adding substance to the statement. Therefore, option D is the right answer.

11.A

Options B and D mention that it will be the arctic and the temperate regions that will be affected. Though we do not know the effect of climate change on the tropical regions, we cannot claim that there will be no effects. The passage does not give us sufficient information to make that claim. Therefore, we can rule out options B and D.

Option C states that a compact layer of wool is warmer than a similarly compact layer of goose down. Again, the passage does not provide us with sufficient information to substantiate this claim. We do not have sufficient details to compare 2 different materials. Therefore, option C can be ruled out as well.

Option A talks about ripple effect. The entire passage is about how the effects of



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climate change are interrelated. Ripple effect also discusses the same. Therefore, option A is the right answer.

12.C

In the passage, author uses the example to explain how having some spaces between layers increases the insulating property. He then uses the same logic to explain the effects of increase in density of snow on subnivium. Therefore, the author uses the example to draw an analogy. Therefore, option C is the right answer.

13.C

The main argument around which the passage revolves can be referred from following statements made by the author "...The private car is...a device of immense practical ... but at the same time a theatre for myths of unattainable self-fulfilment... ". In the later part, the author substantiates this argument. Hence, option C, which states the same, must be the right answer.

14.D

Refer to the following lines, "...the rarest materials for batteries would make undeserving despots and their dynasties fantastically rich..." Thus, the author states that relying on rare materials will support despotic rule.

Hence, option A is correct and can be eliminated.

Refer to the following lines, "...The air in cities would once more be breathable and their streets as quiet as .. Cars that were as silent as bicycles ...". Hence, option B is correct

and can be eliminated.

Refer to the following lines, "...traffic jam is trying to escape from it, yet it is the inevitable consequence of mass car ownership..." Hence, the author points out that the problem of traffic jam which persists with electric car as

it is a consequence of mass car ownership. Hence, option C is correct and can be eliminated.

Option D, which states that electric cars will undermine the driver autonomy, cannot be inferred from the passage. Hence, option D is the right choice.

15.D

Refer to following lines, "...Mr Musk is selling a dream that the world ...This last may be the most important factor in the story. The private car...". Since people believe in the autonomy represented by private cars, Tesla had remarkable sales.

Option A is nowhere stated as the reason for high sales for Tesla. Hence, it can be eliminated.

Nowhere in the passage has the author mentioned about tax subsidy to Tesla buyers. Hence, option B can be eliminated.

The author states that there are limited number of specialised charging stations. But the author doesn't state that there will be significant increase in charging stations rapidly which would increase the sales. Hence, option C can be eliminated.

Option D correctly highlights the main reason for Tesla's remarkable sales. Hence, option D is the right choice.

16.C

Refer to the following lines, "...Traffic jams will be abolished only when the private car becomes a public utility...". According to the author the fantasy of autonomy comes full circle. Thus the author states that car drivers want autonomy but public transport will be the future as only then the traffic problem will be solved.

Option A, which states that car drivers will no longer own cars, is too extreme and can be ruled out.

Option B specifies something that is out of the scope of the paragraph. Hence, option B

is incorrect.

Option C completely reflects what the author says in the end. Hence, it is the right choice.

Option D is again too extreme and cannot be found in the passage. Also, the author mentions electric bicycles just to provide an illustration. Hence, it can be eliminated. Hence, option C is the right answer.

17.C

In paragraph 5 and 6 the author states that instead of cars having owners they'll work as taxis do, call the taxis at will and use only for journey which we actually need. According to the author this is the future towards which Uber is working.

Option A, which states that electric cars will have mechanisms to prevent collisions, is out of context. Hence, it is incorrect and can be eliminated.

Option B, which states that future will definitely have no traffic jams, is incorrect. Hence, option B can be eliminated.

Option C captures the points which we discussed. Hence, option C is the right answer.

The passage doesn't give any comparison about Uber rides and Tesla sales. Hence, option D is incorrect and can be eliminated.

18.B

According to the author we'll have no traffic jams only when cars become public utility. And, for us (people) to have independence, we'll have to start using electrically powered bicycles. Hence, option B, which states this, is the right answer.

Option A is nowhere mentioned in the passage. Hence, can be eliminated.

Author doesn't give any comparison, as mentioned in option C, between electric powered bicycle and electric cars. Hence, option C can be eliminated.

The author nowhere mentions that electric buses are the best form of public transport.

Hence, option D can be eliminated.

Hence, option B is the right choice.



19.A

The passage starts by introducing typewriters. The author later states that some government offices in Russia are going back to typewriters and that in the US some offices still use them. The author then goes on to give reasons for the same by highlighting positive aspects of the typewriter.

Option A correctly describes what the passage is trying to do. Hence, it is the right choice. The author doesn't state that use of typewriters will be perennial. Hence, it can be eliminated.

The main aim of the passage is not to highlight personal benefit. Hence, it can be eliminated.

Option D is out of scope as the author nowhere states or highlights that computers offer less options than typewriters. Hence, it can be eliminated.

Hence, option A is the right answer.

20.D

Refer to the sentence, "... the only way anyone else can get it is if you give it to them. That is why the Russians have decided to go back to typewriters in some government offices..." Hence, the government uses typewriters to control who views the document as the only way someone can read the document is by physically accessing it to them. Option D, which highlights this, is the right answer.

21.D

The author states that, "...Nor are there any easy distractions...". Hence, the only thing one can do using typewriter is write, unlike computers. Hence, option A is correct.

Refer to following lines "... there's a big premium on hitting the right key...". Thus, there's premium attached on hitting right keys because as you cannot revise what you've typed on the typewriter. Hence, option B is correct.

Refer to following lines "...thinking process is accompanied by the encouraging clack of keys...". Hence, typewriters are noisier than computers. So, option C is correct.

Nowhere in the passage does the author state or highlight that typewriters are messier than the computers.

Hence, option D is not the reason why the author praises typewriters.

Thus, option D is the right choice.

22.C

The passage revolves around how vikings did not start out as pillagers but as traders. The intention of the author seems to dispel the notion that the Vikings were pillagers. The combs have been used just as an illustration to prove the author's hypothesis. Therefore, option A can be ruled out.

Option B states that the purpose was to change the period of Viking age. However, the passage does not hint any such intention. The author cites that the combs had made their way to Britain before the Viking age to substantiate the fact that Vikings were traders before they became pillagers.

Therefore, we can rule out option B too.

Option D states that despite being pillagers, Vikings were efficient traders and craftsmen. However, the passage talks about a period prior to which Vikings turned pillagers. Therefore, we can eliminate option D too. Option C states that the purpose of the passage is to dispel the notion that Vikings were pillagers. This seems the most appropriate option as the passage tries to establish the fact that Vikings started out as traders.

Therefore, option C is the right answer.

23.D

The author mentions the statement to imply that the Vikings had trade relations with the British before the Viking age. The Viking age started in 793, whereas the artifacts predate this period. Therefore, the intention of the line "Most of the artifacts also date to the 780s, but some are as old as 725" is to emphasize that Vikings had trade relations.

Therefore, option D is the right answer.

24.A

In the passage, it has been mentioned that "Such combs served as symbols of good health, Geggel writes" .

Therefore, we can infer option C and hence, it can be eliminated.

Option D states that "Vikings, once upon a time, had trade relations with Denmark and Scandinavia". The last paragraph mentions that "Beyond Norway, these combs would have been a popular industry in Scandinavia as well. It's possible that the antler combs represent a larger trade network, where the Norsemen supplied raw material to craftsmen in Denmark and elsewhere". Therefore, we can rule out option D too.

Option B states that the Vikings had trade relations with Northern Europe. This is the very theme of the passage. Hence, we can eliminate option B too.

Option A states that "Vikings brought reindeer from Norway to Denmark for trade purposes". However, the passage only mentions that they brought the combs - not the Reindeers itself. Therefore, option A is the right answer.

25.C

According to the paragraph, the North American walnut sphinx moth caterpillars produce whistles which are extremely loud considering their size. These whistles appear to mimic bird (predator) alarm calls which scares them to look for cover. Thus, these sounds act as acoustic deception and help the insect to defend themselves against predators.

Option A mentions about vocal tracts which is out of scope. Hence, it can be eliminated.

Option B though correct, fails to mention the use of sound to defend against the predators. Hence, it can be eliminated.

Option C captures all the main points and hence is right choice.

Option D mentions 'camouflage' which is also out of context. Hence, it can be eliminated.

Hence, option C is the right answer.

26.D

According to the paragraph, Socrates and Bacon were good at asking questions. The Socratic method works in a way by finding exceptions to the arguments of the opponent, which makes the opponent to agree on something that contradicts their original position. In a similar way, Bacon stressed that it was important to disprove theory as it is to prove it. Thus both Socrates and Bacon stressed on examining arguments from both ends - to prove as well as disprove.

Option A, which speaks only about disproving of arguments, can be eliminated.

Option B talks only about examining and observation. Hence, it can be eliminated.

Option C talks only about confirming of arguments and not the other way. Hence, it can be eliminated.

Option D captures the main points which we discussed earlier.

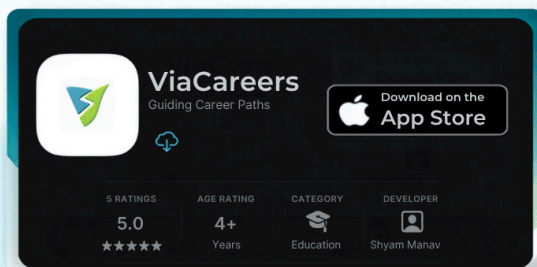
Hence, option D is the right answer.

27.C

According to the paragraph, language is like a gelatinous mass that changes shape to fit. Also, many times the only way to find meaning of word is to examine how it is used. It is stated that definitions are fixed for the word by dictionary. Wittgenstein found that circulation of ordinary language was a free-floating currency of meaning.

So the meanings are dynamic. Thus, the value of word arises from the exchange and then the lexicographer abstracts meaning from that exchange. Thus, definitions are picked up from the meaning in use.

Option A, which states that definitions are like dogmatic, cannot be found in the paragraph. Hence, it can be



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eliminated. The paragraph doesn't talk about why lexicographers fix meanings. Hence, option B can be eliminated.

Option C covers all the main points. Hence, it is the right choice.

The purpose of the passage is not to compare meaning of words in dictionaries with

meaning which arises from exchange. Hence, option D can be eliminated. Hence, option C is the right choice.

28.25341

Sentence 2, which introduces the topic of what stories tell, must be the starting sentence. Sentence 5 elaborates on sentence 2. Hence sentence 5 logically follows sentence 2. According to the sentence 3, the stories we retell are never quite right for us. Sentence 4 elaborates on what if we get the stories quite right. Hence, 3-4 forms a pair which must come after sentence 5. Sentence 1 which concludes the topics of discussion must be the ending sentence. Hence, 25341 is the right answer.

29.53421

On closely reading the sentences, we see that the topic of discussion is how chemical reactions started by lightning affects nitrogen in the air which ultimately help nourish the earth. Hence, sentence 5 which introduces lightning to us must be the starting sentence. Sentence 3 further elaborates on chemical reactions, started by lightning, which affects nitrogen. Hence, sentence 3 logically follows sentence 5. Sentence 4 states how nitrogen helps in nourishing the earth. Hence, sentence 4 must follow sentence 3. Sentence 2 states why in its natural form nitrogen is unusable and sentence 1 further elaborates on why nitrogen must undergo transformation for plants to use it. Hence sentences 2 and 1 form a pair which must follow sentence 4. Hence, the correct sequence 53421.

30.25431

On closely reading the sentences, we can see that the passage is about placebo effect. Sentence 2, which introduces the placebo effect, must be the starting sentence. Sentence 5 states that placebo effect are now not just studied for real interventions, as stated in sentence 2, but as potential portal into self healing power. Hence, sentence 5 logically follows sentence 2. Sentence 4 which elaborates on self healing must follow sentence 5. Sentence 3 makes a point that apart from the belief in the

treatment, the clinical setting also has a role to play.

Sentence 1 elaborates on this. Hence, 31 is a pair which must follow sentence 4. Thus, the correct order is

25431.

31.43512

Sentence 4 should be the opening sentence since it talks about the need for a dictionary in the 18th century. The other 4 statements talk about Samuel Johnson.

3 must follow 4 since it introduces the subject, Samuel Johnson. Only sentence 3 contains the full name of Samuel Johnson.

3 should be followed by 5 since it describes Johnson's character. 5 plays the role of a general introduction and hence, it should be placed before any specific detail regarding Johnson's contribution to the dictionary is

introduced. Out of sentences 1 and 2, 1 should precede 2 since it establishes that Johnson worked on English and sentence

2 explains the innate connection between Johnson and the language (English).

43512 is the correct order.

32.2

The paragraph is about how inefficient we are when it comes to usage of language.

Sentence 2 stands out as an imperative or instructive statement whereas the other statements simply elaborate on the point that we are unskilled at language usage.

Therefore, option 2 is the odd sentence.

33.4

The paragraph is about the timelessness of the Wimbledon and Roger Federer.

Sentences 1, 2 and 3 are clearly the part of the paragraph.

Wimbledon - one of its finest champion - Roger Federer

Now, sentences 4 and 5 are close. Sentence 4 talks about a specific event. Whereas, sentence 5 is inline with the idea of timelessness and hence, can be used as the concluding sentence of the paragraph. Moreover, sentence 4 appears hanging (Missing

some previous statement). Therefore, sentence 4 is the odd one out.

34.1

After reading all the sentences, we know that the paragraph is talking about the logos and brands and the purpose behind them. Statement 2 is the opening sentence which tells us about the Commonwealth Bank's logo. Statement 5 provides more information about the logo, mentioned in statement 2, that there is more to what is visible to eyes about the Bank's logo. Statement 3 gives another insight that it's not only logos, but brand names are also created with hidden meanings. Statement 4 provides the reasoning behind passing subtle messages through brands and logos. Thus, 2534 forms a meaningful paragraph. Statement 1 describes something as geometric symbols and aerodynamic swooshes which does not connect well with the other four sentences. Thus, statement 1 does not fit in the paragraph. Hence, option 1 is the correct answer.



DILR

Explanation [35 - 38]:

We are given that Party 3 received 70% of total pizzas, therefore, number of pizzas received by Party 3 = $\frac{70}{100} \times 800 = 560$

Remaining 240 pizzas are equally divided among party 1 and party 2 hence we can say that each of Party 1 and Party 2 received 120 pizzas.

We know that all of the pizza can be classified into a total of 4 types. Hence, on drawing

a table which can accommodate all of the cases:

35.B

	Thin Crust (T)			Deep Dish (D)		
	T - NC	T - EC	Total	D - NC	D - EC	Total
Party 1 (120)						
Party 2 (120)						
Party 3 (560)						
Total (800)						

Total number of Thin Crust pizzas = $0.375 \times 800 = 300$. Therefore, total number of Deep Dish pizzas = $800 - 300 = 500$.

Out of 120 pizzas that Party 1 received, 60% were of Thin Crust type hence, total number of Thin Crust pizza received by Party 1 = $0.6 \times 120 = 72$. Consequently Party 1, must have received 48 Deep Dish type pizzas.

Out of 120 pizzas that Party 2 received, 55% were of Thin Crust type hence, total number of Thin Crust pizza received by Party 2 = $0.55 \times 120 = 66$. Consequently Party 1, must have received 54 Deep Dish type pizzas.

Therefore, total number of Thin Crust pizzas ordered by Party 3 = Total Thin Crust pizzas ordered - Thin Crust pizzas ordered by Party 1 - Thin Crust pizzas ordered by Party 2
 $300 - 72 - 66 = 162$

Hence, option B is the correct answer.

36.C

	Thin Crust (T)			Deep Dish (D)		
	T - NC	T - EC	Total	D - NC	D - EC	Total
Party 1 (120)						
Party 2 (120)						
Party 3 (560)						
Total (600)						

Total number of Thin Crust pizzas = $0.375 \times 800 = 300$. Therefore, total number of Deep Dish pizzas = $800 - 300 = 500$.

Out of 120 pizzas that Party 1 received, 60% were of Thin Crust type hence, total number of Thin Crust pizza received by Party 1 = $0.6 \times 120 = 72$. Consequently Party 1, must have received 42 Deep Dish type pizzas.

Out of 120 pizzas that Party 2 received, 55% were of Thin Crust type hence, total number of Thin Crust pizza received by Party 2 = $0.55 \times 120 = 66$. Consequently Party 1, must have received 54 Deep Dish type pizzas.

Therefore, total number of Thin Crust pizzas ordered by Party 3 = Total Thin Crust pizzas ordered - Thin Crust pizzas ordered by Party 1 - Thin Crust pizzas ordered by Party 2
 $300 - 72 - 66 = 162$

Hence number of Deep Dish type of pizzas order by Party 3 = $560 - 162 = 398$

	Thin Crust (T)			Deep Dish (D)		
	T - NC	T - EC	Total	D - NC	D - EC	Total
Party 1 (120)			72			48
Party 2 (120)			66			54
Party 3 (560)			162			398
Total (800)			300			500

Total number of Normal Cheese pizzas require to be delivered = $0.52 \times 800 = 416$

Number of Normal Cheese pizzas require to be delivered to Party 2 = $0.3 \times 120 = 36$

Number of Normal Cheese pizzas require to be delivered to Party 3 = $0.65 \times 560 = 364$

Therefore, total number of Normal Cheese pizzas require to be delivered to Party 1 = Total Normal Cheese

pizzas to be delivered - Normal Cheese pizzas require to be delivered to Party 2 - Normal Cheese pizzas require to be delivered to Party 3
 $416 - 36 - 364 = 16$
 Hence, option C is the correct answer.

37.B

	Thin Crust (T)			Deep Dish (D)		
	T - NC	T - EC	Total	D - NC	D - EC	Total
Party 1 (120)						
Party 2 (120)						
Party 3 (560)						
Total (600)						

Total number of Thin Crust pizzas = $0.375 \times 800 = 300$. Therefore, total number of Deep Dish pizzas = $800 - 300 = 500$.

Out of 120 pizzas that Party 1 received, 60% were of Thin Crust type hence, total number of Thin Crust pizza received by Party 1 = $0.6 \times 120 = 72$. Consequently Party 1, must have received 42 Deep Dish type pizzas.

Out of 120 pizzas that Party 2 received, 55% were of Thin Crust type hence, total number of Thin Crust pizza received by Party 2 = $0.55 \times 120 = 66$. Consequently Party 1, must have received 54 Deep Dish type pizzas.



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Therefore, total number of Thin Crust pizzas ordered by Party 3 = Total Thin Crust pizzas ordered - Thin Crust

pizzas ordered by Party 1 - Thin Crust pizzas ordered by Party 2

$$300 - 72 - 66 = 162$$

Hence number of Deep Dish type of pizzas order by Party 3 = $560 - 162 = 398$

	Thin Crust (T)			Deep Dish (D)		
	T - NC	T - EC	Total	D - NC	D - EC	Total
Party 1 (120)			72			48
Party 2 (120)			66			54
Party 3 (560)			162			398
Total (800)			300			500

Number of Normal Cheese pizzas require to be delivered to Party 2 = $0.3 \times 120 = 36$

It is given that 50% of these Normal Cheese pizzas were of Thin Crust variety, then We can say that remaining

50% were of Deep Dish variety. We can find out each of 4 types of pizzas require to be delivered to Party 2.

	Thin Crust (T)			Deep Dish (D)		
	T - NC	T - EC	Total	D - NC	D - EC	Total
Party 1 (120)			72			48
Party 2 (120)	18	48	66	18	36	54
Party 3 (560)			162			398
Total (800)			300			500

Hence, the difference between the numbers of T-EC and D-EC pizzas to be delivered to Party 2 = $48 - 36 = 12$

Therefore, option B is the correct answer.

38.A

	Thin Crust (T)			Deep Dish (D)		
	T - NC	T - EC	Total	D - NC	D - EC	Total
Party 1 (120)						
Party 2 (120)						
Party 3 (560)						
Total (600)						

Total number of Thin Crust pizzas = $0.375 \times 800 = 300$. Therefore, total number of Deep Dish pizzas = $800 - 300 = 500$.

Out of 120 pizzas that Party 1 received, 60% were of Thin Crust type hence, total number of Thin Crust pizza received by Party 1 = $0.6 \times 120 = 72$. Consequently Party 1, must have received 42 Deep Dish type pizzas.

Out of 120 pizzas that Party 2 received, 55% were of Thin Crust type hence, total number of Thin Crust pizza received by Party 2 = $0.55 \times 120 = 66$. Consequently Party 1, must have received 54 Deep Dish type pizzas.

Therefore, total number of Thin Crust pizzas ordered by Party 3 = Total Thin Crust pizzas ordered - Thin Crust pizzas ordered by Party 1 - Thin Crust pizzas ordered by Party 2

$$\Rightarrow 300 - 72 - 66 = 162$$

Hence number of Deep Dish type of pizzas order by Party 3 = $560 - 162 = 398$

	Thin Crust (T)			Deep Dish (D)		
	T - NC	T - EC	Total	D - NC	D - EC	Total
Party 1 (120)			72			48
Party 2 (120)			66			54
Party 3 (560)			162			398
Total (800)			300			500

Total number of Normal Cheese pizzas require to be delivered = $0.52 \times 800 = 416$

Number of Normal Cheese pizzas require to be delivered to Party 2 = $0.3 \times 120 = 36$

Number of Normal Cheese pizzas require to be delivered to Party 3 = $0.65 \times 560 = 364$

Therefore, total number of Normal Cheese pizzas require to be delivered to Party 1 = Total Normal Cheese pizzas to be delivered - Normal Cheese pizzas require to be delivered to Party 2 - Normal Cheese pizzas require to be delivered to Party 3

$$\Rightarrow 416 - 36 - 364 = 16$$

It is given that 25% of these 16 Normal Cheese pizzas were of Deep Dish type, hence the number of D- NC type pizza require to be delivered to Party 1 = $0.25 \times 16 = 4$

Consequently, the number of T- NC type pizza require to be delivered to Party 1 = $16 - 4 = 12$

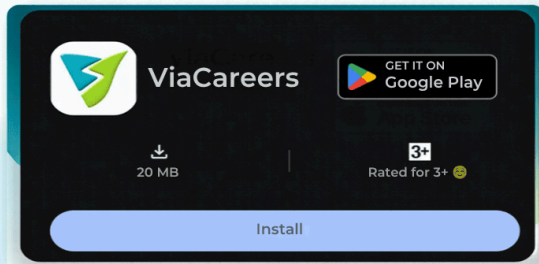
We can find out each type of pizza that is required to be delivered to Party 1.

	Thin Crust (T)			Deep Dish (D)		
	T - NC	T - EC	Total	D - NC	D - EC	Total
Party 1 (120)	12	60	72	4	44	48
Party 2 (120)			66			54
Party 3 (560)			162			398
Total (800)			300			500

Cost Price of a T-EC pizza = Rs. 500

Cost Price of a D-EC pizza = Rs. 550

Cost Price of a T-NC pizza = $\frac{3}{5} \times 550 = \text{Rs. } 330$



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Cost Price of a D-NC pizza = $\frac{3}{5} \times 550 = \text{Rs. } 330$

Therefore the total bill amount for Party 1 = $12 \times 330 + 60 \times 500 + 4 \times 330 + 44 \times 550 = \text{Rs. } 59480$

Therefore, option A is the correct answer.

Explanation [39 - 42]:

From the table we can say that number of students who opted for E2 after reshuffle = $5 + 34 + 6 + 3 + 5 + 7 + 16 = 76$.

It is given us that the number of students in E2 increased by 30 after the change process. Hence, we can say that the number of students who were enrolled in E2 before reshuffle = $76 - 30 = 46$.

39.C

It is given that before the change process there were 10 more students in E2 than in E3. Therefore, the number of students who were enrolled in E3 before reshuffle = $46 - 10 = 36$.

Number of students who moved from E1 to all other electives are known. Therefore, the number of students who were enrolled in E1 before reshuffle = $9 + 5 + 10 + 1 + 4 + 2 = 31$.

It is given that before the change process there were 6 more students in E1 than in E4. Therefore, the number of students who were enrolled in E4 before reshuffle = $31 - 6 = 25$.

Also, it is given that E4 had 2 more students than E6 before reshuffle. Therefore, the number of students who were enrolled in E6 before reshuffle = $25 - 2 = 23$.

All the students from E7 moved to one of electives among E1 to E6.

Therefore, the number of students who were enrolled in E7 before reshuffle = $4 + 16 + 30 + 5 + 5 + 41 = 101$.

Except E5 we know the number of students who were enrolled in all electives. We also know that there were total 300 students who opted for exactly 1 elective.

Hence, the the number of students who were enrolled in E7 before reshuffle = $300 - (46+36+31+25+23+101) = 38$.

For each elective, the number of students who were enrolled before reshuffle will be same as sum of the number of students who moved from that elective to another elective including no movement cases.

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2		34	8		2	2	46
	E3	2	6	25			2	36
	E4		3	2	14		4	25
	E5		5			30		38
	E6		7	3		2	9	23
	E7	4	16	30	5	5	41	101

For elective E2,

Number of students who moved to E1 + 34 + 8 + Number of students who moved to E4 + 2 + 2 = 46

i.e. Number of students who moved from to E1 = Number of students who moved from to E4 = 0

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25			2	36
	E4		3	2	14		4	25
	E5		5			30		38
	E6		7	3		2	9	23
	E7	4	16	30	5	5	41	101

For elective E4,

Number of students who moved to E1 + 3 + 2 + 14 + Number of students who moved to E5 + 4 = 25 i.e. Number of students who moved from to E1 = Number of students who moved from to E5 = 1 {As the remaining blanks can be filled by either 0 or 1}

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25			2	36
	E4	1	3	2	14	1	4	25
	E5		5			30		38
	E6		7	3		2	9	23
	E7	4	16	30	5	5	41	101

For elective E6,

Number of students who moved to E1 + 7 + 3 + Number of students who moved to E4 + 2 + 9 = 23

i.e. Number of students who moved from to E1 = Number of students who moved from to E4 = 1 {As the remaining blanks can be filled by either 0 or 1}



		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25			2	36
	E4	1	3	2	14	1	4	25
	E5		5			30		38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101

It is given that after the reshuffle, the number of students in E4 was 3 more than that in E1.

As of now the number of students enrolled in E4 after reshuffle = $1 + 0 + E3 \text{ to } E4 + 14 + E5 \text{ to } E4 + 1 + 5 = 21 +$

$\{E3 \text{ to } E4\} + \{E5 \text{ to } E4\}$

Also, the number of students enrolled in E1 after reshuffle = $9 + 0 + 2 + 1 + E5 \text{ to } E1 + 1 + 4 = 17 + E5 \text{ to } E1$.

Hence, it is possible only when $E5 \text{ to } E1 = 1$ and $E3 \text{ to } E4 = E5 \text{ to } E4 = 0$.

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25	0		2	36
	E4	1	3	2	14	1	4	25
	E5	1	5		0	30		38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101

Remaining blank places can be filled easily as we know the total sum of each row.

Therefore, the number of students who moved from E3 to E5 = the number of students who moved from E5 to

E3 = the number of students who moved from E5 to E6 = 1.

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25	0	1	2	36
	E4	1	3	2	14	1	4	25
	E5	1	5	1	0	30	1	38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101
Total		18	76	79	21	45	61	300

From the table we can see that the number of students who enrolled for E1 and E4 decreased from 31 and 25 to 18 and 21 respectively.

Therefore, option C is the correct answer



40.D

It is given that before the change process there were 10 more students in E2 than in E3. Therefore, the number of students who were enrolled in E3 before reshuffle = $46 - 10 = 36$.

Number of students who moved from E1 to all other electives are known. Therefore, the number of students who were enrolled in E1 before reshuffle = $9 + 5 + 10 + 1 + 4 + 2 = 31$.

It is given that before the change process there were 6 more students in E1 than in E4. Therefore, the number of students who were enrolled in E4 before reshuffle = $31 - 6 = 25$.

Also, it is given that E4 had 2 more students than E6 before reshuffle. Therefore, the number of students who were enrolled in E6 before reshuffle = $25 - 2 = 23$.

All the students from E7 moved to one of electives among E1 to E6. Therefore, the number of students who were enrolled in E7 before reshuffle = $4 + 16 + 30 + 5 + 5 + 41 = 101$.

Except E5 we know the number of students who were enrolled in all electives. We also know that there were

total 300 students who opted for exactly 1 elective.

Hence, the the number of students who were enrolled in E7 before reshuffle = $300 - (46+36+31+25+23+101) = 38$.

For each elective, the number of students who were enrolled before reshuffle will be same as sum of the number of students who moved from that elective to another elective including no movement cases.

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2		34	8		2	2	46
	E3	2	6	25			2	36
	E4		3	2	14		4	25
	E5		5			30		38
	E6		7	3		2	9	23
	E7	4	16	30	5	5	41	101

For elective E2,
 Number of students who moved to E1 + 34 + 8 + Number of students who moved to E4 + 2 + 2 = 46

i.e. Number of students who moved from to E1 = Number of students who moved from to E4 = 0

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25			2	36
	E4		3	2	14		4	25
	E5		5			30		38
	E6		7	3		2	9	23
	E7	4	16	30	5	5	41	101

For elective E4,

Number of students who moved to E1 + 3 + 2 + 14 + Number of students who moved to E5 + 4 = 25

i.e. Number of students who moved from to E1 = Number of students who moved from to E5 = 1 {As the remaining blanks can be filled by either 0 or 1}

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25			2	36
	E4	1	3	2	14	1	4	25
	E5		5			30		38
	E6		7	3		2	9	23
	E7	4	16	30	5	5	41	101

For elective E6,

Number of students who moved to E1 + 7 + 3 + Number of students who moved to E4 + 2 + 9 = 23

i.e. Number of students who moved from to E1 = Number of students who moved from to E4 = 1 {As the remaining blanks can be filled by either 0 or 1}

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25			2	36
	E4	1	3	2	14	1	4	25
	E5		5			30		38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101

It is given that after the reshuffle, the number of students in E4 was 3 more than that in E1. As of now the

number of students enrolled in E4 after reshuffle = $1 + 0 + E3 \text{ to } E4 + 14 + E5 \text{ to } E4 + 1 + 5 = 21 + \{E3 \text{ to } E4\} + \{E5 \text{ to } E4\}$

Also, the number of students enrolled in E1 after reshuffle = $9 + 0 + 2 + 1 + E5 \text{ to } E1 + 1 + 4 = 17 + E5 \text{ to } E1$.

Hence, it is possible only when $E5 \text{ to } E1 = 1$ and $E3 \text{ to } E4 = E5 \text{ to } E4 = 0$.



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		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25	0		2	36
	E4	1	3	2	14	1	4	25
	E5	1	5		0	30		38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101

Remaining blank places can be filled easily as we know the total sum of each row.
 Therefore, the number of students who moved from E3 to E5 = the number of students who moved from E5 to

E3 = the number of students who moved from E5 to E6 = 1.

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25	0	1	2	36
	E4	1	3	2	14	1	4	25
	E5	1	5	1	0	30	1	38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101
Total		18	76	79	21	45	61	300

Form the table, we can see that after the reshuffle the number of students in electives E1 to E6 are 18, 76, 79, 21, 45 and 61 in that order.

Therefore, option D is the correct answer.

41.D

It is given that before the change process there were 10 more students in E2 than in E3. Therefore, the number of students who were enrolled in E3 before reshuffle = $46 - 10 = 36$.

Number of students who moved from E1 to all other electives are known. Therefore, the number of students who were enrolled in E1 before reshuffle = $9 + 5 + 10 + 1 + 4 + 2 = 31$.

It is given that before the change process there were 6 more students in E1 than in E4. Therefore, the number of students who were enrolled in E4 before reshuffle = $31 - 6 = 25$.

Also, it is given that E4 had 2 more students than E6 before reshuffle. Therefore, the number of students who were enrolled in E6 before reshuffle = $25 - 2 = 23$.

All the students from E7 moved to one of electives among E1 to E6. Therefore, the number of students who were enrolled in E7 before reshuffle = $4 + 16 + 30 + 5 + 5 + 41 =$

101.

Except E5 we know the number of students who were enrolled in all electives. We also know that there were total 300 students who opted for exactly 1 elective.

Hence, the the number of students who were enrolled in E7 before reshuffle = $300 - (46+36+31+25+23+101) =$

38.

For each elective, the number of students who were enrolled before reshuffle will be same as sum of the number of students who moved from that elective to another elective including no movement cases.

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2		34	8		2	2	46
	E3	2	6	25			2	36
	E4		3	2	14		4	25
	E5		5			30		38
	E6		7	3		2	9	23
	E7	4	16	30	5	5	41	101

For elective E2,

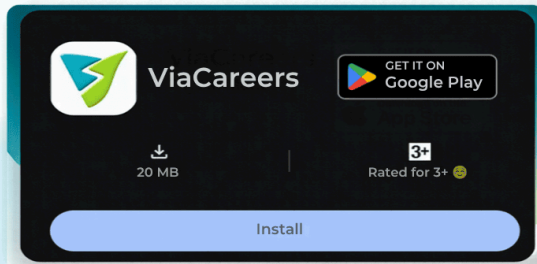
Number of students who moved to E1 + 34 + 8 + Number of students who moved to E4 + 2 + 2 = 46

i.e. Number of students who moved from to E1 = Number of students who moved from to E4 = 0

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25			2	36
	E4		3	2	14		4	25
	E5		5			30		38
	E6		7	3		2	9	23
	E7	4	16	30	5	5	41	101

For elective E4,

Number of students who moved to E1 + 3 + 2 + 14 + Number of students who moved to



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$$E5 + 4 = 25$$

i.e. Number of students who moved from to E1 = Number of students who moved from to E5 = 1 {As the remaining blanks can be filled by either 0 or 1}

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25			2	36
	E4	1	3	2	14	1	4	25
	E5		5			30		38
	E6		7	3		2	9	23
	E7	4	16	30	5	5	41	101

For elective E6,

Number of students who moved to E1 + 7 + 3 + Number of students who moved to E4 + 2 + 9 = 23

i.e. Number of students who moved from to E1 = Number of students who moved from to E4 = 1 {As the remaining blanks can be filled by either 0 or 1}

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25			2	36
	E4	1	3	2	14	1	4	25
	E5		5			30		38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101

It is given that after the reshuffle, the number of students in E4 was 3 more than that in E1. As of now the

number of students enrolled in E4 after reshuffle = $1 + 0 + \text{E3 to E4} + 14 + \text{E5 to E4} + 1 + 5 = 21 + \{\text{E3 to E4}\} + \{\text{E5 to E4}\}$

Also, the number of students enrolled in E1 after reshuffle = $9 + 0 + 2 + 1 + \text{E5 to E1} + 1 + 4 = 17 + \text{E5 to E1}$.

Hence, it is possible only when $\text{E5 to E1} = 1$ and $\text{E3 to E4} = \text{E5 to E4} = 0$.

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25	0		2	36
	E4	1	3	2	14	1	4	25
	E5	1	5		0	30		38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101

Remaining blank places can be filled easily as we know the total sum of each row.

Therefore, the number of students who moved from E3 to E5 = the number of students who moved from E5 to

E3 = the number of students who moved from E5 to E6 = 1.

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25	0	1	2	36
	E4	1	3	2	14	1	4	25
	E5	1	5	1	0	30	1	38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101
Total		18	76	79	21	45	61	300

We are asked the largest change in its enrollment as a percentage of its original enrollment for all 6 electives but as we can see there are only 4 electives. Hence, we will check only for E1, E2, E3 and E6.

The percentage change in the number of students for E1 =

$$\frac{18 - 31}{31} \times 100 \approx 42\%$$

The percentage change in the number of students for E2 =

$$\frac{76 - 46}{46} \times 100 \approx 65\%$$

The percentage change in the number of students for E3 =

$$\frac{79 - 36}{36} \times 100 \approx 119\%$$

The percentage change in the number of students for E6 =

$$\frac{61 - 23}{23} \times 100 \approx 165\%$$

We can see that the percent change in the number of student for E6 is the largest. Therefore, option D is the correct answer.



42.A

It is given that before the change process there were 10 more students in E2 than in E3. Therefore, the number of students who were enrolled in E3 before reshuffle = $46 - 10 = 36$.

Number of students who moved from E1 to all other electives are known. Therefore, the number of students who were enrolled in E1 before reshuffle = $9 + 5 + 10 + 1 + 4 + 2 = 31$. It is given that before the change process there were 6 more students in E1 than in E4. Therefore, the number of students who were enrolled in E4 before reshuffle = $31 - 6 = 25$.

Also, it is given that E4 had 2 more students than E6 before reshuffle. Therefore, the number of students who were enrolled in E6 before reshuffle = $25 - 2 = 23$.

All the students from E7 moved to one of electives among E1 to E6. Therefore, the number of students who were enrolled in E7 before reshuffle = $4 + 16 + 30 + 5 + 5 + 41 = 101$. Except E5 we know the number of students who were enrolled in all electives. We also know that there were total 300 students who opted for exactly 1 elective.

Hence, the number of students who were enrolled in E7 before reshuffle = $300 - (46 + 36 + 31 + 25 + 23 + 101) = 38$.

For each elective, the number of students who were enrolled before reshuffle will be same as sum of the number of students who moved from that elective to another elective including no movement cases.

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2		34	8		2	2	46
	E3	2	6	25			2	36
	E4		3	2	14		4	25
	E5		5			30		38
	E6		7	3		2	9	23
	E7	4	16	30	5	5	41	101

For elective E2,

Number of students who moved to E1 + 34 + 8 + Number of students who moved to E4 + 2 + 2 = 46

i.e. Number of students who moved from to E1 = Number of students who moved from to E4 = 0

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25			2	36
	E4		3	2	14		4	25
	E5		5			30		38
	E6		7	3		2	9	23
	E7	4	16	30	5	5	41	101

For elective E4,

Number of students who moved to E1 + 3 + 2 + 14 + Number of students who moved to E5 + 4 = 25

i.e. Number of students who moved from to E1 = Number of students who moved from to E5 = 1 {As the remaining blanks can be filled by either 0 or 1}

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25			2	36
	E4	1	3	2	14	1	4	25
	E5		5			30		38
	E6		7	3		2	9	23
	E7	4	16	30	5	5	41	101

For elective E6,

Number of students who moved to E1 + 7 + 3 + Number of students who moved to E4 + 2 + 9 = 23

i.e. Number of students who moved from to E1 = Number of students who moved from to E4 = 1 {As the remaining blanks can be filled by either 0 or 1}

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25			2	36
	E4	1	3	2	14	1	4	25
	E5		5			30		38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101

It is given that after the reshuffle, the number of students in E4 was 3 more than that in E1. As of now the

number of students enrolled in E4 after reshuffle = 1 + 0 + E3 to E4 + 14 + E5 to E4 + 1 + 5 = 21 + {E3 to E4} + {E5 to E4}

Also, the number of students enrolled in E1 after reshuffle = 9 + 0 + 2 + 1 + E5 to E1 + 1 + 4 = 17 + E5 to E1.

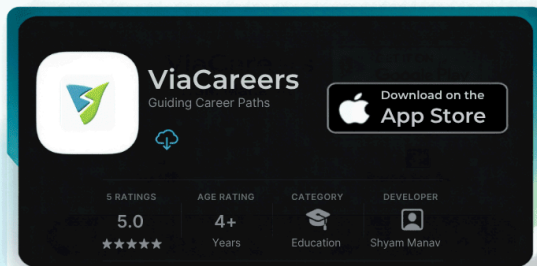
Hence, it is possible only when $E5 \text{ to } E1 = 1$ and $E3 \text{ to } E4 = E5 \text{ to } E4 = 0$.

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25	0		2	36
	E4	1	3	2	14	1	4	25
	E5	1	5		0	30		38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101

Remaining blank places can be filled easily as we know the total sum of each row.

Therefore, the number of students who moved from E3 to E5 = the number of students who moved from E5 to

E3 = the number of students who moved from E5 to E6 = 1.



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		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25	0	1	2	36
	E4	1	3	2	14	1	4	25
	E5	1	5	1	0	30	1	38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101
	Total	18	76	79	21	45	61	300

We can see from the table that number of students enrolled in E1 dropped to 18. Hence, all the students who moved from E1 to any other elective will have to re-enroll in E1.

We can see that the number of students who enrolled for E1 prior to reshuffle = 31. Out of these 31 students, 9 students didn't move to any other elective whereas remaining 22 students moved to other electives. Hence, all these 22 students have to re-enroll in E1. Therefore, the total number of students in E1 post re-enrollment = $18 + 22 = 40$ which is shown in the table

		To Elective						Total
		E1	E2	E3	E4	E5	E6	
From Elective	E1	31	0	0	0	0	0	31
	E2	0	34	8	0	2	2	46
	E3	2	6	25	0	1	2	36
	E4	1	3	2	14	1	4	25
	E5	1	5	1	0	30	1	38
	E6	1	7	3	1	2	9	23
	E7	4	16	30	5	5	41	101
Total		40	71	69	20	41	59	300

Therefore, the sequence of electives in decreasing order of their final enrollments = E2, E3, E6, E5, E1, E4.

Hence, option A is the correct answer.

43.C

Neeta received least amount in bank deposits implies she received highest amount in property and the viceversa for Geeta. The assets are 3 flats worth 90 lakh, a house worth 50 lakh, and a deposit worth 70 lakh. The total value of assets is 210 lakhs. They are divided equally, so each will receive assets worth 70 lakh.

No one daughter can get 3 flats as the total value of asset will be 90 lakhs which is greater than actual share.

All three daughters can't get 1-1 flat each as well. In that case, the daughter who owns 1 flat and the house will have assets worth $30 + 50 = 80$ lakhs which is more than the actual share. Hence, we can conclude the one of the three daughter gets 2 flats and 10 lakhs bank deposit.

Out of the remaining two daughters, one will get the house and bank deposit worth 20 lakhs and the other one must have 1 flat and 40 lakhs in bank deposit. On the basis of bank distribution we can easily determine that property and bank deposits for each

Neera, Seeta and Geeta.

	Neeta	Seeta	Geeta
Property	2 flats worth 60 lakhs	house worth 50 lakhs	1 flat worth 30 lakhs
Bank deposits	10 lakhs	20 lakhs	40 lakhs

From the table, we can see that Seeta must have received Rs. 20 lakh in bank deposits. Hence, option C is the correct answer.

44.2

Neeta received least amount in bank deposits implies she received highest amount in property and the viceversa for Geeta. The assets are 3 flats worth 90 lakh, a house worth 50 lakh, and a deposit worth 70 lakh. The total value of assets is 210 lakhs. They are divided equally, so each will receive assets worth 70 lakh.

No one daughter can get 3 flats as the total value of asset will be 90 lakhs which is greater than actual share. All three daughters can't get 1-1 flat each as well. In that case, the daughter who owns 1 flat and the house will have assets worth $30+50 = 80$ lakhs which is more than the actual share. Hence, we can conclude the one of the three daughter gets 2 flats and 10 lakhs bank deposit. Out of the remaining two daughters, one will get the house and bank deposit worth 20 lakhs and the other one must have 1 flat and 40 lakhs in bank deposit. On the basis of bank distribution we can easily determine that property and bank deposits for each Neeta, Seeta and Geeta.

	Neeta	Seeta	Geeta
Property	2 flats worth 60 lakhs	house worth 50 lakhs	1 flat worth 30 lakhs
Bank deposits	10 lakhs	20 lakhs	40 lakhs

From the table, we can see that Neeta received 2 flats.

45.B

Let the total number of gold coins with the old woman be '9n'.

Total value of the assets with the old woman = $50 + 3 \times 30 + 70 + 9n = 210 + 9n$.

We know that the assets have been distributed in the ratio 1:2:3.

Therefore, Neeta must have received $35 + 1.5n$ (by value), Seeta must have received $70 + 3n$ and Geeta must have received $105 + 4.5n$.

Further, it has been given that the gold coins distributed were in the ratio 2:3:4.

Therefore, the number of gold coins with Neeta must be ' $2n$ ', Seeta must be ' $3n$ ' and Geeta must be ' $4n$ '. Seeta has ' $3n$ ' gold coins. Therefore, the total value of the assets with her must be 70. Seeta could not have inherited all the flats. Therefore, Seeta must have received the house (worth 50 lakh) and 20 lakh from bank deposits.

We know that Geeta did not receive Rs. 30 lakh from the bank deposits. Therefore, Neeta must have received



Rs. 30 lakh.

The remaining 5 lakh must be contributed by the gold coins (Since there is no other asset worth 5 lakh).

$$\Rightarrow 5 + 1.5n = 2n$$

$$\Rightarrow 0.5n = 5$$

$$\Rightarrow n = 10$$

The old-woman must have had $10 \times 9 = 90$ gold coins. Therefore, option B is the right answer.

46.20

Let the total number of gold coins with the old woman be ' $9n$ '.

Total value of the assets with the old woman = $50 + 3 \times 30 + 70 + 9n = 210 + 9n$.

We know that the assets have been distributed in the ratio 1:2:3.

Therefore, Neeta must have received $35 + 1.5n$ (by value), Seeta must have received $70 + 3n$ and Geeta must have received $105 + 4.5n$.

Further, it has been given that the gold coins distributed were in the ratio 2:3:4.

Therefore, the number of gold coins with Neeta must be ' $2n$ ', Seeta must be ' $3n$ ' and Geeta must be ' $4n$ '.

Seeta has $3n$ gold coins. Therefore, the total value of the assets with her must be 70. Seeta could not have

inherited all the flats. Therefore, Seeta must have received the house (worth 50 lakh) and 20 lakh from bank deposits.

We know that Geeta did not receive Rs. 30 lakh from the bank deposits. Therefore, Neeta must have received Rs. 30 lakh.

The remaining 5 lakh must be contributed by the gold coins (Since there is no other asset worth 5 lakh).

$$\Rightarrow 5 + 1.5n = 2n$$

$$\Rightarrow 0.5n = 5$$

$$\Rightarrow n = 10$$

The old woman must have had $10 \times 9 = 90$ gold coins.

Total assets = $210 + 90 \times 1 = 300$ lakh

Neeta has received 50 lakh in total, Seeta has received 100 lakh and Geeta has received 150 lakh.

Geeta must have received 90 lakh from 3 flats. Out of the remaining 60 lakh, $4 \times 10 = 40$ lakh has been

contributed by the gold coins. Geeta must have received $150 - 90 - 40 = 20$ lakh from bank deposits. Therefore, 20 is the right answer.

Explanation [47 - 50]:

Odd numbered dorms need either moderate or extensive repair.

Even numbered dorms need either light or extensive repair.

Type of repair	Light	Moderate	Extensive
(Possible dorms)	2, 4, 6, 8, 10	1, 3, 5, 7, 9	1, 2, 4, 5, 7, 8, 10
Distribution	2 (1 crore) 1 (2 crore)	3 (3 crore) 1 (4 crore)	1 (5 crore) 2 (6 crore)
Dorm numbers (Definite)			

It has been given that dorms 4 to 9 all require different repairing costs. The dorms 3 and 9 should require moderate repair (going by the table). Dorm 7 costs the highest.

Therefore, dorm 7 should require 6 crores to repair. Dorm 8 requires the least cost to repair. Therefore, dorm 8 should cost 1 crore to repair. We can eliminate these dorm numbers from other 2 lists.

Type of repair	Light	Moderate	Extensive
(Possible dorms)	2, 4, 6, 10		2, 4, 10
Distribution	2 (1 crore) 1 (2 crore)	3 (3 crore) 1 (4 crore)	1 (5 crore) 2 (6 crore)
Dorm numbers (Definite)	8	1, 3, 5, 9	7

Dorms 4 to 9 cost different costs to repair. => Both dorms 5 and 9 cannot require the same cost of repair.

Dorms 1 and 3 should require 3 crores to repair.

Dorm 6 should require light repair (2 crores) since dorm 8 requires 1 crore to repair.

=> Dorm 4 requires 5 crore to repair.

Dorm	1	2	3	4	5	6	7	8	9	10
Cost	3	1 or 6	3	5	3 or 4	2	6	1	3 or 4	1 or 6

47.D

We can see that all options except option D are definitely true. Option D cannot be ascertained to be true. Dorm

10 can cost Rs. 1 crore or Rs. 6 crores to repair. Therefore, option D is the right answer.



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48.19

Cost = $3 + 3 + 6 + 3 + 4$ = Rs.19 crores. Therefore, 19 is the correct answer.

49.3

There are 3 dorms from 6 to 10 which are women's dorms.

It has been given that the cost of repairing the woman dorms add up to 20. Therefore, the distribution of the costs should be $6+6+5+3$.

Dorm 4 is the dorm whose number is below 5 but is a woman's dorm. Therefore, dorm 9 should cost Rs.3 crores

to repair. Dorm 8 cannot be a woman's dorm. Therefore, dorm 10 should be a woman's dorm and should cost

Rs. 6 crore to repair.

Dorm 9 will cost Rs.9 crore to repair and hence, 9 is the correct answer.

50.D

It has been given that the cost of repairing the woman dorms add up to 20. Therefore, the distribution of the costs should be $6+6+5+3$. Dorm 4 is the dorm whose number is below 5 but is a woman's dorm. Therefore, dorm 9 should cost Rs.3 crores

to repair. Dorm 8 cannot be a woman's dorm. Therefore, dorm 10 should be a woman's dorm and should cost Rs. 6 crore to repair.

Hence, Option D is the right answer.

Explanation [51 - 54]:

Now we are given that the lowest rating is an even number and only 2 cups got an even number rating.

Let's take cases:-

1. The lowest rating is 4

If the lowest rating is 4 then the other ratings will be in the range 5-10.

From this we need 4 odd and 1 even numbers.

This is not possible as there are only 3 odd numbers from 5-10.

Thus, the lowest rating is not 4.

2. The lowest rating is 2.

If the lowest rating in 4 then the other ratings will be in the range 5-10.

From this we need 4 odd and 1 even numbers.

This is possible when the odd ratings are 3,5,7 and 9.

We are given that the highest rating is not even. Thus, 10 rating is not possible.

We are also given that the rating of tea in Cup 3 was double the rating of the tea in Cup 5.

Thus, the rating of the tea in cup 3 is an even number.

Thus, the rating of the tea in cup 5 must be an odd number.

Only 1 such pair is possible of 3 and 6.

Thus, the tea in cup 2 got the rating of 2.

The tea in cup 3 got a rating of 6 and the tea in cup 5 got a rating of 3.

We are given that:-

Tea in Cup 3 got a higher rating than that in Cup 1.

Thus, the tea in cup 1 got a rating of 5.

Cup 6 contained tea from Himachal and the Tea from Ooty got the highest rating.

Thus, cup 6 got a rating of 7 and cup 4 got a rating of 9.

The table is as shown below:-

Cup no.	1	2	3	4	5	6
Rating	5	2	6	9	3	7
Place				Ooty		Himachal

51.7

Hence, 7 is the 2nd highest rating given.

52.4

Thus, 4 was the number of the cup that contained tea from Ooty.

53.B

If the tea from Munnar did not get the minimum rating then it must have got the 2 lowest rating as we know,

Assam>Wyanand>Munnar.

Thus, Wyanand must have got a rating of 5.



54.B

The table is as shown below:-

Cup no.	1	2	3	4	5	6
Rating	5	2	6	9	3	7
Place				Ooty		Himachal

It is given that the rating of Assam>Wayanad>Munnar

Hence, since Wayanad and Ooty are in consecutive cups, Wayanad can be either in cup number 3 or 5.

So Wayanad can only be in cup number 5, then Munnar will be in cup number 2. So Darjeeling and Assam can be in cup 1 and 3 in any order.

Hence B is a possibility.

55.C

Let us draw the diagram and mark position of various pieces as given in the question.

	a	b	c	d	e	f	g	h
8								
7								
6								
5			Queen				g5	
4								
3	a3						g3	
2			c2					
1							g1	

Attack line is shown by the yellow color. All the pieces on this line will be under attack.

	a	b	c	d	e	f	g	h
8								
7								
6								
5			Queen				g5	
4								
3	a3						g3	
2			c2					
1							g1	

From the diagram we can see that a3, g1, c2 and g5 are under attack. Hence, option C is the correct answer.

56.D

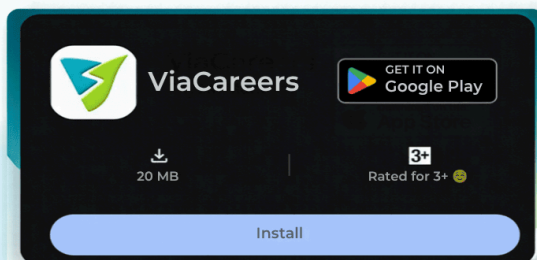
Option (a): When queen is at f8. In this case h8 and b4 will be under attack.

	a	b	c	d	e	f	g	h
8						(f8)		h8
7				d7				h7
6								
5								
4		b4						
3	a3							
2								
1	a1							

Option (b): When queen is at a7. In this case a3 and d7 will be under attack.

	a	b	c	d	e	f	g	h
8								h8
7	(a7)			d7				h7
6								
5								
4		b4						
3	a3							
2								
1	a1							

Option (c): When queen is at c1. In this case a1 and a3 will be under attack.



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	a	b	c	d	e	f	g	h
8								h8
7				d7				h7
6								
5								
4		b4						
3	a3							
2								
1	a1		(c1)					

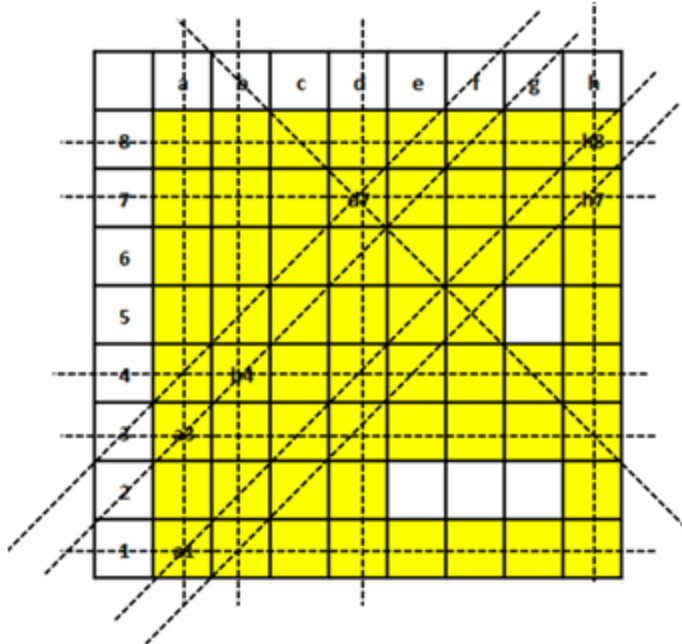
Option (d): When queen is at d3. In this case a3, d7 and h3 will be under attack.

	a	b	c	d	e	f	g	h
8								h8
7				d7				h7
6								
5								
4		b4						
3	a3			(d3)				
2								
1	a1							

Therefore, we can say that option D is the correct answer.

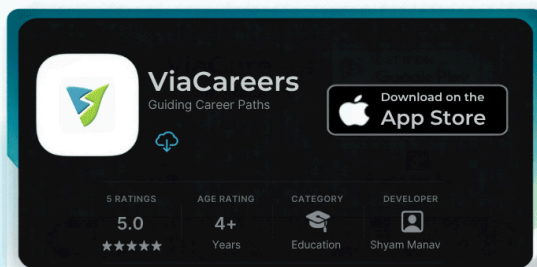
57.C

From the diagram we can see that except positions e2, f2, g2 and g5 queen can attack at least one among the given pieces.



Hence, we can say that there are exactly for position from where queen can't attack any of the given pieces.

Therefore, option C is the correct answer.

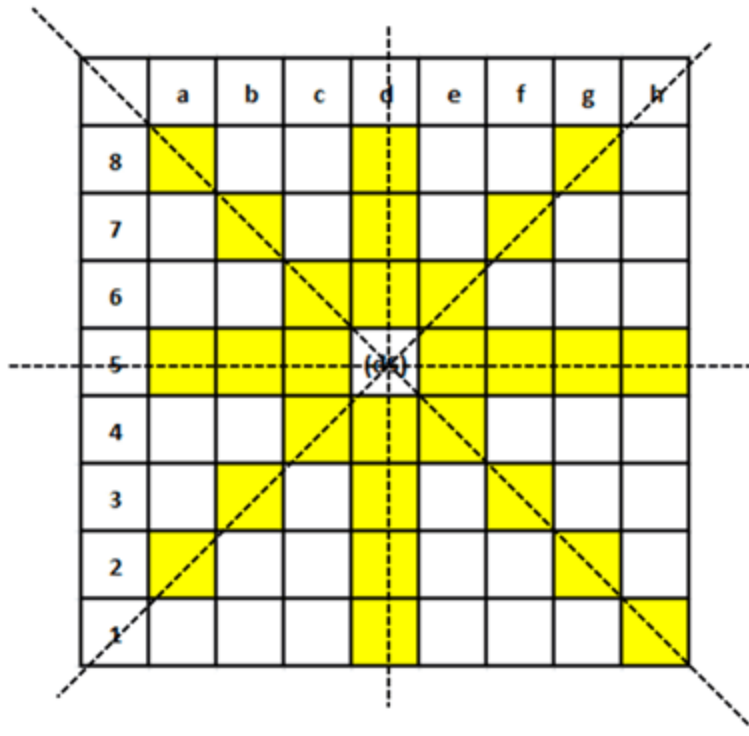


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58. C



From the diagram we can see that the number of positions those are safe from queen's attack = $6 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 36$. Therefore, option C is the correct answer.

Explanation [59 - 62]:

We are given that Jayanta, Ajit and Byomkesh were sitting in seats marked by the same letter, in consecutive rows in increasing order of row numbers; but all of them paid different amounts for their choices of seat.

Let us see how the friends are supposed to pay for the seats they choose:-

In row 1-1000

In row 2-10 - 300 for window and 500 for aisle

In row 11 - 200 for window and 400 for aisle

In row 12,13 - 1000

In row 14-20 - 200 for window and 400 for aisle

In row 21-30 - 0

Thus, As we can see 10, 11 and 12 are the only consecutive seats in which the amounts is different.

Thus, Jayanth, Ajit and Byomkesh sat in row 10, row 11 and row 12.

Manik sat beside Jayantha and thus Manik is also sitting in row 10.

Now we are given that 7 of the 8 friends paid a total of 4600 Rs.

Let's start with the cases:-

It is obvious that 5 friends cannot pay 1000 Rs for their seat because the amount will exceed 4600

Case 1:- 4 friends pay 1000 Rs each. Thus, the remaining friends will pay 600 Rs.

This is possible only when each of them pay 200 Rs.

So the case is- 1000×4 , 200×3

Case 2 :- 3 friends pay 1000 Rs each. Thus, the remaining friends will pay 1600 Rs.

There are 2 cases where this is possible:-

1000×3 , 500×2 , 400, 200

1000×3 , 400 $\times 4$

Case 3:- 2 friends pay 1000 Rs each. Thus, the remaining 5 friends will pay 2600 Rs.

This is not possible as each friend can pay a maximum of 500 Rs.

Thus, the possible cases are

1000×4 , 200×3

1000×3 , 500×2 , 400, 200

1000×3 , 400 $\times 4$

As there is no case in which a friend has to pay 300 Rs thus, Jayantha must be sitting in row 10 aisle seat.

Thus, Jayantha paid 500 Rs.

Thus, the case is:-

1000×3 , 500×2 , 400, 200

Thus, Manik must have also paid 500 sitting in row 10 aisle seat

Ajit must be sitting in row 11 aisle seat paying 400 Rs.

Byomyesh must be sitting row 12 aisle seat paying 1000 Rs.

Thus, among Gargi, Kikira, Pradosh and Tapes 2 must have paid 1000, 1 must have paid 200 and the remaining person must have paid nothing.

Now we know Gargi and Kikira are sitting adjacent to each other and thus, either both or none of them must have paid 1000 Rs.

Among Pradosh and Tapes a maximum of 1 person could have paid 1000 Rs.

Thus, the only possible case here is :-

Gargi and Kikira paid 1000 each.

Pradosh is sitting ahead of Tapesb and one of them paid 200 Rs.
 Since, both of them were sitting in seats marked by the same letter, in consecutive rows thus, the only possibility is Pradosh sitting in row 20 window seat and paying 200 and Tapesb sitting in row 21 paying nothing.

59.A

Thus, the amount paid by each friend is as shown below:

	Amount paid	Row-seat
Gargi	1000	1 or 13
Kikira	1000	1 or 13
Pradosh	200	20-W
Tapesb	0	21
Manik	500	10-A
Jayantha	500	10-A
Ajit	400	11-A
Byomyesh	1000	12-A

Manik is sitting in row 10.

60.C

Thus, the amount paid by each friend is as shown below:-
 Jayanta paid 500 for her choice of seat.



	Amount paid	Row-seat
Gargi	1000	1 or 13
Kikira	1000	1 or 13
Pradosh	200	20-W
Tapesh	0	21
Manik	500	10-A
Jayantha	500	10-A
Ajit	400	11-A
Byomyesh	1000	12-A

Jayanta paid 500 for her choice of seat.

61.D

Thus, the amount paid by each friend is as shown below:-

	Amount paid	Row-seat
Gargi	1000	1 or 13
Kikira	1000	1 or 13
Pradosh	200	20-W
Tapesh	0	21
Manik	500	10-A
Jayantha	500	10-A
Ajit	400	11-A
Byomyesh	1000	12-A

Gargi paid 1000 rs for her choice of seat

62.D

We are given that Jayanta, Ajit and Byomkesh were sitting in seats marked by the same letter, in consecutive rows in increasing order of row numbers; but all of them paid different amounts for their choices of seat.

Let us see how the friends are supposed to pay for the seats they choose:-

In row 1-1000

In row 2-10 - 300 for window and 500 for aisle

In row 11 - 200 for window and 400 for aisle

In row 12,13 - 1000

In row 14-20 - 200 for window and 400 for aisle

In row 21-30 - 0

Thus, As we can see 10, 11 and 12 are the only consecutive seats in which the amounts is different.

Thus, Jayanth, Ajit and Byomkesh sat in row 10, row 11 and row 12.

Manik sat beside Jayantha and thus Manik is also sitting in row 10.

Now we are given that 7 of the 8 friends paid a total of 4600 Rs.

Let's start with the cases:-

It is obvious that 5 friends cannot pay 1000 Rs for their seat because the amount will

exceed 4600

Case 1:- 4 friends pay 1000 Rs each. Thus, the remaining friends will pay 600 Rs.

This is possible only when each of them pay 200 Rs.

So the case is- $1000 \times 4, 200 \times 3$

Case 2 :- 3 friends pay 1000 Rs each. Thus, the remaining friends will pay 1600 Rs.

There are 2 cases where this is possible:-

$1000 \times 3, 500 \times 2, 400, 200$

$1000 \times 3, 400 \times 4$



Case 3:- 2 friends pay 1000 Rs each. Thus, the remaining 5 friends will pay 2600 Rs.

This is not possible as each friend can pay a maximum of 500 Rs.

Thus, the possible cases are

$1000 \times 4, 200 \times 3$

$1000 \times 3, 500 \times 2, 400, 200$

$1000 \times 3, 400 \times 4$

As there is no case in which a friend has to pay 300 Rs thus, Jayantha must be sitting in row 10 aisle seat.

Thus, Jayantha paid 500 Rs.

Thus, the case is:-

$1000 \times 3, 500 \times 2, 400, 200$

Thus, Manik must have also paid 500 sitting in row 10 aisle seat

Ajit must be sitting in row 11 aisle seat paying 400 Rs.

Byomyesh must be sitting row 12 aisle seat paying 1000 Rs.

Thus, among Gargi, Kikira, Pradosh and Tapes 2 must have paid 1000, 1 must have paid 200 and the remaining person must have paid nothing.

Now we know Gargi and Kikira are sitting adjacent to each other and thus, either both or none of them must

have paid 1000 Rs.

Among Pradosh and Tapeshe a maximum of 1 person could have paid 1000 Rs.

Thus, the only possible case here is :-

Gargi and Kikira paid 1000 each.

Pradosh is sitting ahead of Tapeshe and one of them paid 200 Rs.

Since, both of them were sitting in seats marked by the same letter, in consecutive rows thus, the only possibility is Pradosh sitting in row 20 window seat and paying 200 and Tapeshe sitting in row 21 paying nothing.

Thus, the amount paid by each friend is as shown below:-

	Amount paid	Row-seat
Gargi	1000	1 or 13
Kikira	1000	1 or 13
Pradosh	200	20-W
Tapeshe	0	21
Manik	500	10-A
Jayantha	500	10-A
Ajit	400	11-A
Byomyesh	1000	12-A

Tapeshe did not paid any amount.

63. 11

Let the original sequence be TIMRL

Two fingers can be out of place. This can be done if and only if two fingers interchange their position. These two can be selected in ${}^5C_2 = 10$ ways. In addition to these, the original sequence will also be accepted. Hence the total number of acceptable sequences = $10 + 1 = 11$

64.C

Input of the scanned sequence of five fingers is allowed to vary from the original sequence by one place for any of the fingers. This can be achieved only when two consecutive fingers are interchanged. Let the original sequence be TIMRL

Case 1: Only a set of two consecutive numbers are interchanged.

They can be selected in $5-1 = 4$ ways

Case 2: Two sets of two consecutive numbers are interchanged.

(i) TI are interchanged, $\Rightarrow$ (MR, RL) $\Rightarrow$ 2 ways

(ii) IM are interchanged $\Rightarrow$ (RL) $\Rightarrow$ 1 way

Total no of ways possible = $4 + 2 + 1 = 7$

Including the original sequence, we get the total number of allowed combinations as 8

65. 15

There can be two scans out of place.

TIMTRL is the original sequence.

If T is interchanged: There will be four ways: ITMTRL, MITTRL, RIMTTL, LIMTRT

If I is interchanged: There will be four ways

If M is interchanged: There will be three ways

If T is interchanged: There will be two ways

If R is interchanged: There will be one way

Total 14.

Another sequence allowed is original, So total 15 ways.



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66.C

1. If original sequence is given.

2. If either of LR, RL, LT, TI, IM is interchanged => 5 ways.
 3. If LR and LT and IM interchanged. The sequence will look like: RLTLMI
 4. If LR and LT are interchanged.
 5. If LR and TI are interchanged.
 6. If LR and IM are interchanged.
 7. If RL and TI are interchanged.
 8. If RL and IM are interchanged.
 9. If LT and IM are interchanged.
- Total 13 ways possible.

QUANT

67.3

According to the question each column, each row, and each of the two diagonals of the 3X3 matrix add up to the same value. This value must be 15.

Let us consider the matrix as shown below:

6		2

Now we'll try substituting values from 1 to 9 in the exact middle grid shown as 'x'. If $x = 1$ or 3, then the value in the left bottom grid will be more than 9 which is not possible. x cannot be equal to 2. If $x = 4$, value in the left bottom grid will be 9. But then addition of first column will come out to be more than 15.

Hence, not possible. If $x = 5$, we get the grid as shown below:

6	7	2
1	5	9
8	3	4

Hence, for $x = 5$ all conditions are satisfied. We see that the bottom middle entry is 3.

Hence, 3 is the correct answer.

68. 1900

By the time A traveled 10 KM, B traveled 9 KM

Hence $Speed_A : Speed_B = 10 : 9$

Similarly $Speed_B : Speed_C = 10 : 9$

Hence $Speed_A : Speed_B : Speed_C = 100 : 90 : 81$

Hence by the time A traveled 10 KMs, C should have traveled 8.1 KMs

So A beat C by 1.9 KMs = 1900 Mts



69. B

The ratio of milk and water in Bottle 1 is 7:2 and the ratio of milk and water in Bottle 2 is 9:4

Therefore, the proportion of milk in Bottle 1 is $\frac{7}{9}$ and the proportion of milk in Bottle 2 is $\frac{9}{13}$

Let the ratio in which they should be mixed be equal to X:1.

Hence, the total volume of milk is $\frac{7X}{9} + \frac{9}{13}$

The total volume of water is $\frac{2X}{9} + \frac{4}{13}$

They are in the ratio 3:1

Hence, $\frac{7X}{9} + \frac{9}{13} = 3 * (\frac{2X}{9} + \frac{4}{13})$

Therefore, $91X + 81 = 78X + 108$

Therefore $X = \frac{27}{13}$

70. C

Let the distance between the home and office be $2x$ miles

Time taken for going in the morning = $\frac{2x}{60}$ hrs

Time taken for going back in the evening = $\frac{x}{25} + \frac{x+5}{50}$ hrs

It is given that he took 30 minutes (0.5 hrs) more in the evening

Hence $\frac{2x}{60}$ hrs + 0.5 = $\frac{x}{25} + \frac{x+5}{50}$

Solving for x, we get x = 15 miles.

Total distance traveled = $2x + x + x + 5 = 4x + 5 = 65$ Miles

71. B



Let the total number of shirts be x . Hence number of non defective shirts = $x - 15\%$ of x
 $= 0.85x$

Number of shirts left for export = No of non defective shirts - number of shirts sold in domestic market

$=$ No of non defective shirts - 20% of No of non defective shirts

$= 80\%$ of No of non defective shirts

Hence $8840 = 0.8 * (0.85x)$. Solving for x we get, $x = 13000$

72.C

Let the average height of 22 toddlers be $3x$

Sum of the height of 22 toddlers = $66x$

Hence average height of the two toddlers who left the group = x

Sum of the height of the remaining 20 toddlers = $66x - 2x = 64x$

Average height of the remaining 20 toddlers = $64x/20 = 3.2x$

Difference = $0.2x = 2$ inches $\Rightarrow x = 10$ inches

Hence average height of the remaining 20 toddlers = $3.2x = 32$ inches

73.B

Let the manufacturing price of the table = x

Hence the price at which the wholesaler bought from the manufacturer = $1.1 \times x$

The price at which the retailer bought from the wholesaler = $1.3 \times 1.1 \times x$

The price at which the customer bought from the retailer = $1.5 \times 1.3 \times 1.1 \times x$

$1.5 \times 1.3 \times 1.1 \times x = 4290$

$\Rightarrow x = 2000$

74.A

Let the time taken by the outlet pipe to empty = x hours

$$\text{Then, } \frac{1}{8} - \frac{1}{x} = \frac{1}{10}$$

$$\Rightarrow x = 40$$

Hence time taken by the outlet pipe to make the tank half-full = $40/2 = 20$ hour

75.A

Let the number of dozens of candies he bought of each variety be x

$$\text{Hence total cost} = 12x + 15x = 27x$$

$$\text{Total selling price} = 16.50 \times 2x = 33x$$

$$\text{Profit} = 33x - 27x = 6x$$

$$\text{Given } 6x = 150 \Rightarrow x = 25$$

Hence he bought 50 dozens of candies in total

76.C

Let initial population and production be x,y and final population be z

Final production = 1.4y, final percapita = 1.27 times initial percapita

$$\Rightarrow \frac{1.4y}{z} = 1.27 \times \frac{y}{x}$$

$$\Rightarrow \frac{z}{x} = \frac{1.4}{1.27} \approx 1.10$$

Hence the percentage increase in population = 10%

77.C

$$a : b = 3:4 \text{ and } b : c = 2:1 \Rightarrow a:b:c = 3:4:2$$

$$\Rightarrow a = 3x, b = 4x, c = 2x$$

$$\Rightarrow a + b + c = 9x$$

$\Rightarrow a + b + c$ is a multiple of 9.

From the given options only, option C is a multiple of 9

78. **B**

Let the distance traveled by the car be x KMs

Distance traveled by the bike = 168 KMs

Speed of car is double the speed of bike

$$\Rightarrow \frac{x}{3:40-2:00} = 2 \times \frac{168}{3:40-1:00}$$

$$\Rightarrow \frac{x}{100} = 2 \times \frac{168}{160}$$

$$\Rightarrow x = 210$$

Hence the distance between A and B is $x + 168 = 378$ KMs

79. **A**

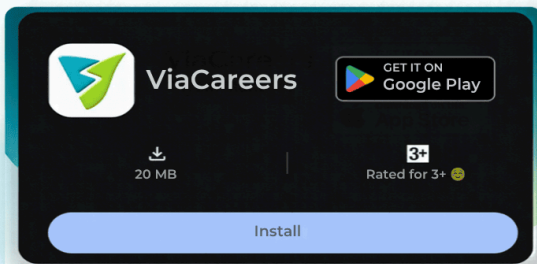
Let the time take by kamal to complete the task be x days.

$$\text{Hence we have } \frac{1}{10} + \frac{1}{8} + \frac{1}{x} = \frac{1}{4}$$

$$\Rightarrow x = 40 \text{ days.}$$

$$\text{Ratio of the work done by them} = \frac{1}{10} : \frac{1}{8} : \frac{1}{40} = 4 : 5 : 1$$

$$\text{Hence the wage earned by Kamal} = \frac{1}{10} \times 1000 = 100$$



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80. C

The proportion of water in the first mixture is $\frac{1}{3}$

The proportion of Liquid A in the first mixture is $\frac{2}{3}$

The proportion of water in the second mixture is $\frac{1}{4}$

The proportion of Liquid B in the second mixture is $\frac{3}{4}$

The proportion of water in the third mixture is $\frac{1}{5}$

The proportion of Liquid C in the third mixture is $\frac{4}{5}$

As they are mixed in the ratio 4:3:2, the final amount of water is $4 \times \frac{1}{3} + 3 \times \frac{1}{4} + 2 \times \frac{1}{5} = \frac{149}{60}$

The final amount of Liquid A in the mixture is $4 \times \frac{2}{3} = \frac{8}{3}$

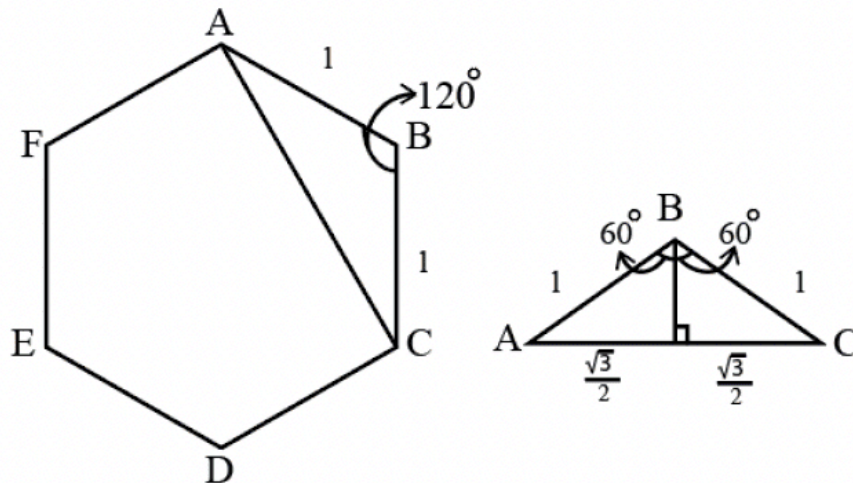
The final amount of Liquid B in the mixture is $3 \times \frac{3}{4} = \frac{9}{4}$

The final amount of Liquid C in the mixture is $2 \times \frac{4}{5} = \frac{8}{5}$

Hence, the ratio of Water : A : B : C in the final mixture is $\frac{149}{60} : \frac{8}{3} : \frac{9}{4} : \frac{8}{5} = 149 : 160 : 135 : 96$

From the given choices, only option C is correct.

81. D



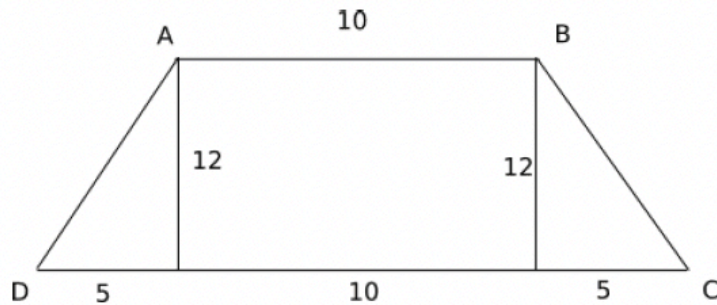
The length of the diagonals of a regular hexagon with side s are $\sqrt{3}s$.

Here length of $AC = \sqrt{3}s = \sqrt{3}$ cms

Hence area of the square = $\sqrt{3}^2 = 3$ sq cm

82. C

See the diagram below



$$\text{Length of side AD} = \sqrt{12^2 + 5^2} = 13$$

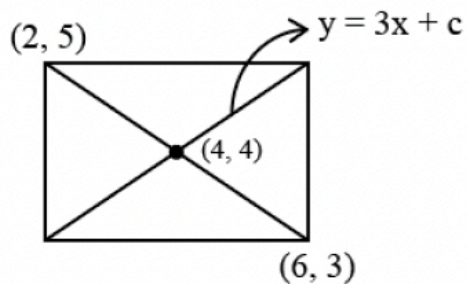
$$\text{Area of the trapezium} = 12 * (10 + 20)/2 = 180$$

$$\text{Perimeter of the trapezium} = 10 + 20 + 13 + 13 = 56$$

$$\text{Area of the sides of the pillar} = 56 * \text{height} = 56 * 20 = 1120.$$

$$\text{Total area of the pillar} = 1120 + \text{area of base} + \text{area of the top} = 1120 + 180 + 180 = 1480$$

83. D



The midpoint of one diagonal lies on the other diagonal.

$$\text{Midpoint is } ((2+6)/2, (5+3)/2) = (4, 4)$$

$$\text{Hence } 4 = 3 * 4 + c \Rightarrow c = -8$$

84.90

$\angle COD = 120 \Rightarrow \angle CAD = 120/2 = 60$ (The angle subtended by the chord DC at the major arc is half the angle subtended at the centre of the circle.)

$\angle BAC = 30$

$\angle BAD = \angle BAC + \angle CAD = 30 + 60 = 90.$

$\angle BCD = 180 - \angle BAD = 180 - 90 = 90$



85.200

Let the length and breadth of the park be $l, b, l > b$

Case 1: $2l + b = 400$

Area = lb . Area is maximum when $2l * b$ is maximum, which is maximum when $2l = b$ (using $AM \geq GM$ inequality) $\Rightarrow l = 100, b = 200$. Which can't happen since $l > b$

Case 2: $l + 2b = 400$

Area = lb . Area is maximum when $l * 2b$ is maximum, which is maximum when $l = 2b$ (using $AM \geq GM$ inequality) $\Rightarrow l = 200, b = 100$.

Hence length of the longer side is 200 ft

86.16

Let the length of non-hypotenuse sides of the right angled triangle be a . Then the hypotenuse $h = \sqrt{2}a$
 P is equidistant from all the side of the triangle. Hence P is the incenter and the perpendicular distance is the inradius.

In a right angled triangle, inradius = $\frac{a+b-h}{2}$

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

$$\Rightarrow \sqrt{2}a(\sqrt{2} - 1) = 8(\sqrt{2} - 1)$$

$$\Rightarrow a = 4\sqrt{2}$$

$$\text{Area of the triangle} = \frac{1}{2}a^2 = 16 \text{ sq cm}$$

87. D

$$(x - 1)x(x + 1) = 15600$$

$$\Rightarrow x^3 - x = 15600$$

The nearest cube to 15600 is $15625 = 25^3$

We can verify that $x = 25$ satisfies the equation above.

Hence the three numbers are 24, 25, 26. Sum of their squares = 1877

88. D

$$1 < \log_3 5 < 2$$

$$\Rightarrow 1 < \log_5(2 + x) < 2$$

$$\Rightarrow 5 < 2 + x < 25$$

$$\Rightarrow 3 < x < 23$$

89. C

$$f[f(g(1)) + g(f(1))]$$

$$= f[f(2^1) + g(1^2)]$$

$$= f[f(2) + g(1)]$$

$$= f[2^2 + 2^1]$$

$$= f(6)$$

$$= 6^2 = 36$$

90. C

Let the roots of the equation $x^2 + (a + 3)x - (a + 5) = 0$ be equal to p, q

Hence, $p + q = -(a + 3)$ and $p \times q = -(a + 5)$

$$\text{Therefore, } p^2 + q^2 = a^2 + 6a + 9 + 2a + 10 = a^2 + 8a + 19 = (a + 4)^2 + 3$$

As $(a + 4)^2$ is always non negative, the least value of the sum of squares is 3

91. A

It is given that $9^{x-\frac{1}{2}} - 2^{2x-2} = 4^x - 3^{2x-3}$

Let us try to reduce them to powers of 3 and 2

The given equation can be reduced to $3^{2x-1} + 3^{2x-3} = 2^{2x} + 2^{2x-2}$

Hence, $3^{2x-3} \times 10 = 2^{2x-2} \times 5$

Therefore, $3^{2x-3} = 2^{2x-3}$

This is possible only if $2x - 3 = 0$ or $x = 3/2$

92. 3

$$\log(2^a \times 3^b \times 5^c) = \frac{\log(2^2 \times 3^3 \times 5) + \log(2^6 \times 3 \times 5^7) + \log(2 \times 3^2 \times 5^4)}{3}$$

$$\log(2^a \times 3^b \times 5^c) = \frac{\log(2^{2+6+1} \times 3^{3+1+2} \times 5^{1+7+4})}{3}$$

$$\log(2^a \times 3^b \times 5^c) = \frac{\log(2^9 \times 3^6 \times 5^{12})}{3}$$

$$3\log(2^a \times 3^b \times 5^c) = \log(2^9 \times 3^6 \times 5^{12})$$

Hence, $3a = 9$ or $a = 3$

93. 51

Sum of the sequence of even numbers is $2a_3 + (2a_3 - 2) + (2a_3 - 4) + (2a_3 - 6) + (2a_3 - 8) = 450$

$$\Rightarrow 10a_3 - 20 = 450$$

$$\Rightarrow a_3 = 47$$

Hence $a_5 = 47 + 4 = 51$

94. 3

$$\frac{1}{a} + \frac{1}{b} = \frac{1}{9}$$

$$\Rightarrow ab = 9(a + b)$$

$$\Rightarrow ab - 9(a + b) = 0$$

$$\Rightarrow ab - 9(a + b) + 81 = 81$$

$$\Rightarrow (a - 9)(b - 9) = 81, a > b$$

Hence we have the following cases,

$$a - 9 = 81, b - 9 = 1 \Rightarrow (a, b) = (90, 10)$$

$$a - 9 = 27, b - 9 = 3 \Rightarrow (a, b) = (36, 12)$$

$$a - 9 = 9, b - 9 = 9 \Rightarrow (a, b) = (18, 18)$$

Hence there are three possible positive integral values of (a,b)

95.6

After Amal, Bimal and Kamal are given their minimum required pens, the pens left are $8 - (1 + 2 + 3) = 2$

Now these two pens have to be divided between three persons so that each person can get zero pens =

$${}^{2+3-1}C_{3-1} = {}^4C_2 = 6$$

96.50

For the number to be divisible by 6, the sum of the digits should be divisible by 3 and the units digit should be even. Hence we have the digits as

Case I: 2, 3, 4, 6

Now the units place can be filled in three ways (2,4,6), and the remaining three places can be filled in $3! = 6$

ways.

Hence total number of ways = $3 \times 6 = 18$

Case II: 0, 2, 3, 4

case II a: 0 is in the units place $\Rightarrow 3! = 6$ ways

case II b: 0 is not in the units place $\Rightarrow$ units place can be filled in 2 ways (2,4),

thousands place can be filled in 2

ways (remaining $3 - 0$) and remaining can be filled in $2! = 2$ ways. Hence total number of ways = $2 \times 2 \times 2 = 8$

Total number of ways in this case = $6 + 8 = 14$ ways.

Case III: 0, 2, 4, 6

case III a: 0 is in the units place $\Rightarrow 3! = 6$ ways

case II b: 0 is not in the units place $\Rightarrow$ units place can be filled in 3 ways (2,4,6),

thousands place can be filled in

2 ways (remaining $3 - 0$) and remaining can be filled in $2! = 2$ ways. Hence total number of ways = $3 \times 2 \times 2 = 12$

Total number of ways in this case = $6 + 12 = 18$ ways.

Hence the total number of ways = $18 + 14 + 18 = 50$ ways

97.1

$$f(1 * 1) = f(1)f(1)$$

$$\Rightarrow f(1) = f(1)f(1)$$

$$\Rightarrow f(1) = 0 \text{ or } f(1) = 1$$

Hence maximum value of $f(1)$ is 1



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98. D

$$|f(x) + g(x)| = |f(x)| + |g(x)| \text{ if and only if}$$

$$\text{case 1: } f(x) \geq 0 \text{ and } g(x) \geq 0$$

$$\Leftrightarrow 2x - 5 \geq 0 \text{ and } 7 - 2x \geq 0$$

$$\Leftrightarrow x \geq \frac{5}{2} \text{ and } \frac{7}{2} \geq x$$

$$\Leftrightarrow \frac{5}{2} \leq x \leq \frac{7}{2}$$

$$\text{case 2: } f(x) \leq 0 \text{ and } g(x) \leq 0$$

$$\Leftrightarrow 2x - 5 \leq 0 \text{ and } 7 - 2x \leq 0$$

$$\Leftrightarrow x \leq \frac{5}{2} \text{ and } \frac{7}{2} \leq x$$

So $x \leq 5/2$ and $x \geq 7/2$ which is not possible.

Hence, answer is

$$\Leftrightarrow \frac{5}{2} \leq x \leq \frac{7}{2}$$

99. C

Let the common ratio of the G.P. be r .

Hence we have $a_n = 3(a_{n+1} + a_{n+2} + \dots)$

The sum up to infinity of GP is given by $\frac{a}{1-r}$ where a here is a_{n+1}

$$\Rightarrow a_n = 3\left(\frac{a_{n+1}}{1-r}\right)$$

$$\Rightarrow a_n = 3\left(\frac{a_n \times r}{1-r}\right)$$

$$\Rightarrow r = \frac{1}{4}$$

Now, $a_1 + a_2 + a_3 + \dots = 32$

$$\Rightarrow \frac{a_1}{1-r} = 32$$

$$\Rightarrow \frac{a_1}{3/4} = 32$$

$$\Rightarrow a_1 = 24$$

$$a_5 = a_1 \times r^4$$

$$a_5 = 24 \times (1/4)^4 = \frac{3}{32}$$

100. A

$$a_{100} = \frac{1}{(3 \times 100 - 1) \times (3 \times 100 + 2)} = \frac{1}{299 \times 302}$$

$$\frac{1}{2 \times 5} = \frac{1}{3} \times \left(\frac{1}{2} - \frac{1}{5}\right)$$

$$\frac{1}{5 \times 8} = \frac{1}{3} \times \left(\frac{1}{5} - \frac{1}{8}\right)$$

$$\frac{1}{8 \times 11} = \frac{1}{3} \times \left(\frac{1}{8} - \frac{1}{11}\right)$$

....

$$\frac{1}{299 \times 302} = \frac{1}{3} \times \left(\frac{1}{299} - \frac{1}{302}\right)$$

$$\text{Hence } a_1 + a_2 + a_3 + \dots + a_{100} = \frac{1}{3} \times \left(\frac{1}{2} - \frac{1}{5}\right) + \frac{1}{3} \times \left(\frac{1}{5} - \frac{1}{8}\right) + \frac{1}{3} \times \left(\frac{1}{8} - \frac{1}{11}\right) + \dots + \frac{1}{3} \times \left(\frac{1}{299} - \frac{1}{302}\right)$$

$$= \frac{1}{3} \times \left(\frac{1}{2} - \frac{1}{302}\right)$$

$$= \frac{25}{151}$$