GMAT

Sample Question Paper -Solutions

-Verbal Solutions-

Answer 1

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Tenses, Subject Verb Agreement, Subjunctive Mood	There are two hints in the given sentence. One of them is the underlined verb "undergoes" and the other is the subjunctive construction "require that". Using these two hints, you can find out that the sentence is testing you on Subject Verb Agreement or Subjunctive Tenses.	Option A: Though this option follows Subject verb Agreement, it doesn't follow the subjunctive mood construction. **Option B: Right answer** Option C: Too wordy a construction and it doesn't follow the subjunctive mood. Option D: Unnecessary usage of the continuous construction; the word "that" is missing. Option E: Unnecessary usage of the modal auxiliary "have to"; the word "that" is missing. **Answer: B**	Medium

Answer 2

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
It is a Main Theme Question: It asks you to find out the main idea of the passage	Here the first and the last paragraph summaries do not match. While the first paragraph focuses on the future of AGI, the last paragraph lays stress on the divide between the progressive and the ethical scientists. In such a case the first paragraph becomes background paragraph and the important lines to mark the answer then are the second paragraph, first sentence and the last sentence. these important sentences in the presented passage are pointing out that the Progressive Scientists have not been serious about the questions raised by ethical scientists seriously	Option A: Not given in the passage Option B:Not given in the passage Option C: Not given in the passage **Option D: This is exactly what the important lines suggest** Option E: Not given in the passage **Answer: D**	Difficult

Answer 3

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
It is a Referential question as the question is asking you to understand specific details that would be given in a certain lines of the passage	For referential questions, one needs to only read the specific lines that the question points to The sentence that the quote in the question refers to is: The progressive scientists have maintained a cavalier attitude towards the fear expressed by the ethical scientists and have dismissed it as the fear of "unknown"	Option A: This is not referred by the quote in passage **Option B: Restates the sentence referred by the quote in the passage** Option C:This is not referred by the quote in passage Option D: This is not referred by the quote in passage Option E: This is not referred by the quote in passage **Answer: B**	Difficult

Answer 4

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
It is a Referential question as the question is asking you to understand specific details that would be given in a certain lines of the passage	For referential questions, one needs to only read the specific lines that the question points to The sentence that the quote in the question refers to are: "They realize little that this doubt stems out, not from what is unseen but out of what exists." And "Given how catastrophic the consequences could be, the disdain with which the Ethical Scientists view the future of AGI is not all that far from truth."	Option A: Not mentioned in the passage Option B:This idea is opposite to what is mentioned in the passage **Option C: Restatement of lines referred by the question** Option D: The author claims the opposite Option E: Though mentioned in the passage but does not pertain to the question **Answer: C**	Easy

Answer 5

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
It is a Referential question as the question is asking you to understand specific details that would be given in a certain lines of the passage	The question here asks for the attitude of Progressive Scientists towards Ethical Scientists Which are in the following lines from the passage: "The Progressive Scientists have maintained a cavalier attitude towards the fear expressed……They realize little that this doubt stems out, not from what is unseen but out of what exists… Given how catastrophic the consequences could be, the disdain with which the Ethical scientists view the future of AGI does not seem misplaced. So, the attitude of the Progressive Scientists is negative towards Ethical Scientists"	Option A: Negative tone but Too strong to match the tone of the Progressive Scientists Option B: Opposite to the feelings expressed in the lines **Option C: words that reflect the feeling expressed by the words "cavalier" and "realize little"** Option D: Both the words don't match the tone used by the author Option E: Both the words don't match the tone used by the author **Answer: C**	Easy

Answer 6

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Tenses, Usage of Pronouns	The hint in this sentence is the underlined verb "reduced". Since this verb has different forms all throughout the sentence and since all of them are in different tenses, we can conclude that the concept tested is tenses.	Option A: Inappropriate usage of the simple past tense as the action is happening after a specific event in the past. The usage of present perfect tense is appropriate. Option B: Inappropriate usage of the past perfect tense as the action is happening after a specific event in the past. The usage of present perfect tense is appropriate. **Option C: Right Answer** Option D: No usage of present perfect tense. Option E: No usage of present perfect tense. **Answer: C**	Difficult

Answer 7

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
The wording of the question which reads, "casts the most doubt on the effectiveness of the solution proposed" tells us that this is a weaken question	Formulating the answer A cursory reading of the question stimulus tell us that the stimulus follows the planning pattern, which is described below. Planning Pattern: In the planning pattern one will find the question stimulus framed in the following manner. First a problem will be stated. Then the author of the argument proposes a plan which if implemented will solve the problem. Because the author has proposed the plan. He is not able to find anything wrong with his plan. So he assumes that No problems with the plan. In order to weaken the argument, the test taker is supposed to find a problem with the plan.	**Option A: The option is clearly highlighting a problem in the plan because if the customers believe that the lower the cholesterol content, the less satisfactory the taste is. Then it is highly unlikely that the plan stated by the author will be successful.** Option B: The option states that market for oils is shrinking but the argument is all about market share. And it is an open secret that the market may shrink but the market share may still increase. Option C: We don't know how many months of campaigning is needed for the market share to increase. Option D: What happened in other markets does not give us any indication about what will happen in the market under consideration. Option E: What happened in other markets does not give us any indication about what will happen in the market under consideration. **Answer: A**	Medium

Answer 8

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
The question, "which of the following if true, most seriously weakens the conclusion ? " indicate that the question is a Weaken question	Our first item of business is to identify the conclusion of the argument and then look for gaps between the conclusion and the premises. In the middle of the argument we see the word, "since." "Since" is a type of conclusion tag, but it attaches itself to a premise immediately next to the conclusion. Order is crucial. Thus, if we see the phrase "Since A, then B", A is a premise supporting the conclusion, B. If we see the phrase "A, since B", A is now the conclusion, and B is a premise undergirding that conclusion. In this particular problem, the phrase, "Since sodium can be metabolized in the average person's body at a rate of 0.018 BAC (or 'blood alcohol content') per hour" is a conclusion supporting the conclusion, "individual with a BAC of 0.18 should be symptom-free after 12 hours." The gap between the premise and the conclusion is glaring. Notice that the premise talks about an "average person's body", and then the conclusion focusing on a specific, if unnamed, individual. Naturally, a specific individual is not necessarily "average." The Test maker is hoping that we miss this disconnect.	Option A: Answer choice "A" reinforces the last sentence in the body of the question, by stating that sodium-like symptoms can be caused by other things, such as prescription drugs or drowsiness. In a small way, answer choice "A" actually strengthens the argument. Don't be confused by Strengthen answers when dealing with Weaken questions. Option B: Answer choice "B" is completely irrelevant. The question deals with the effects of certain levels of blood sodium content, not with how those levels were reached. How many drinks a certain person consumed to reach a given level is not pertinent to the problem. Answer choice "B" attempts to hijack the question. Option C: Answer choice "C" is equally irrelevant. The question focuses on the short-term effects of sodium, not on long-term medical issues. (Notice the problem asserts that a severely intoxicated individual would not have symptoms "similar" to the ones mentioned in the opening sentence of the question. All of these symptoms are short-term. Other symptoms – while potentially egregious – are irrelevant to the question.) "C" fails to focus on the logical gap between an "average" individual and a specific individual. **Option D: Answer choice "D" tells us that the metabolization rate of sodium varies from person to person, highlighting**	Medium

the gap between an "average" person and a specific individual. It indicates that there are factors which could allow sodium to remain in the bloodstream for longer than "average." Answer choice "D" weakens the conclusion and is correct.

Option E: Answer choice "E" is also irrelevant and outside the scope of the question. The problem focuses on whether a "severely intoxicated individual with a BSC of 0.18" could experience sodium-caused symptoms after 12 hours. The potential existence of individuals incapable of reaching this limit is outside the scope of the problem.

Answer: D

Answer 9

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Subject Verb Agreement, Pronouns	The underlined verb "allow" and the fact that it oscillates between the singular and plural forms indicates that the question tests Subject Verb Agreement.	A: Inappropriate usage of the verb "allow" to match with the subject "design" B: Inappropriate usage of the verb "allow" to match with the subject "design"; Also the pronoun "its" doesn't refer to the antecedent properly. **C: Right answer** D: The pronoun "it" doesn't refer to the antecedent properly. E: The pronoun "it" doesn't refer to the antecedent properly. **Answer: C**	Medium

Answer 10

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Subject Verb Agreement	Both the subject "Users" and the verb "use" in this sentence are underlined. The only error that can be tested in such a case is Subject Verb Agreement.	**Option A: Right Answer** Option B: Subject "users" doesn't match with the verb "uses" Option C: Passive Construction not required Option D: Subject "users" doesn't match with the verb "uses" Option E: Passive Construction not required **Answer: A**	Easy

Answer 11

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Comparison, Subject verb Agreement	The indication in this sentence is the phrase "is less than". This tells us that the concept that is tested is Comparison.	Option A: Comparison Error. 'The number of people' is compared to 'cancer'. Also, 'the number of people' is singular but 'are' is plural. Option B: Incorrect usage of the comparative adjective 'fewer'. Also, 'the number of people' is singular but 'are' is plural. Option C: Comparison Error. 'The number of people' is compared to 'people'. Option D: Comparison Error. 'The number of people' is compared to 'people'. **Option E: Correct Answer.** **Answer: E**	Easy

Answer 12

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
It is a Main Theme Question: It asks you to find out the main idea of the passage	Here the first and the last paragraph summaries match. In such a case the first paragraph becomes important and the main theme can be derived from the first and the last sentence of the first paragraph these important sentences in the presented passage are pointing out that the US polity is so unique that it cannot be penned into a theory	Option A: though the author says that Americans can't ask others to adopt theory of their nation. The tone contained in the word "criticize" is too strong for what author says Option B: not stated Option C: not stated Option D: The passage never mentions anything about the difficulties faced by the nation **Option E: restates the meaning of the important lines** **Answer: E**	Medium

Answer 13

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
It is a Referential question as the question is asking you to understand specific details that would be given in a certain lines of the passage	As the lines refer to specific lines, we need to understand them The lines referred in the question are: "We have not been much interested in the "grammar" of politics; we have been more interested in the way it works rather than in the theory behind it." So the lines state that America has been interested in workings of politics rather than the theory of it. The word grammar is quoted to emphasize the movement against it	Option A: the word grammar indeed refers to the philosophy Option B: not mentioned **Option C: meaning asserted in the lines** Option D: not mentioned Option E: not mentioned **Answer: C**	Medium

Answer 14

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
The question, "The argument relies on assuming which one of the following" indicate that the question is assumption question	Whenever we hit these kinds of assumption questions, we need to look for something that the argument relies on to reach its conclusion. So, here in the argument we are talking about dark chocolate and milk chocolate. The author is saying that dark chocolate is more expensive than milk chocolate. The author's conclusion is that the price difference cannot be accounted for by the greater cost of providing dark chocolate to the chocolate lover. The author's support is that the process by which chocolates are processed is fairly simple and not very costly. The gap noticed is that the author talks about something fairly narrow or talks about 1 aspect... the process of making the chocolate. But then the conclusion talks about "cost of providing dark chocolate to the chocolate lover." you see the shift? The author's evidence only consists of turning regular milk chocolate to dark but perhaps there are other reasons for the greater cost such as location where chocolate is made/type of chocolate, packing, logistics, and etc.	Option A: This is stated in the argument's conclusion. Hence, this is not an assumption. Option B: Difference in production cost can as much account for price difference. Also, this is not an assumption. Option C: The level of competition is not assumed in the argument. Option D: This is irrelevant to the argument at hand. **Option E: The author of the argument is only taking processing cost into consideration hence he assumes that there is no difference in the cost of raw material of the two chocolate types. Also, if we negate this assumption, the conclusion will get demolished.** **Answer: E**	Medium

Answer 15

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
The question, "Which of the following would be the most useful to establish in evaluating the recommendation" indicate that the question is Evaluate the argument question	Whenever we hit these kinds of assumption questions, we need to look for something that the argument relies on to reach its conclusion. Once you've eliminated the impossible, whatever remains, however improbable, must be the truth. The core of the consultant's argument is: branching into this new sector will bring new profits, profits to replace what was lost in the commercial cleaning equipment sector.	Option A: Raises a different question, profits from a third sector not mentioned. This might offer yet another alternative, but it's not directly relevant to the question: will entering the upright drive-belt suction technology sector replace former profits? Option B: might appear to be relevant to the question of profits, but suppose we knew the precise answer to this — suppose we knew, say, that each firm had five cleaners and each upright drive-belt suction technology center had three cleaners. Then what? How many firms overall are there? How many upright drive-belt suction technology centers overall are there? We don't know, so we can't evaluate the question of total profits. Option C: is an interesting distractor. Whatever a vacuum cleaner may clean, it probably has something to do with space. Are these cleaners cleaning ambient space in the room, or are they cleaning some particular internal channel within the firm? We don't know, and even if we did, we would still be a long way off from deciding anything about profits. Option **D: The credited answer is. Whether branching into this new upright drive-belt suction technology sector indeed will reproduce the former profits.** Option E: Choice (E), like Choice (A), offers another option, another avenue that Clear-space might decide to follow instead of, or in addition to, the consultant's recommendation. The task here, though, quite specifically, is to evaluate the consultant's recommendation. How successful another avenue would be tells us nothing about how successful the plan recommended by the consultant would be. **Answer: D**	Medium

Answer 16

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
The wordings of the question especially, "vulnerable to criticism" tells us that this a flaw question.	Whenever we hit these kinds of assumption questions, we need to look for something that the argument relies on to reach its conclusion. Once you've eliminated the impossible, whatever remains, however improbable, must be the truth. The core of the consultant's argument is: branching into this new sector will bring new profits, profits to replace what was lost in the commercial cleaning equipment sector. This question, like many CR questions, has answer choices that are worded in such a way as to seem valid when actually they are not. So possibly more important than understanding the specific explanation to this question is noting the pitfalls and developing an approach to handling CR questions such that you will not be fooled and will find right answers.	Option A: It simply doesn't take into account the existence of potential counter premise. This is tempting, because there is counter premise, but you need to be careful here. The counter evidence is not ignored. Rather it is deemed falsified. Option B: It generalizes from one of its kind occurrences. This is interesting, because in its twisted way the argument uses atypical cases to prove its point, but it does not generalize from them. It merely uses them as "evidence". **Option C: It presumes what it seeks to establish. This is it. The argument presupposes that Cary cannot write poems of superior quality, and then uses that argument as a way of nullifying evidence that weakens the argument.** Option D: It depends on the judgment of specialists in a matter where their specialty is irrelevant. Option E: It infers limits on ability from a few isolated lapses in performance. Actually it infers limits on ability from the majority of observed instances, and further infers limits on ability from a few isolated cases of superior performance. Once again you need to be careful to notice exactly what is being said. Yes there are isolated cases, but they are not cases of lapses in performance. There is no discussion of the judgment of specialists or the relevance of anyone's specialty. **Answer: C**	Difficult

Answer 17

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Comparison	The key word "unlike" is an indication that the question tests you on Comparison. The moment we know that it is a comparison question, the immediate step to be done is to check whether the entities compared are parallel.	Option A: Comparison Error. 'Opinion' is compared to 'Arthur Ashkin'. Option B: Comparison Error. 'Opinions' are compared to 'Arthur Ashkin'. Option C: Comparison Error. 'Peers' opinions' are compared to 'Arthur Ashkin'. **Option D: Correct Answer.** Option E : Changes the intended meaning of the sentence due to usage of the conjunction "with" **Answer: D**	Medium

Answer 18

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Parallelism, Idioms	The indicator in the question is the use of the correlative conjunction "not only … but also". As a rule the parts of speech after the correlative conjunctions have to be parallel and hence the check for parallelism begins.	Option A: Parallelism Error. The elements, 'support', 'create' and 'had covered' are not parallel. Also, the pronoun 'their' has ambiguous antecedents. Option B: Parallelism Error. The components of 'not only' (supported, created and covered) are not parallel to the components of 'but also' (cause). **Option C: Correct Answer.** Option D: Using 'Supported' as a common verb for all the components of 'not only' and 'but also' is inappropriate. Also, the pronoun 'they' has ambiguous antecedents. Option E: Incorrect usage of 'not only' and 'at the same time' **Answer: C**	Medium

Answer 19

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Comparison, Pronouns	The indication here is the phrase "faster than" - This means that something was faster than something else and hence immediately leads to the comparison check.	Option A: Comparison Error. 'Population' is compared to 'China, Brazil or Russia'. Option B: 'The Indian population' is compared to the pronoun 'those', which is plural, but 'population' is singular. Option C: Comparison Error. 'Population' is compared to the people of China, Brazil or Russia. Option D: 'Population' shows that the three countries have a common population. This changes the meaning of the sentence. **Option E: Correct Answer.** **Answer: E**	Medium

Answer 20

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
The phrase, "Which of the following, if true, most strengthen the argument" indicate that the question is Strengthen question	Whenever we hit these kinds of strengthen questions, we need to find the missing link first. Then we have to choose an option which takes care of this missing link and also helps strengthening the argument.

Given argument simply says that because these industries have switched from non-renewable energy sources to renewable energy sources, the consumption of non-renewable energy sources is reduced.

The missing link: The argument considers that industries are the ONLY places where non-renewable energy sources is used. | Option A.: In an indirect way, this option slightly weakens rather than strengthens the argument. For if non-renewable energy sources are used to produce the electricity now used by the industries and if it is because of these newer technologies that output has increased, the argument's conclusion is less likely.

Option B: It does not matter how much non-renewable energy sources was used to manufacture the older technologies originally. That has no bearing on whether more non-renewable energy sources would have been expended as a result of the continued operation of the industries if the partial switch to newer technologies had not occurred.

Option C: This is what we would expect, but it in no way strengthens the argument.

Option D: This may seem to weaken the argument by indicating that the switch from older technologies will have less of an impact on non-renewable energy sources consumption by these industries than we might have assumed. But since the conclusion makes no claim about how much consumption has been reduced, it is not clear that this option has any bearing on the strength of the argument one way or the other.

Option E: Which deals with a clear issue in the argument, the assumption that the generation of the electricity used by the new technologies requires less non-renewable energy source than was used by the older technologies. This is the option that most strengthens the argument.

Answer: E | Difficult |

Answer 21

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
The phrase, "Which of the following is an assumption " indicate that the question is assumption question	Our first item of business is to identify the conclusion of the argument and then look for gaps between the conclusion and the premises. Situation: Most of the employees of the Power Corporation work in the designing division, where employees average 15 hours per month in overtime. The average amount of overtime per month for employees at Power corporation does not fluctuate much from month to month. Reasoning: What is the argument's greatest weakness? The argument's conclusion is that almost certainly each month most of the employees of Power corporation work at least some overtime.	**Option A: If none of the participants who said their own behavior was fair would have judged someone else's similar behavior as unfair, then their relaxed moral judgment of themselves would not suggest that they applied weaker moral standards to themselves than to others.** Option B: Even if this is so, the experimental results could still suggest that the persons would apply weaker moral standards to themselves than to others. Option C: The argument would be equally strong even if persons who were assigned the unfamiliar task did not know that someone else had gotten a familiar task—or even if no people were actually assigned the unfamiliar task at all. Option D: Even if the moral standards applied by the persons who judged themselves were as accurate as those applied by the people to whom the scenario was described, the former standards were still weaker. Option E. Even if all the participants in the first group had felt that all the choices available to them would have been fair for them to make personally, they might have applied stricter moral standards to someone else in the same position. **Answer: A**	Difficult

Answer 22

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
The phrase, "on which of these grounds is the debater's argument most vulnerable to criticism" indicate that the question is a flaw question	Situation: Most of the employees of the Power Corporation work in the designing division, where employees average 15 hours per month in overtime. The average amount of overtime per month for employees at Power corporation does not fluctuate much from month to month. Reasoning: What is the argument's greatest weakness? The argument's conclusion is that almost certainly each month most of the employees of Power corporation work at least some overtime.	Option A: The argument leaves open the possibility that in some divisions of the corporation, the average monthly overtime of its employees is quite different from 15 hours, even if (as the argument states) that average does not change much from month to month. Option B: The argument does not assume that there is a monthly amount of overtime worked by each employee of the designing division equivalent to the company-wide average monthly overtime per employee. Option C: This does not identify a weakness that can be detected in the argument. Since the claims mentioned here are not specified, the passage provides no evidence that clearly indicates that this type of confusion is playing a role in the argument. **Option D: The argument ignores the possibility that most of the employees of Power Corporation work no overtime at all in a particular month—which is quite consistent with the argument's assertion that the average number of monthly overtime hours per employee within the designing division is 15**. Option E: The possibility described by this is not overlooked by the argument, because this possibility is consistent with the conclusion. It could easily be that most employees of the corporation work some overtime each month—as the conclusion envisions—but that there are always some employees who do not work any overtime **Answer: D**	Difficult

Answer 23

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
It is a Main Theme Question: It asks you to find out the main idea of the passage	Here the first and the last paragraph summaries do not match. While the first paragraph focuses on the top-bottom approach, the last looks an approach that combines top-down and bottom-up approach In such a case the first paragraph becomes background paragraph and the important lines to mark the answer then are the second paragraph, first sentence and the last sentence these important sentences in the presented passage are pointing out that the these important sentences in the presented passage are pointing out that though top-bottom approach worked in the past, now we need to look at something that can stand the technical challenges.	Option A: Explains why self-assembly is the best approach to make integrated circuits: The tone expressed by "best" is too strong to be true. Option B: Explains how the "top-bottom" approach is better than the "bottom-up approach": opposite of what the passage indicates Option C: Shows how the "bottom-up" and the "top-bottom approach" can both complement and hinder development of nano-scaling techniques: not mentioned in the passage Option D: discusses how "top-bottom approach" has been discarded because of the new approach: The third paragraph states a combination of top- bottom and self- assembly method would be used in the future so, the top-bottom approach is not yet discarded **Option E: Reasons that future necessitates an innovative approach: Mentioned in the first sentence of the second paragraph** **Answer: E**	Difficult

Answer 24

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
It is a Referential question as the question is asking you to understand specific details that would be given in a certain lines of the passage	As it is a referential question, we need to go back to the relevant lines in the passage. They are: "But as we get to ever-smaller dimensions, new approaches to building nano-scaled devices will be required."	Option A: not mentioned Option B: not mentioned Option C: the word only negates this option **Option D: Stated in the lines given in the passage** Option E: the word "tedious" is not implied the passage. In fact, this kind of comparison is never drawn in the passage **Answer: D**	Medium

Answer 25

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
It is a Referential question as the question is asking you to understand specific details that would be given in a certain lines of the passage	As it is a referential question, we need to go back to the relevant lines in the passage. They are: Think of it as water splashing onto a pane of glass… The more precisely we can direct this self-assembly, the more versatility we can achieve.	Option A: The example is taken to illustrate the combined method **Option B: The example is used to explain this so, it is the right answer** Option C: The example is taken to illustrate the combined method Option D: bottom-up approach is never questioned Option E: The example does not evaluate the approach it is only an example. **Answer: B**	Difficult

Answer 26

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
This is a structure question	To answer this question, one must look at the way the first paragraph is linked with the other passage. Linking word that links the first paragraph to the others should express this link. The linking word that connects the first and the second paragraph is: "But as we get to ever-smaller dimensions, new approaches to building nano-scaled devices will be required"	Option A: no such parameters are set Option B: No problems get highlighted in the first paragraph **Option C: this is the link that the relevant line indicates.** Option D: No such admiration is stated by the author Option E: "opposition" is never mentioned **Answer: C**	Difficult

Answer 27

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
It is a big picture question. Title of a passage is linked the main theme of the passage	Here the first and the last paragraph summaries do not match. While the first paragraph focuses on the top-bottom approach, the last looks an approach that combines top-down and bottom-up approach In such a case the first paragraph becomes background paragraph and the important lines to mark the answer then are the second paragraph, first sentence and the last sentence these important sentences in the presented passage are pointing out that though top-bottom approach worked in the past, now we need to look at something that can stand the technical challenges.	Option A: This is never discussed in the passage. We do look at how the technique of making them has developed but that too is background information

Option B: Pointing out limited usefulness of the "top-down" process: This is never undertaken by the passage

Option C: Detailed study of transistors: not mentioned

Option D: At the threshold of new approach: this is what the second paragraph, first sentence indicates

Option E : How top-bottom approach works: This is mentioned but top-bottom is quoted in the first paragraph which is only a background paragraph and hence cannot give the main theme.

Answer: D | Difficult |

Answer 28

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Idioms and Tenses	The indicator is the usage of the phrase "both X and Y". This means both X and Y are parallel.	Option A: Inappropriate usage of "both…as well as…" Option B: Not parallel between both X and Y Option C: Sentence fragment **Option D: Right answer** Option E: Inappropriate usage of "both…as well as…" **Answer: D**	Medium

Answer 29

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Comparison	The indicator "as" is an indicator for comparison. Hence the entities compared are to be parallel to each other.	Option A: Inappropriate usage of "as" to compare nouns. Option B: Inappropriate usage of "as" to compare nouns. Option C: Inappropriate usage of "as" to compare nouns. Option D: Not parallel due to the usage of "in" **Option E: Right answer** **Answer: E**	Easy

Answer 30

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Modifier, Subject Verb Agreement & Comparison	The phrase at the beginning of the sentence is a clear indication of the fact that the concept tested is "Modifiers". Also, since the use of the word "like" is present, we would need to start checking for the entities compared.	Option A: Modifier Error & Pronoun Agreement Errors- The modifying phrase, "Almost like clones in their similarity to one another' incorrectly modifies the "penguin species homogeneity". The penguin species and not the homogeneity of the penguin species are similar to one another. Incorrect usage of the pronoun "them"; Option B: The Modifier Error is corrected. However, the option gives rise to a new error. The species cannot be vulnerable to disease; the penguins themselves are vulnerable to disease. Option C: Modifier error- The penguin species and not the homogeneity of the penguin species are similar to one another Option D: Modifier Error- The penguin species and not the homogeneity of the penguin species are similar to one another **Option E: Correct answer. Members of the penguin species are… The modifying phrase is changed to a clause…Adheres to the rules of Subject Verb Agreement & Pronoun Agreement.** **Answer: E**	Difficult

Answer 31

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
The phrase, "Which of the following, if true, most strengthens the argument" indicate that the question is strengthen question	Situation: seal fish population declined even though there were no signs of disease or malnutrition. T e local otter population also declined. Whales eat seal fishes when otters are unavailable, and thus are probably the cause of the decline in the seal fish population. Reasoning: What would be evidence that predation by Whales reduced the seal fish population? Disease and malnutrition are ruled out as alternative explanations of the decline in the seal fish population. The argument could be further strengthened by casting doubt on other possible explanations, such as predation by other animals, or by presenting observations that predation of seal fish by whales would help to explain.	Option A: Regardless of whether or not whales ate the seal fishes, the sea urchin population would most likely have increased when the population of seal fishes preying on them decreased. Option B: Because the otter population declined during the initial years of the seal fish population decline, predation by and competition with otters were already implausible explanations of the otter population decline. **Option C: whales eating most of the accessible seal fish could plausibly explain this observation, which therefore provides additional evidence that whale predation reduced the seal fish population.** Option D: If the whale population declined at the same time as the seal fish population, it would be less likely that increasing predation by whales reduced the seal fish population. Option E: Since the seal fish showed no signs of malnutrition, they were probably getting enough fish. But if they were not, commercial fishing rather than whales might have caused the seal fish population decline. **Answer: C**	Difficult

Answer 32

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
It is a Referential question as the question is asking you to understand specific details that would be given in a certain lines of the passage	As it is a referential question, we need to go back to the relevant lines in the passage. They are: To achieve this, the critic must lay aside one's social conditioning and not be blinded to certain qualities of work, thereby prevent an adequate understanding that deconstruction demands	Option A.: This is opposite of what the author states as the author want the critic to go off hook with any kind of social conditioning Option B: Not mentioned **Option C: This is restatement of the given lines** Option D: Not mentioned Option E: not mentioned **Answer: C**	Medium

Answer 33

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
It is a Referential question as the question is asking you to understand specific details that would be given in a certain lines of the passage	The question here asks for the attitude of author towards Deconstructive study So the attitude of the author is negative Which are in the following lines from the passage: "Deconstructive criticism of literature …it stifles any possibility of it being successful" "As human behavior is but a product of its circumstances, to be objective to all that is contained in a literary work becomes a utopian idea, something that we may but only dream of achieving" So, the attitude of the author is negative	Option A: Interesting being a positive tone is wrong Option B: Not indicated by the passage Option C: not mentioned **Option D: this is what the relevant line state** Option E: the word pointless is too strong for that of the author **Answer: D**	Medium

Answer 34

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Grammatical Construction	This question is categorized as difficult because there are no clear identifiers in the sentence that help you zero down on the error that is tested. Hence, jumping to the options becomes crucial. Each of the option has a particular error and hence the only way to tackle this question would be to tackle the options one by one.	Option A: The usage of makers of the law is a poor construction because it can be replaced by one word. Also, seems to be does not agree with the subject makers. When example is given, such as is preferred over like. Option B: Usage of lawmakers is correct and seem agrees with the subject. Usage of the pronoun it is wrong as it refers to the lawmakers. Also, has does not agree with its subject lawmakers. The usage of also is wrong as it should be and. Option C: The subject of over political and religious views is unclear. The clauses and phrases are not placed properly. Option D: The subject of over political and religious views is unclear. The clauses and phrases are not placed properly. The placement of also is wrong. **Option E: Correct Answer**. **Answer: E**	Difficult

Answer 35

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Modifiers, Voice & Pronouns	There are multiple indications as to why this sentence is testing you on modifiers. Firstly, the question stem has multiple parts to it. Secondly the option uses "which" and the "being" forms of phrases and these are clear indicators for sentences testing you on modifiers.	Option A: Incorrect usage of the Active Voice; the correct version should be 'was sold; there should be a comma after Wayne; the pronoun "it" does not have a clear Noun Antecedent, giving rise to an Ambiguous pronoun error. Option B: Relative Pronoun Error- the Relative Pronoun, "which" modifies the nearest noun, Rhone; uses the active voice "sold" **Option C: Correct answer** Option D: Comma missing after "Rhone"; incorrect usage of the Present Continuous form "Being" Option E: Incorrect usage of the active voice "sold" **Answer: C**	Medium

Answer 36

CONCEPT TESTED	HINT FOR THE ANSWER	REASONS FOR ELIMINATION	DIFFICULTY LEVEL
Modifiers	The reason why we conclude that this sentence is testing you on modifiers is because of the presence of the phrase "a medium is …." This phrase is changing itself into many forms and hence the usage of modifiers is very evident.	Option A: Animal hide skins is not a method- Wrong answer Option B :Animal hide skins is not a method- Wrong answer **Option C: Correct answer- protecting is preceded by a comma and thus modifies the entire preceding clause.** Option D: As a protection of – wrong structure Option E: The usage of the infinitive phrase is incorrect as we are not talking about the purpose. Generally, the GMAT does not like the usage of an Infinitive phrase as a Modifier **Answer: C**	Medium

-Quant Solutions-

1. Solution:

Topic: Geometry

Concept Tested: Circles

Type of Question: Data Sufficiency (DS)

Given:
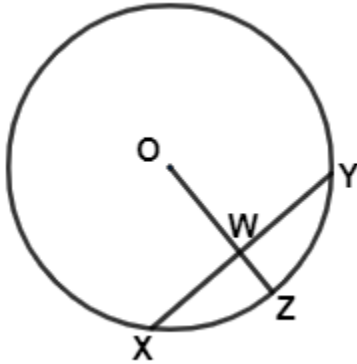
Question: The question is asking to find the area of circle. That means, we need radius.
Approach:

Statement I is insufficient:

W is the midpoint of chord XY will not give any information about radius. Hence, it is insufficient.

Statement II is insufficient:

Given that the ratio of ZW to OW is 3:5, which again will not give any information about radius.

Combining both also, it is not possible to find the radius.

Hence, the answer is E.

2. Solution:

Topic: Algebra

Concept Tested: Exponents Expressions, Manipulating Algebraic Expressions:

Type of Question: Problem Solving (PS)

Given:

$$A^4 + B^4 = 100$$

Question: The question is asked to find greatest possible value of A.

$$A^4 + B^4 = 100$$

$$\Rightarrow A^4 < 100$$

$$\Rightarrow A^2 < 10$$

If $A = 3$, $A^2 < 10$ and $A^4 = 81$

But if $A = 4$, $A^2 > 10$, which is not possible.
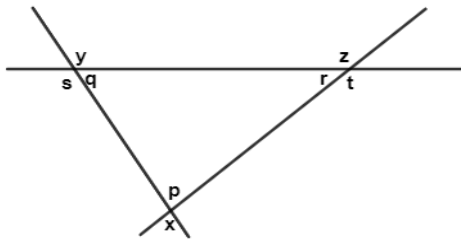
So, A has to be little more than 3.

$$\Rightarrow 3 < A < 6$$

3. Solution:

Topic: Geometry

Concept Tested: Lines and Angles

Type of Question: Problem Solving (PS)

Given: $y + z = 280$

Question: we need to find the degree measure of x.

From the figure,
$p = x$
$q = 180 - y$
$r = 180 - z$
In the triangle, sum of the angles in a triangle = 180

$\Rightarrow 180 - y + 180 - z + x = 180$

$x = y + z - 180$

$x = 280 - 180$

$x = 100$

Shortcut: Sum of the external angles in any polygon is 360 degree.

So, $y + z + 180 - p = 360$

$280 + 180 - p = 360$

$p = 100 = x$

Hence, the answer is B.

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4. Solution:

Topic: Algebra

Concept Tested: Solving Linear Equations

Type of Question: Problem Solving (PS)

Given: The price per ticket for adult is $50 and price per ticket for children is $30.

Question: To find the number of children.

Let x be the number of adults, then 1000-x is the number of children.

Also given that the average price per ticket is $42.

$$\Rightarrow \frac{50x+30(1000-x)}{1000} = 42$$

Solving the above equation, x=600.

So, the number of children= 1000-x=400.

Hence, the answer is C.

5. Solution:

Topic: Word Problems

Concept Tested: Mixtures

Type of Question: Problem Solving (PS)

Given:

The ratio of milk to water is 1:2 in the first vessel.

The milk and water are in the ratio 2:3 in the second vessel.

After mixing, the resulting mixture have milk and water in the ratio 5:8.

Question: In what ratio the contents of two vessels should be mixed.

Approach: Use alligation method.

Milk in Vessel 1	Milk in Vessel 2

$$\frac{1}{3} \qquad\qquad \frac{2}{5}$$

$$\frac{5}{13}$$

$$\left|\frac{2}{5}-\frac{5}{13}\right| \qquad\qquad \left|\frac{1}{3}-\frac{5}{13}\right|$$

$$=\frac{1}{65} \qquad\qquad =\frac{2}{29}$$
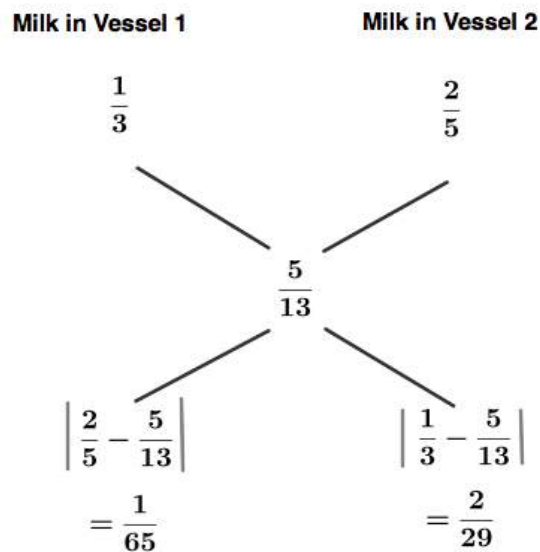
So, the ratio of (1/65) to (2/29) reduces to 3:10

Hence, the answer is B.

---

6. Solution:

Topic: Arithmetic

Concept Tested: Fractions

Type of Question: Problem Solving (PS)

Approach: Let us use plugging in numbers for unknown values.

Let the Total acid produced= 30 units

$\Rightarrow$ Acid A= $\frac{1}{3}$ 30=10 units

Acid B= 20 units

Let time taken to produce per unit Acid A= 5 hours

$\Rightarrow$ Time taken to produce per unit Acid B= $\frac{2}{5} * 5$ =2 hours

Number of hours the factory took to produce acid B=2 $\times$ 20= 40

Total Number of hours factory took to produce both acid A and acid B= $(2 \times 20) + (5 \times 10) = 90$

Then, 40/90 = 4/9

Hence, the answer is B.

7. Solution:

Topic: Geometry

Concept Tested: Quadrilaterals

Type of Question: Problem Solving (PS)

Given:

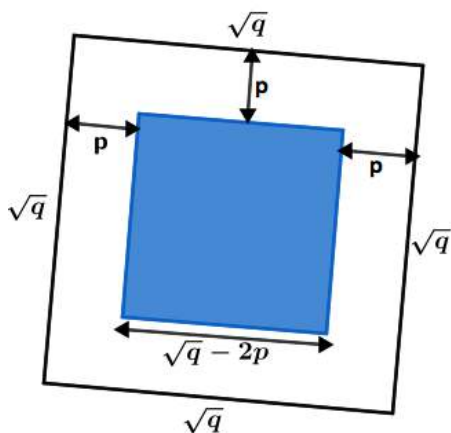A picture set in a square wooden frame that is p inches wide on all sides.

The combined area of picture and the frame is equal to q square inches.
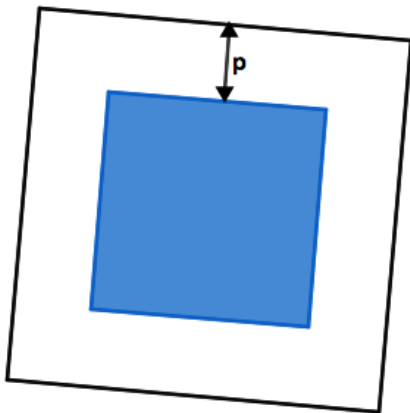
Question: The question is asking for perimeter of the smaller quadrilateral (square) in the above figure.

Since, the frame is a square with area q, each side is $\sqrt{q}$

Each side of the inner square is $\sqrt{q} - 2p$ as shown in below figure.

So, the perimeter of smaller square is $4\left(\sqrt{q} - 2p\right) = 4\sqrt{q} - 8p$

Hence, the answer is E.

8. Solution:

Topic: Geometry

Concept Tested: Quadrilaterals

Type of Question: Data Sufficiency

Given: PQRS is a parallelogram.

Question: Is PQRS a rhombus?

Note:

1. In a parallelogram, if all sides are equal to each other, then it is a rhombus.
2. In a parallelogram, if the diagonals bisect each other at 90 degree, then it is a rhombus.

Statement I is Sufficient:

Given that all four sides are equal to each other which is the definition of rhombus. So, statement one is sufficient.

Statement II is Sufficient:

Given that the two diagonals SQ and RP are perpendicular bisectors of each other, which again proves that the PQRS is a rhombus. So, statement one is sufficient.

Hence, the answer is D.

9. Solution:

Topic: Algebra

Concept tested: Inequalities

Type of Question: Problem solving (PS).

Let's plug in values and check.

	x=-1; y=2	Comments	x=-2;y=-1	
x<0	TRUE	Eliminate B and E	TRUE	
y>0	TRUE		FALSE	Eliminate C
xy>0	FALSE	Eliminate D		

Hence, the answer is A.

10. Solution:

Topic: Algebra

Concept tested: Inequalities

Type of Question: Data Sufficiency (DS

Given:

$p < x < q$ and $r < y < s$

Statement I is Insufficient:

Even though p< r, there is no information
on the relative size of x and r . For example,
if p = 2, x = 10, q = 20, r = 4, y = 6, and s = 8,
p< r because 2 < 4 and x > y , since 10 > 6.
If, on the other hand, p = 2, x = 4, q = 20,
r = 4, y = 6, and s = 7, r < s, because 3 < 4 and
x < y , since 4 < 6; NOT sufficient.

Statement II is Sufficient:

(2) If q < r , then p < x < q < r < y < s and so
x>y ; NO hence SUFFICIENT.
Statement 2 alone is sufficient.

Hence, the answer is B.

11. Solution:

Topic: Arithmetic

Concept tested: Percent and percent change.

Type of Question: Problem Solving(PS)

Let the original price of the books be 100.

According to the statements:

Collector bought for 40% more than the original price = 100+40=140.

Store bought back at 50% ⇒70.

The difference between original price to buy-back price is 100.

By direct proportion:

Let the original price=x;

Then x/100 = 100/30 (because 100-70 =30)

Solving for x,

The original price is = 333.3

Collector got it for 466.66 (40% more than the original price)

Store brought back at 50% ⇒ 466.66/2=233.33

For the second time profit : 70%

⇒233.33 + (0.7*233.33) = 396.66

Hence, the answer is D.

12. Solution:

Topic: Arithmetic

Concept tested: Percent change.

Type of Question: Data Sufficiency (DS)

Let X represents the price, in dollars, for the tab before the sale and let D represent the discounted price, in dollars. The percent by which X was discounted to obtain D can be determined if the value of X-D/X can be determined.

Statement I is Insufficient:

This indicates that D = X– 50, but X is unknown.

Insufficient, Hence BCE.

Statement II is sufficient:

This indicates that X is 25% greater than D or that X = 1.25 D. Then,

1.25D-D/1.25D=20%.

Sufficient.

Statement 2 alone is sufficient.

Hence, the answer is B.

13. Solution:

Topic: Arithmetic

Concept tested: Ratios

Type of Question: Problem Solving(PS)

Since more than 7 yellow colored roses are there, the minimum number of yellow colored roses should be 8. Using ratio box:

	Red	Yellow	Pink
Ratio	7	4	6
Multiplier	2	2	2
Actual	14	8	12

The total numbers of roses are: 14+8+12=34.

Hence, the answer is E.

14. Solution:

Topic: Geometry

Concept tested: Polygons

Type of Question: Problem Solving (PS)

The sum of the interior angles of Polygon A is divisible by 16

$180*(x-2)=16k$, where x is the number of sides and k is an integer.

$45(x-2)=4k$

x-2 must be a multiple of 4 (as 45 is not)

since x<10 then the only acceptable value of x is 6.

Hence, the answer is C.

15. Solution:

Topic: Triangles and Polygons

Concept tested: Triangles.

Type of Question: Data Sufficiency (DS)
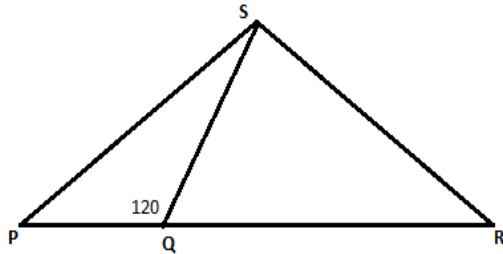
Given: angle PQS is 120, hence angle RQS is 60.

Statement I is Insufficient:

QS=RS is 1, triangle RSQ is an equilateral triangle. All the angles are 60.

We may not be able to find PSQ unless we get to know the value of SPQ.
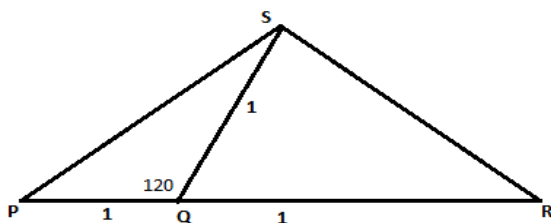
Hence BCE.

Statement II is Insufficient.

Statement (2): PR=2, with this information we may not be able to find the angle.

Hence eliminate.

Let us combine the statements and check.

Triangle PQS is an Isosceles triangle.

Sum of the degrees= 180;

SPQ=PSQ=30.

So, it is sufficient.
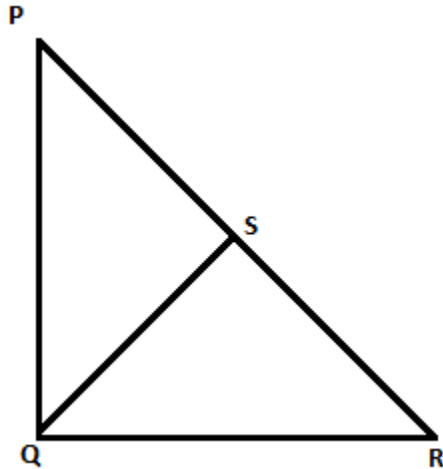
Hence, the answer is C.

16. Solution:

Topic: Triangles and Polygons
Concept tested: Triangles.
Type of Question: Data Sufficiency (DS)
Given:
PQR=90

Statement I is Insufficient:

QS is perpendicular to PR and length 12.

From this we can say that base of both triangles = QS=12. But, heights, PS and SR are still unknown to find the area. Hence, it is insufficient.

Hence BCE

Statement II is Insufficient:

PQR perimeter is 60; with this information we may be able to find the side of PQR by the ratio of 3:4:5 since PQR is a right angled triangle. The sides should be 15, 20, and 25.

PR =25, since the hypotenuse is the greatest side.

Since we don't know QS, and the length of PQ and QR.

This is also insufficient. Hence not B.

Combining the statement together.

If PQ is 15, QS=12 then PS is 9.
If PQ is 20, QS=12 then PS is 16.

Hence there are two answers and two ratios possible, it is **insufficient**. Basically, we don't get whether PQ>QR or QR>PQ.

Hence, it is not possible to find the ratios of areas.

Hence, the answer is E.

17. Solution:

Topic: Probability

Concept tested: Counting and Probability

Type of Question: Problem solving (PS)

Given:

A lottery ticket numbered from 100,101,102, … till 999.

Question:

Probability of randomly selected ticket whose number has ten's digit as "3"

Approach:

Probability = Favorable outcomes/Total no. of outcomes.

In our question,

Probability = (Numbers from 100 through 999 whose ten's digit is 3) / (Total No. of numbers from 100 -999)

Let's try to first find the number of digits which has a ten's digit as "3".

In every hundred numbers (100-199), there will be ten numbers whose ten's digit will be "3".

For example, Between 200 – 299,

231, 232, 233, …239 are the numbers which has a ten's digit as "3".

From 100 – 999, there are totally 9 hundred's, and therefore 90 numbers whose ten's digit will be "3".

And, there are totally 900 numbers starting from 100 till 999.

So, Probability = 90/ 900 = 1/10.

OR,

Slot Method,

From 100 – 999, it's a three-digit numbers.

Let's draw slot with the three-digit places,

9	X	1	X	10	-->	90
Values from 1- 9		Ten's place -fixed "3"		Values from "0-9"		

Hundred's place can take values from 1 to 9(both inclusive), it can't take a value "0" because it's a three- digit number. Ten's place has to be "3", as it's the condition given in the question.

Unit's place can take any value from 0 to 9(Both inclusive).

Now,

Total No. of Outcomes

9	X	10	X	10	-->	900
Values from 1- 9		Values from "0-9"		Values from "0-9"		

So, Probability = 90/ 900 = 1/10.

Hence, the answer is C.

18. Solution:

Topic: Word Problems
Concept tested: Sets and Venn Diagrams
Type of Question: Problem solving (PS)
Given:

Total number of students = 250.

40 percent- Study French = 40/100 * 250 = 100.

30 percent- Study German = 30/100 * 250 = 75.

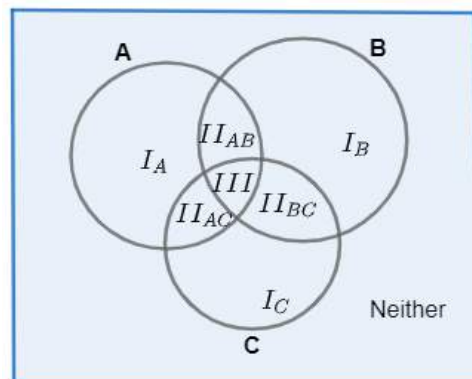50 percent- Study Spanish = 50/100 * 250 = 125.

All three = 10

Neither = 10

<u>Approach:</u>

For these questions, basic approach is using the Inflated total concept.

Concept:

Let A, B, C are the three sets as shown in the figure below,

$$I = I_A + I_B + I_C$$ (Exactly one)

$$II = II_{AB} + II_{BC} + II_{AC} = \{B \cap C + A \cap C + A \cap B\} - 3 \text{ ALL three}$$

$$III = A \cap B \cap C$$ (Exactly Three)

A= $I_A + II_{AB} + III + II_{AC}$

B= $I_B + II_{AB} + III + II_{BC}$

C= $I_C + II_{AC} + III + II_{BC}$

Let S= A + B +C (where S is the inflated sum as lot of double counting is there).

S = $I + 2\,II + 3\,III$

From the above diagram,

(Atleast one) X = $I + II + III$

Overall Total = $X + Neither$

$$S - X = II + 2III$$

By using the above expressions, X and S, we can solve any question, in particular questions which talks about exactly two, exactly one etc.

Using the above concept in our given question.

French = 100

German = 75

Spanish = 125

So, inflated total, S = 100 + 75 + 125 = 300

Also given, total = 250 and Neither = 10

Overall total = X + Neither

250 = X + 10

X = 240

Using the above expression,

S − X = II + 2III

300 − 240 = II + 2(10)

All three is given as 10.

So,

Exactly two (II) = 40.

Hence, the answer is C.

19. Solution:

Topic: Geometry
Concept tested: Three Dimensional
Type of Question: Data Sufficiency (PS)

Given:

Volume of a rectangular box = m cubic feet.

i.e.,

m = length * breadth * height

Also given

length: breadth: height = 5: 3: 2

So, let length = 5x, breadth = 3x and height = 2x

Hence volume = 5x * 3x * 2x = 30 * x^3

Equating with "m"

30 * x^3 = m

x^3 = m/30

x = $\sqrt[3]{(m/30)}$

Question: What is the length of the box in terms of m?

Length = 5x

We know that,

x = $\sqrt[3]{(m/30)}$

So,

5x = 5 * $\sqrt[3]{(m/30)}$

We know that,

We can write above equation as,

5x = $\sqrt[3]{5^3}$ * $\sqrt[3]{(m/30)}$

So,

Length = $\sqrt[3]{(25m/6)}$

Hence, the answer is A.

20. Solution:

Topic: Geometry

Concept tested: Co-ordinate Geometry

Type of Question: Problem Solving (PS)

Given:

Lines "l" and "k" are perpendicular to each other.

So, If "m1" is the slope of line "l" and "m2" is the slope of line "k"

Then,

m1 * m2 = -1

Also given, line "l" passes through the points (4,1) and (8,-1)

So, slope of line "l" = ((y2-y1)/(x2-x1))

= ((-1-1)/(8-4))

= -2/4

m1= -1/2

we know that,

m1 * m2 = -1

So, m2 = 2

Question: Equation of the line "k" which passes through the point (3,1) ?

We know the slope of line "k" and the point it passes through.

So, equation of line can be given by,

(y-y1) = m (x-x1)

y-1 = 2(x-3)

So, 2x-y = 5

So the answer is B.

OR

The best short-cut to solve this question,

Given (3,1) is a point on the line "k". So substitute (3,1) in the answer choices for "x" and "y". Only Answer choices B and E. Satisfies the condition. Now since we know that slope of line "k" is 2, we can eliminate option E.

Hence, the answer is B.

21. Solution:

Topic: Word Problems
Concept tested: Table method
Type of Question: Data Sufficiency (DS)

Let "d" be the number of people who bought donuts and "p" be the number of people who bought pizzas.

Question:

Is d > p?

Approach:

Table method would be the best way to solve this type of questions.

	Donuts	Not donuts	Total
Pizzas			p
Not pizzas			
Total	d		

Statement I is insufficient:

Of the people who bought donuts, 30 percent of them also bought pizzas.

	Donuts	Not donuts	Total
Pizzas	0.3d		p
Not pizzas			
Total	d		

It tells about the people who chosen both.

Both = 0.3d

We don't know the value of 'd' or 'p'. So, can't say anything. Not sufficient. Eliminate A and D options.

Statement II is insufficient:

Of the people who bought pizzas, 40 percent of them also bought donuts.

	Donuts	Not donuts	Total
Pizzas	0.4p		p
Not pizzas			
Total	D		

Again, It tells about the people who chosen both.

Both = 0.4p

Similar to statement I, we don't know the value of 'd' or 'p'. So Eliminate option B.

Together it is sufficient:

From statement I and II we get,

0.3* d = 0.4 * p

d/p = 0.4/0.3

i.e., d/p = 4/3

Since number of people who buy "pizzas" and "donuts" has to be positive,

d > p.

Number of people who buy donuts is more than the number of people who buy pizzas.

Together, it is sufficient.

Hence, the answer is C.

22. Solution:

Topic: Algebra
Concept tested: Equations
Type of Question: Data Sufficiency (DS)

Let "x" be the number of pens Alan bought and "y" be the number of pencils.

So, total cost of pens is "**3x**"

So, total cost of pencils is **"2y"**

Question:

Total number of pen and pencils Alan purchased?

i.e., x + y?

Statement I is sufficient:

Alan bought pen and pencils for 10 dollars.

i.e.,

3x + 2y = 10

Most of the students, here fall for the trap and they end up choosing it as not sufficient. Because of the two variables.

But it is sufficient.

Because, "x" and "y" are positive integers, so only possible solution here is

x =2 and y = 2.

Because,

3x + 2y = 10

We know that,

Even + Even = Even

2y is even and 10 is also even.

So, then "3x" also has to be even, which means "x" is even.

Therefore, "x" has to be 2 and "y" has also to be 2 (x = 4, 6..etc would exceed the total cost of ten dollars.)

So, "x+y" = 4.

"I" alone sufficient.

Eliminate options B, C and E.

Statement II is insufficient:

Total cost of the pens which Allan bought is less than 10 dollars.

i.e.,

3x < 10

So, x could be 1, 2 or 3

And also we don't know anything about "y"

So insufficient.

Hence, the answer is A.

23. Solution:

Topic: Word Problems

Concept tested: Rates

Type of Question: Data Sufficiency (DS)

Given:

Let A, be the inlet pipe in which the water is pumped into the tank

And B, be the leak in which the water is leaked out of the tank.

Question: How long it will take the tank get filled completely?

We need to know the rates of pipe A and B to solve the question.

Statement I is insufficient:

Total capacity of water the tank can hold is 120 gallons.

We know the capacity of the tank but not the rates of A and B.

So insufficient.

Statement II is insufficient:

Inlet pipe can completely fill the empty tank 10 hours if there is no leak in the tank, and also the leak at the bottom of the tank can completely empty the filled tank in 15 hours if there is no water pumped into the tank.

We know that,

Time is inversely proportional to rate.

A = time taken to fill the tank is 10 hours, So, its rate is 1/10.

B = time taken to empty the tank is 15 hours. So, its rate is (-1/15). Because it leaks the water.

When both A and B happens at the same time, then the rate is,

$$\frac{1}{10} - \frac{1}{15} = \frac{1}{30}$$

From above, we know that, it takes 30 hours to completely fill the tank.

So, statement II alone is insufficient.

Hence, the answer is B.

24. Solution:

Topic: Algebra

Concept tested: Solving Quadratic Equations

Type of Question: Problem Solving (PS)

We are given two quadratic inequalities:

$$x^2 - 5x + 4 < 0 - - - - - - - - - (1)$$

$$x^2 - 3x + 2 < 0 - - - - - - - - - (2)$$

We have to find the value of x that satisfies both the inequalities.

We have to keep the following pointers in mind while we are solving the quadratic inequalities and to find the value of "x".

(i)   The coefficient of x^2 is positive

(ii)   The Right hand side of the inequality is zero.

As in the question already the given inequalities are in standard form; let's solve the inequalities one by one:

Case 1: Solving the inequality 1: $x^2 - 5x + 4 < 0$

When we factorize we get; (x – 1) (x – 4) < 0

∴ The range of "x" will be $1 < x < 4$ ----------- (3)

Case 2: Solving the inequality 2: $x^2 - 3x + 2 < 0$

When we factorize we get; (x – 1) (x – 2) < 0

∴ The range of "x" will be $1 < x < 2$ ----------- (4)

Now, if we look at the inequalities (3) and (4), we see that the value of x that satisfies both of them will be:

$$1 < x < 2$$

Out of the five options, only option D (1.6) falls in the range.

Hence, the answer is D.

25. Solution:

Topic: Algebra

Concept tested: Solving Quadratic Equations

Type of Question: Data Sufficiency (DS)

Given information: p^2 is an integer and

$$\sqrt{p^6 - p^4 - q - 1} = 10$$

Squaring on both the sides; we get:

$$p^6 - p^4 - q - 1 = 100$$

$$p^4(p^2 - 1) - (q + 1) = 100 \text{ -------------------- (1)}$$

Let's analyze the statements individually:

Analysis of statement 1: $p^2 = \sqrt{p^2 + 20}$

1. $p^2 = \sqrt{p^2 + 20}$

Squaring on both the sides; we get:

$$p^4 = p^2 + 20$$

$$p^4 - p^2 + 20 = 0$$

$$(p^2 - 5)(p^2 + 4) = 0$$

As square term cannot be negative, $\boldsymbol{p^2 = 5}$

Hence statement 1 is sufficient to answer. Hence we can eliminate the options B; C and E.

Analysis of statement 2: $q = \sqrt{q + 2}$

Given: $q = \sqrt{q + 2}$

Squaring on both the sides; we get

$$q^2 = q + 2$$

$$q^2 - q - 2 = 0$$

Factorizing the above quadratic equation we get;

$$(q - 2)(q + 1) = 0$$

Here $q = 2$ or $q = -1$

Let's substitute the value of 'q' in the equation 1, to find the value of "p^2".

Case 1: Substituting $q = 2$

$p^4(p^2 - 1) - (2 + 1) = 100$

$p^4(p^2 - 1) = 103$

Since 103 is a prime number, it cannot be expressed as product of two numbers such that "p^2" yields an integer value. So q = 2is not possible value.

Case 2: Substituting $q = -1$

$p^4(p^2 - 1) - (-1 + 1) = 100$

$p^4(p^2 - 1) = 100$

$p^4(p^2 - 1) = 25 \times (5 - 1)$

$\therefore p^2 = 5$

Hence statement 2 is sufficient to answer. We can eliminate the option A.

Hence, the answer is D.

26. Solution:

Topic: Numbers

Concept tested: Operation on Even an Odd Number

Type of Question: Data Sufficiency (DS)

Given:

P is a positive integer.

Inferences:

We have to check whether $P^4 + 7 = ODD$; if this should fetch us ODD result, we have to apply the concept of *"Operation on Even and ODD numbers"*

[**NOTE:** *ODD + ODD = EVEN; EVEN + ODD = ODD; EVEN + EVEN = EVEN.]*

As "7" is an ODD number therefore P^4 *must be Even*; therefore "P" must be "EVEN"

So, the crux of the question boils down to, is 'P' EVEN?

To find: $P^4 + 7$ an odd number?

"P" is even or not!!!

Analysis of Statement 1: "P" is the smallest integer such that it is divisible by all the integers from 51 to 55, inclusive.

Basically, the statement clearly stating that "P" is divisible by all the integers from 51 to 55 inclusive. So this means "P" is also divisible by integers "52" and "54" also.

Therefore we can conclude that "P" must be EVEN.

Hence statement 1 is sufficient to answer. We can eliminate the options B, C and E.

Analysis of statement 2: 13^P is an odd number

It is given that $13^P = ODD$

Let's substitute for "P" an even number and an odd number and check what will be the end result!!!

Case 1: If P = 2; $13^2 = 169 = ODD$

Case 2: If P = 3; $13^3 = 2197 = ODD$

Note: An odd number multiplied with itself any number of times will give an odd product.

Therefore, 13^P will be always ODD, irrespective of "P" is Even or ODD.

Hence statement 2 is not sufficient to answer. We can eliminate the option "D".

Hence, the answer is A.

27. Solution:

Topic: Numbers

Concept tested: Unit digits

Type of Question: Data Sufficiency (DS)

Given:
"m" is a positive integer.
Inferences:
It is a YES or NO DS question. "$m^2 + 1$" can be divided evenly by 10 or it may not be also.
Basically the question is based on the unit digit concept of numbers.
Therefore; m^2 unit digit should end with "9", so basically we have to check whether "m" is 3 or 7.
So we can conclude that if "m" is 3 or 7 then answer will be "YES" to the question otherwise it will be "NO".

Let's analyze the statements individually:

Analysis of statement 1: 101^{16} × m, when divided by 2 leaves a remainder 1.

- ❖ The statement means "m" is an odd number.
- ❖ The unit digit can be 1, 3, 5, 7 or 9.

Therefore the statement 1 is not sufficient to answer. We can eliminate the options A and D.

Analysis of statement 2: 101^{16} × m, when divided by 5 leaves a remainder 2.

- ❖ The unit digit can be 2 or 7

Therefore the statement 2 is not sufficient to answer. We can eliminate the option B.

Combining the statements 1 and 2; we get:
From statement 1 we know that:

- ❖ The unit digit of "m" can be 1, 3, 5, 7 or 9.

From statement 2 we know that:

- ❖ The unit digit of "m" can be 2 or 7.

Therefore, we can conclude that unit digit of 'm' is '7'.

Unit digit of "$m^2 + 1$" = Unit digit of (9 + 1) =10

Hence "$m^2 + 1$" can be evenly divided by 10. So, "YES" will the answer to the question.

Therefore combining the statements 1 and 2 we can answer the question.
Hence, the answer is C.

28. Solution:

Topic: Numbers

Concept tested: Factorials

Type of Question: Data Sufficiency (DS)

Given: "x" is a positive integer.

Analysis of statement 1: $\frac{105!}{55^x} = Integer$

Inferences: The statement is based on the concept of highest power of "55" in the 105!

As we can see that, "55" is a composite number; let's break it down to its prime number, I.e.; $55 = 5 * 11$; as "11" is the highest prime number if we find the highest power of "11" in 105! Is enough!!!!

The highest power of 11 in 105! Is "9". Therefore, the possible values of "p" satisfying the condition is $0 \leq x \leq 9$.

$\therefore If\ x = 2$; Then the answer will be "NO" 'x' is not greater than 3'.

$If\ x = 6$; Then the answer will be "YES" 'x' is greater than 3'.

Hence the statement 1 is not sufficient to answer. We can eliminate the options A and D.

Analysis of statement 2: $\frac{105!}{11^x} = Integer$

The highest power of 11 in 105! Is "9". Therefore, the possible values of "p" satisfying the condition is $0 \leq x \leq 9$.

$\therefore If\ x = 2$; Then the answer will be "NO" 'x' is not greater than 3'.

$If\ x = 6$; Then the answer will be "YES" 'x' is greater than 3'.

Hence the statement 2 is not sufficient to answer. We can eliminate the option B.

Combining the statements 1 and 2; we get:

Even after combining the statements we do not get the exact value of "x". Hence we can eliminate the option "C".

Hence, the answer is E.

29. Solution:

Topic: Numbers

Concept tested: Prime factorization; factors and multiples

Type of Question: Problem Solving (PS)

Approach:

It is given that "p" is completely divided by the number 17, therefore "p" is a multiple of 17.

So, $p = 17 \times c$ *Where "c is an integer* $-----(1)$

Also it is given that;

$p = x^2 * y$ *Where "x" and "y" are distinct prime numbers* $-----(2).$

Now we know that, "p" is a multiple of 17 and "p" has only two distinct prime factors "x" and "y".

So, either x = 17 or y = 17.

Now looking at the options we have to check which will be the definitely multiple of 289. So here the hint is "what is 289? How it is related to 17?" We know that $17^2 = 289$.

Now, if x = 17, we need the "x^2" term in the number to make it a multiple of "289"

OR

If y = 17, we need the "y^2" term in the number to make it a multiple of "289".

As, we do not here, which number of out of "x" and "y" is equal to "17"

So, we can only be sure that a given number is divisible by 17^2 if the powers of both x and y are 2 or higher in that number. In that case, whether x = 17 or y = 17, the number will be divisible by 17^2 for sure.

There is only one such number in the options: $x^2 y^2$

So, the number that is definitely a multiple of 289 is $x^2 y^2$

Hence, the answer is D.

30. Solution:

Topic: Statistics
Concept tested: Mean; Mode & Range
Type of Question: Problem Solving (PS)

Given: Let A1 to A7 be arranged in the ascending order. All terms are integers and terms are distinct in nature.

A1	A2	A3	A4	A5	A6	A7
	180		240			

- ❖ 180 is the median of the smallest three numbers. i.e; A2 = 180.
- ❖ Median of 7 numbers; as there are odd numbers, the middle number will be the median, i.e; A4 = 240.
- ❖ Range A7 − A1 = 80
    A7 = 80 + A1.

To find: Possible range for the largest 3 numbers. i.e; Values that (A7 − A5) can take.

Approach:

Better way to solve the question is to find the minimum and maximum values that (A7 - A5) can take and compare with the answer choices.

➢ How small can (A7 − A5) be?

As the terms are not distinct in nature, A5, A6 and A7 could be SAME. The minimum value A5; A6 and A7 can take will be 240.

A1	A2	A3	A4	**A5**	**A6**	**A7**
	180		240	**240**	**240**	**240**

∴ Minimum range for the largest 3 numbers = A7 − A5 = 240 − 240 = 0.

➢ How large can (A7 − A5) be?

(A7 − A5) will be maximized when A7 is maximized and A5 must be minimized.
The least value A5 can take will be 240. A7 can take at most value = 180 + 80 = 260.

A1	A2	A3	A4	**A5**	**A6**	**A7**
180	180		240	**240**	**240**	**260**

Maximum range for the largest 3 numbers = A7 − A5 = 260 − 240 = 20.
Now let's check answer choices that fall within the range.
Maximum value will be 20 and Minimum value will be 0. The only choice which satisfies the range is III.
Hence, the answer is E.

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31. Solution:

Topic: Statistics

Concept tested: Mean; Mode & Range

Type of Question: Data Sufficiency (DS)

This question basically is "YES" or "NO" DS question.

The answer will be "YES" when the value of "p" is always POSITIVE.

The answer will be "NO" when the value of "p" is "ZERO" or "NEGATIVE".

Given: List A = p, 24, 24, 24, 28, 20, 16; here MODE of the list A is "24" as the frequency of "24" is maximum.

To find: Is "p" positive?

Analysis of statement 1: The mean of list A is lesser than the mode of list A.

Mode of list A = 24

Mean of list A = $\frac{136+p}{7}$

If mean of list A is less than the Mode of list A, mean of list A should be less than 24.

$\frac{136+p}{7} < 24$;

"p" should be $136 + p < 168$;

$p < 32$

"A number less than 32 may or may not be positive".

Hence, statement 1 is not sufficient to answer. We can eliminate the options A and D.

Analysis of statement 2: The range of list A is lesser than the mode of list A.

Mode of list A = 24

Range of list A = $Highest\ value\ -\ Lowest\ value$.

Here we will be in dilemma which one to consider as highest value and lowest value?

Highest value: Is it "p" or "28".

Lowest value: Is it "p" or "16"

Let's take different cases and check:

Case 1: "p" is the highest and "16" is the lowest. Here obviously "p" has to be **positive.**

Case 2: "28" is the highest and "p" is the lowest. The mode of list A = 24.

Range = 28 – p.

$Mode\ >\ Range.\ So, 24\ >\ 28 - p\ or\ p\ >\ 4.$

Hence "p" is positive.

Case 3: "28" is the highest and "16" is the lowest.

Mode of the list A = 24

Range = 28 – 16 = 12

Mode > Range. Hence "p" must be "positive".

As, in all the three cases it is proved that "p" is positive, hence statement 2 is sufficient to answer. We can eliminate options C and E.

Hence, the answer is B.