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# Test 2 Solutions Manual

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*\*Note: There is no Essay Answer Key at this time.*

# SECTION 1 - READING

## QUESTION 1

**Choice D is best.** The moral righteousness and security of the first paragraph contrasts with the “doubt” and “misinterpreted” feelings in lines 7 and 15. Lines 29-48 are the key paragraph for this answer choice (“Consider the... many clients”) – the narrator’s growing dislike for his client demonstrates his realization of just how far apart from reality his ideals lie.

- It’s NOT Choice A because the narrator never mentions reforming his life
- It’s NOT Choice B because while the narrator is critical of his dying client, the main idea of the passage is the ambivalence for his profession that his client engenders, and is not the skepticism for his client in particular.
- It’s NOT Choice C because there is no evidence that the narrator finds his father to have been immoral.

## QUESTION 2

**Choice B is best.** The narrator’s transition from idealism to disillusionment is set up crucially by this introductory sentence.

- It’s NOT Choice A because the stylistic framework of the passage is not defined by the first sentence, and the introduction plays a more important role of content than style in this passage.
- It’s NOT Choice C because while it may give some sense of the narrators priorities and characters, it does not give the reader a sense of how the narrator views others.
- It’s NOT Choice D because the narrator does not become irrational as the passage goes on – if anything, the narrator begins in irrationality and slowly describes his transition into a more rational, if pessimistic, view of the world.

## QUESTION 3

**Choice C is best.** This is a difficult question. The correct answer is perhaps best arrived at by a process of elimination. The two best answer choices are arguably B and C. Choice C is better than Choice B because lines 16-28 (“After ruminating... so petty”) remain introspective, as the third paragraph reflects on the narrator’s own mentality without straying outside of his own line of thought.

- It’s NOT Choice A because the narrator remains descriptive for the entire paragraph, and never makes an explicit normative statement as to what people *should* be like, even as he is vaguely critical of them.
- It’s NOT Choice B because the narrator remains introspective for the entirety of the paragraph.

- It's NOT Choice D because the narrator is far from enthusiastic in tone about people in general in lines 26-28, instead sounding angered and disgusted by their pettiness.

#### QUESTION 4

**Choice B is best.** The entire paragraph lays out a clear transition from certainty to uncertainty as to the desirability and importance of the narrator's life work.

- It's NOT Choice A because ebullient is roughly synonymous with cheerful, and the narrator is clearly worried or depressed.
- It's NOT Choice C because the author keeps his worries entirely self-contained: the details he makes note of have only to do with himself and his family.
- It's NOT Choice D because although it is tempting, the narrator never makes out any distinctly opposed ideas in the paragraph. Instead, he implies that he has begun to question himself.

#### QUESTION 5

**Choice B is best.** Lines 35-36 "(But as... manner shifted) describe how Mr. Bartridge's manner shifted as he drew the narrator "into his confidence". Thus, we can conclude that Mr. Bartridge talks freely and cynically because he has grown comfortable with the narrator.

- It's NOT Choice A because we have no evidence that Mr. Bartridge has lost respect for the narrator. If anything, there is a clearer case that Mr. Bartridge has grown to like the narrator.
- It's NOT Choice C because Mr. Bartridge's material focus and unwillingness to bequeath his wealth without conditions or to his "profligate son" clearly demonstrate a lack of spiritual concern.
- It's NOT Choice D because Mr. Bartridge does not seem to care what his family thinks of him, especially as he already thinks poorly of his son.

#### QUESTION 6

**Choice C is best.** Lines 32-35 ("He spoke... public beneficence") show the narrator's initial admiration and respect for Mr. Bartridge, as he imagined drawing a will of "public beneficence".

- It's NOT Choice A because this answer choice is incomplete. While it is probably not false, the narrator, given the content of the passage, clearly saw Mr. Bartridge as more than just an elderly gentleman.
- It's NOT Choice B because there is nothing overtly spiritual or religious about the narrator's description of Mr. Bartridge.
- It's NOT Choice D because lines 35 shows that the narrator expected generosity from Mr. Bartridge, the very opposite of what one would have expected from a selfish businessman.

**QUESTION 7**

**Choice A is best.** See Question 6 for justification.

- It's NOT Choice B because this sentence alone does not provide evidence for any of the four answer choices in Question 6.
- It's NOT Choice C because the depiction of Mr. Bartridge that used the last remnants of his energy simply to complain is not a general characterization of an admirable individual.
- It's NOT Choice D because giving money to charities for the sole purpose of being honored with a plaque is not obviously admirable.

**QUESTION 8**

**Choice A is best.** The final paragraph provides a metaphor for the narrator's own transition in perspective: the trees, gnarled in with experience, are reflective of the changes that the narrator feels that he himself is going through.

- It's NOT Choice B because the trees convey the exact opposite, of a change in perspective.
- It's NOT Choice C because there is no evidence that the trees highlight any contrast between faith and reason, but rather the trees highlight the author's journey from faith *to* reason.
- It's NOT Choice D because the author nowhere tries to argue that he is alone in his crisis in questioning his own idealism and work.

**QUESTION 9**

**Choice B is best.** Line 59 seems to ascribe the trees a sense of superiority vis-à-vis the narrator, while lines 60-63 indicate that the narrator feels defeated and useless as he reflects on his career (Perhaps my... human psyche).

- It's NOT Choice A because the narrator is actually reasonably certain that his initial idealism was misplaced, and the final paragraph very clearly indicates that he finds himself pitiful and only to be laughed at.
- It's NOT Choice C because the narrator sees himself as pathetic, not noble.
- It's NOT Choice D because the narrator does not congratulate himself, but rather finds it depressing that his lot was perhaps only "to record the petty final whimpers of the human psyche".

**QUESTION 10**

**Choice D is best.** See Question 9 for justification.

- It's NOT Choice A because on this evidence alone the answer choice for the previous question would be ambiguous between answer choice A and B.

- It's NOT Choice B because like A, this answer choice doesn't provide clear evidence for the narrator feeling defeated. The narrator could feel confused, ill at ease, or simply unhappy.
- It's NOT Choice C because the description of the trees before line 57 gives no indication of how the narrator is feeling.

**QUESTION 11**

**Choice B is best.** Lines 47-58 provide the clearest crystallization of the article's thesis ("In order... for itself"), arguing before the reader that multiple different instruments of communication must be utilized to bring the discussion of AI development to the public.

- It's NOT Choice A because this answer is too general. The author is arguing for an increase in social media usage for a certain cause in order to disseminate information, but is not arguing for the increased use of social media in general.
- It's NOT Choice C because the author does not ask readers to donate, nor does it ever make such a specific request in relation to the medical field.
- It's NOT Choice D because while this answer choice is appealing, the unnecessary inclusion of the clause "exponentially advancing technology" introduces a claim that is unevicenced by the text, and while the passage does generally argue the case for AI, it does not do so unapologetically and makes substantive note of the fears that people may have of AI.

**QUESTION 12**

**Choice A is best.** Lines 42-46 ("but there... cannot comprehend") provide direct evidence for this answer choice.

- It's NOT Choice B because the author makes no mention of this argument.
- It's NOT Choice C because the author makes no mention of this argument.
- It's NOT Choice D because the author uses this as an argument *against* a possible objection to the widespread use of AI.

**QUESTION 13**

**Choice C is best.** Lines 47-48 (in order... the public) are closest in content to the justification provided above in Question 12, and the answer choice can also be reached by process of elimination.

- It's NOT Choice A because the fear of drones is not related to human inability to understand AI-generated solutions.
- It's NOT Choice B because AI's dystopian potential has nothing to do with human inability to understand AI-generated solutions.
- It's NOT Choice D because robots that combine human and artificial intelligence does not directly address how to overcome the objection that humans may not accept solutions that AI provides.

**QUESTION 14**

**Choice C is best.** Nightmarish is the closest synonym and is most in line with how “dystopian” is used in the sentence.

- It’s NOT Choice A because realistic is not synonymous to dystopian.
- It’s NOT Choice B because beneficial is not synonymous to dystopian.
- It’s NOT Choice D because useful is not synonymous to dystopian.

**QUESTION 15**

**Choice D is best.** The final paragraph reviews the passage’s themes of ethical and political questions, as well as, while acknowledging that dystopian fears as highlighted in the media may never go away, AI may also have very real pragmatic value in our lives.

- It’s NOT Choice A because while the final paragraph does make note of philosophy, it is only in passing, and questions of ethics have already been brought up earlier in the passage.
- It’s NOT Choice B because the conclusion is summarizing the previous arguments, not countering them.
- It’s NOT Choice C because the conclusion does not end with a cliffhanger.

**QUESTION 16**

**Choice B is best.** “Exchange” here is used in a sense most closely with “interaction”. In other words, the passage tries to argue that what is important is the relationship between machine and human and how to play off of each other. Thus, the answer choice “cooperative dialogue” makes the most sense. Line 66 describes Co-Bots as asking people for help: thus, the relationship between the robots and humans must be some kind of beneficial relationship.

- It’s NOT Choice A because there is no mention of a monetary transaction, nor does it make sense in the context of the line, paragraph, or passage.
- It’s NOT Choice C because it makes no sense for a heated argument to be beneficial to either human or machine.
- It’s NOT Choice D because a humans and machines will not rapidly transform into one another.

**QUESTION 17**

**Choice A is best.** Lines 68-69 use of the word hope conveys an obvious optimism for the future of AI.

- It’s NOT Choice B because lines 70-71 are descriptive but have no optimistic or pessimistic connotation.
- It’s NOT Choice C because lines 71-73 are descriptive but have no optimistic or pessimistic connotation.

- It's NOT Choice D because lines 73-75 are descriptive but have no optimistic or pessimistic connotation.

**QUESTION 18**

**Choice A is best.** Lines 75-76 ("We may... Russell describes") argue that people may fear AI, but the other sentences provide a clear argument that people should be educated and cognizant of the possible benefits that AI could provide regardless.

- It's NOT Choice B because the author directly contradicts this statement himself. While he argues that this possibility should not be exaggerated or over-emphasized, he does not dismiss the fear out of hand either.
- It's NOT Choice C because the author argues that AI is mostly beneficial – in fact, the author outlines the its possible benefits in order to advocate that the public becomes informed about AI.
- It's NOT Choice D because the author never makes this claim, even if he does focus on health and medicine at points in describing potential benefits of AI.

**QUESTION 19**

**Choice B is best.** The graph shows a clear growth in interest by the increase in funding for AI startups over the four-year period depicted.

- It's NOT Choice A because the graph makes no value judgement as to whether the venture capitalists are being reckless or making intelligent business decisions.
- It's NOT Choice C because while funding for AI startups as a whole is increasing, this does not imply that robots must be getting more expensive to make. In fact, robots could be getting cheaper, which might draw more venture capitalists to the field and push up funding!
- It's NOT Choice D because the graph provides no evidence for this interpretation.

**QUESTION 20**

**Choice D is best.** The largest jump in funding, both in percentage and absolute terms, clearly comes between years 2013-2014.

- It's NOT Choice A because there is a greater increase between 2013-2014.
- It's NOT Choice B because there is a greater increase between 2013-2014.
- It's NOT Choice C because there is a greater increase between 2013-2014.

**QUESTION 21**

**Choice D is best.** This is another question in which process of elimination will lead clearly to only one answer. The passage introduces the idea that AI is becoming more ubiquitous, and the increasing levels of funding showed in the graph only further support this idea.

- It's NOT Choice A because there is no evidence provided in the graph to support this answer choice.
- It's NOT Choice B because the graph makes no normative conclusions about whether laws must be discussed and in what manner.
- It's NOT Choice C because the increased levels of venture capital funding do not provide enough information for us to evaluate how profitable AI has become.

**QUESTION 22**

**Choice D is best.** Lines 1-2 ("Artificial intelligence... the future") introduce the author's skepticism on the apparent consensus that organic foods are really that good for you, and the entire second paragraph, especially line 18, provide direct evidence for this answer choice.

- It's NOT Choice A because the author never mentions research universities in the passage.
- It's NOT Choice B because the author makes no mention of socioeconomic class or of the price and accessibility of organic foods.
- It's NOT Choice C because the concluding paragraph makes a strong argument that organic foods are extremely helpful for modern society.

**QUESTION 23**

**Choice C is best.** See Question 22 for justification.

- It's NOT Choice A because this answer choice provides research findings that support the benefits of organic foods, and thus does not strongly support the previous answer choice of *exaggerating* such research.
- It's NOT Choice B because while the author introduces doubt here on the true value of organic foods, there is nothing specific on how the marketing of organic foods may be exaggerated.
- It's NOT Choice D because confusion for the average consumer does not directly support any aspect of the previous answer.

**QUESTION 24**

**Choice C is best.** Lines 48-52 ("If anything... health advantages") provide direct evidence that the author believes the environmental benefits of organic farming techniques should be publicized with greater effort.

- It's NOT Choice A because while the author disputes the health benefits of organic foods, the author does not go as far as arguing that organic food advocates have no evidence to back up their claims. Indeed, lines 4-6 for example are a direct counterexample for this answer choice.



- It's NOT Choice B because the author actually argues that organic foods advocates should instead look at the environmental benefits of organic foods instead of focusing on an inconclusive line of study of the health benefits of organic foods.
- It's NOT Choice D because the author nowhere makes this claim – if anything, the author implies that it is easy to convince consumers of these claims by providing apparently successful examples of marketing and advertiser promoting this line of thought.

**QUESTION 25**

**Choice D is best.** As used, the word “substantially” here implies that organic farming techniques greatly or largely improve food quality. Thus, “significantly” fits perfectly.

- It's NOT Choice A because “physically” is not synonymous to “substantially”.
- It's NOT Choice B because “inarticulately” is not synonymous to “substantially”.
- It's NOT Choice C because “essentially” is not synonymous to “substantially”.

**QUESTION 26**

**Choice C is best.** The author criticizes stores such as Whole Foods by arguing in lines 64-68 (“But the... be wary”) that goods which only get producers a 20 cent premium result in a 50 cent markup in store, and uses this example as a specific example of the author's more general criticism in lines 56-57 (“Supermarkets looking... low-hanging fruit”) and 60-62 (“Supermarkets like... organic products”).

- It's NOT Choice A because the author does not use milk farmers in an attempt to discredit organic foods themselves or their consumption, but rather the method by which these consumption goods are brought to the public.
- It's NOT Choice B because the author is not critical of the farmers and does not accuse them of hurting the environment – indeed, lines 83-84 indirectly contradict this answer choice.
- It's NOT Choice D because the author uses this example to criticize Whole Foods, not to specifically focus on organic farming with animals.

**QUESTION 27**

**Choice A is best.** Lines 56-57 provide a clear example of how the author views supermarkets as profit hungry and only caring about economic gain (“Supermarkets looking... low-hanging fruit”).

- It's NOT Choice B because the author never makes this argument. The closest the author comes is in lines 69-70 (Supermarkets use... price increases), arguing that supermarkets try and maximize their price increases by carefully placing products, but this is still far from a coherent case that the supermarkets analyze the needs of individuals.

- It's NOT Choice C because lines 100-102 argue that "the best way to promote sustainable farming practices is to make sure that farmers are well paid". By implying that supermarkets underpay farmers, the author implicitly states that supermarkets undermine sustainable agriculture.
- It's NOT Choice D because while tempting, this answer choice is too strong. The author does not argue that supermarkets will *always* increase their prices, only that supermarkets care only for profit. There may be occasions where increasing prices will decrease overall profit for supermarkets, and thus they will refrain from increasing prices.

### QUESTION 28

**Choice B is best.** This is a difficult question. A process of elimination approach will be the most effective in obtaining the correct answer. By arguing that consumers are getting fleeced, the author hammers home the point that they cannot compare prices, reiterating this key concept. Unfortunately, none of the answer choices match up perfectly with this analysis. We realize that choice B comes the closest since it replicates the point of the paragraph that supermarkets take advantage of their customers.

- It's NOT Choice A because while "fleeced" is a unique word choice, the tone is more outraged than humorous, and the word is chosen more for emphasis than for comedy. Furthermore "humor" and "fact based" are not necessarily contradictory.
- It's NOT Choice C because it supports, rather than undermines, the concerns raised in the rest of the passage.
- It's NOT Choice D because it does not ask readers to reconsider their biases in any manner.

### QUESTION 29

**Choice A is best.** Passages 1 and 2 discuss the hidden factors behind organic food production and consumption, with Passage 1 focusing on the lesser-known environmental benefits and Passage 2 focusing on the inability of farmers to cash in on the profits that supermarkets make from their organic goods.

- It's NOT Choice B neither passage explicitly criticizes those that take part in health crazes nor concludes that such people are generally foolish.
- It's NOT Choice C because Passage 1 explicitly criticizes much of the nutritional research that argues that organic foods have clear health benefits.
- It's NOT Choice D because both passages criticize the advertising tactics employed by those selling organic goods as bad and vaguely immoral, and stay far away from proposing new advertising tactics.

### QUESTION 30

**Choice C is best.** Passage 2 criticize supermarkets for taking advantage of consumer willingness to consume organic goods, a trend that is described at depth in Passage 1.

- It's NOT Choice A because Passage 2 provides no anecdotes on the environmental benefits of organic farming.
- It's NOT Choice B because there is no call to action in Passage 2, only criticism of existing practices.
- It's NOT Choice D because Passage 2 takes the conclusions of the research mentioned in Passage 1 largely as given, both in regards to the nutritional and environmental benefits of organic foods, as evidenced in lines 83-84.

### QUESTION 31

**Choice D is best.** The first author argues that advertisers exaggerate the impact of organic foods, while the second author argues that supermarkets overprice organic products. Thus, both authors would likely agree that supermarkets have a tendency to exaggerate the health benefits of organic products.

- It's NOT Choice A because while advertisers may criticize overly optimistic representations of organic foods, neither author would argue that "organic" was a term solely created for the purposes of helping marketing campaigns.
- It's NOT Choice B because lines 62-64 ("Organic food... and ship") clearly demonstrate that the author of Passage 2 would disagree with this statement.
- It's NOT Choice C because this answer choice is too strong. This is barely touched on, if at all, in Passage 2, while the author of Passage 1 never states that environmental degradation due to non-organic techniques is the *most* important issue facing consumers and producers, even if Passage 1 is strongly in support of organic farming techniques.

### QUESTION 32

**Choice C is best.** Lines 81-84 ("Organic products... health benefits") provide clear evidence for this question. Of these four lines, lines 83-84 show that the author of Passage 2 believes that organic foods do have health benefits, exactly the main argument of Carlo Leifert in Passage 1.

- It's NOT Choice A because the willingness of corporations to employ strategies to maximize their price increases provides no evidence as to whether the author of passage 2 believes organic foods have health benefits or not.
- It's NOT Choice B because we again have no evidence for the author's beliefs on the health benefits of organic foods.
- It's NOT Choice D because the author's cautionary note to be aware of the price of organic foods does provide evidence that the author believes organic foods contain nutritional benefits.

### QUESTION 33

**Choice B is best.** Douglas talks about the obstacles that face the women's suffrage movement and how such obstacles, although they may seem formidable and inherent, will not stand the test of time.

- It's NOT Choice A because Douglass draws on the example of emancipated slaves to draw a similarity between the two movements, not a difference.
- It's NOT Choice C because Douglass's speech specifically argues that we should not be considering the differences between men and women, and does not focus on what sets men and women apart but rather why men should not be considered superior to women.
- It's NOT Choice D because while Douglass uses an example of Galileo's truths overcoming the power of organized religion, Douglass makes no argument on the fundamental importance of religion to the success of either movement.

#### QUESTION 34

**Choice C is best.** Since the sentence argues that "some say that is always was and always will be", we need to look for an answer choice saying something along the lines of "people believe things that are true today will always be true, forever". World without end serves to reinforce this idea of continuity and stagnation. Thus, choice C is a perfect choice.

- It's NOT Choice A because Douglass actually believes the exact opposite. Lines 29-31 argue his point that the logic of slavery was proven wrong, just as the logic of male dominance will be proven wrong. Furthermore, lines 64-69 and 75-78 reinforce Douglass's argument that the relationship between man and woman will change.
- It's NOT Choice B because this answer is incorrect on two counts. First, Douglass argues that a change in the relationship between men and women is inevitable given enough time, not change in general. Second, Douglass uses the cited phrase to highlight the beliefs of people who *don't* believe change will occur, not to emphasize his own belief that change will occur.
- It's NOT Choice D because Douglass doesn't anywhere make this claim, although he does draw on historical example to support his main contention.

#### QUESTION 35

**Choice D is best.** The entire first paragraph builds a picture of a society which believes that men will be superior to women because they have always been in the positions of power, and lines 19-20 conclude by showing this logic and mindset to be the main argument against women's suffrage.

- It's NOT Choice A because this argument is never made.
- It's NOT Choice B because this argument is never made.
- It's NOT Choice C because this argument is never made.

#### QUESTION 36

**Choice A is best.** This answer choice argues that because men have been so accustomed to being in power and women to being subjects, both parties have hardened in their beliefs that this is the natural order of things, which exactly supports the contention of the previous answer choice.

- It's NOT Choice A because this answer choice is not specific enough. While Douglass argues that sometimes time can check the will and voice of the reformer, it does not specifically refer to the case of men and women.
- It's NOT Choice C because this answer choice is about slavery, not men and women.
- It's NOT Choice D because this answer choice is about science and religion, not men and women.

### QUESTION 37

**Choice A is best.** Douglass attempts to establish a parallel between the abolitionist and suffrage movements, arguing that the same logic which oppressed and confronted the abolitionist movement that was ultimately defeated is the same logic that confronts the suffrage movement at the moment.

- It's NOT Choice B because Douglass attempts to distance himself from Henry Clay, describing Clay's arguments as a "stupendous barbarism".
- It's NOT Choice C because neither of these bodies are mentioned in the paragraph.
- It's NOT Choice D because while Douglass seems to categorize this past as "barbaric", he never concludes that the modern day is "civilized", and indeed given the unequal relations between men and women at the time it is highly unlikely he would have described it as such.

### QUESTION 38

**Choice D is best.** "Parties" is used to refer to both the groups involved in the argument – that is, that of man and woman. Thus choice D is appropriate.

- It's NOT Choice A while the rhetoric of kings and subjects is used, these are not the true groups in question.
- It's NOT Choice B because slaves have not even been mentioned yet at this point in the passage.
- It's NOT Choice C because Henry Clay has not been introduced yet in this point in the passage.

### QUESTION 39

**Choice B is best.** Even without historical knowledge of the conflict between the Church and Galileo, Douglass's specific mention of the state as being of Galileo and the apparent inability of a few priests to look at Galileo should bring the reader to the answer choice relating Galileo and the Church. If one is aware of the conflict between Galileo and the Church, this is a simple question.

- It's NOT Choice A because even though this may be true, it would be no reason for priests to be draw discomfort from a statue of Galileo, who clearly has nothing to do with women's suffrage. e
- It's NOT Choice C because while the statue is described as having been the work of laymen, there is no evidence to describe in any way that the Church would find this contemptuous.
- It's NOT Choice D because there is no evidence to support this claim.

**QUESTION 40**

**Choice A is best.** Douglass implies that the benefits of the women's suffrage movement will have additional benefits to people that have nothing to do with the movement; in other words, that the benefits will not be limited or restricted only to women. Thus, answer choice A is the best.

- It's NOT Choice B because "imprisoned benefits" does not make sense.
- It's NOT Choice C because "convinced" is not a synonym for "confined".
- It's NOT Choice D because "surrendered" is not a synonym for "confined".

**QUESTION 41**

**Choice C is best.** Lines 73-75 ("Now that... the many") provide the key insight for this answer choice. Although Douglass, in arguing that the belief has become fixed in the minds of the few may seem to be contradicting the idea that the belief has become "widespread", the key is to realize that the answer choice says widespread *enough*... for a certain purpose. Ie, such that they may become the consensus view. This is exactly what Douglass argues as he then continues and posits that the belief is "bound to become fixed in the minds of many".

- It's NOT Choice A because line 74 directly contradicts this answer choice.
- It's NOT Choice B because Douglass never argues this, and the fact that he himself is advocating for women's suffrage is a direct counterargument to this answer choice.
- It's NOT Choice D because Douglass argues that equality between men and women is a universal truth to which, as said in 77, "no man can number and no power can withstand". You could also look at line 64 and realize that Douglass's characterization of women's suffrage as a "great truth" makes it obvious that there can be no reasonable counterarguments against the movement.

**QUESTION 42**

**Choice D is best.** See Question 41 for justification.

- It's NOT Choice A because that good causes are mutually beneficial provides no evidence on how many people believe in the cause.
- It's NOT Choice B because, again, this does not justify the previous answer choice on how widespread Douglass's arguments have come to be accepted.

- It's NOT Choice C because there is no claim made on how widespread the belief is.

**QUESTION 43**

**Choice C is best.** The intro paragraph argues that we rarely think about intelligence existing in plants, and consequently uses this observation to present a new area of research: plant neurobiology.

- It's NOT Choice A because while the author argues that we don't think about plant intelligence often, the author doesn't set it up as debunking a misconception that people believe plants are unintelligent, when in fact they do have neurobiological abilities.
- It's NOT Choice B the first paragraph doesn't obviously describe two opposing viewpoints. It merely notes the general viewpoint and then describes an area of research.
- It's NOT Choice D because there is no speculation whatsoever in the first paragraph, only fact-based statements.

**QUESTION 44**

**Choice B is best.** "Analogous" seems to imply that while plants do not have brains, they seem to have some sort of similar structure that allows them to respond in ways that our own brains allow us. Thus, B is the correct answer.

- It's NOT Choice A because identical is too strong – obviously, the structures are not identical, or that would just mean that plants had brains.
- It's NOT Choice C because "analogous" and "peculiar" are not synonymous.
- It's NOT Choice D because "aberrant" and "analogous" are not synonymous.

**QUESTION 45**

**Choice A is best.** Lines 53-55 ("These discoveries... philosophical concerns") provide evidence that plant research is important because, while it has obviously raised important scientific questions, it has also raised important philosophical questions that other areas of research and other disciplines had not brought up.

- It's NOT Choice B because while this is true, the passage never argues that this constitutes a reason for why researching plant "thought" is crucial.
- It's NOT Choice C because this answer choice seems clearly false in the claim that it makes.
- It's NOT Choice D again, while the author would agree with this statement, the author never uses this fact to argue that this is why we *should* be studying plants.

**QUESTION 46**

**Choice D is best.** Answer choice D makes it clear that plant research raises questions across a variety of disciplines, and from the value of the questions alone that the research produces it is worth our time to continue investigating the field. “Different disciplines”, of course, encompass philosophy and science.

- It’s NOT Choice A because this does not support the claim and makes no mention of philosophical questions.
- It’s NOT Choice B because this does not support the claim and makes no mention of philosophical questions.
- It’s NOT Choice C because this does not support the claim and makes no mention of philosophical questions.

#### QUESTION 47

**Choice A is best.** “Sense” is used to argue that plants can process more than just sound. In terms of stimuli, we would automatically be drawn to ideas of touch, taste... etc. Since plants can sense, or pick up, more than just sound, it would make the most sense that they could *detect* other stimuli. Thus, choice A is best.

- It’s NOT Choice B because while appealing and “understand” actually makes sense in the sentence, A is better because “understand” is a far weaker synonym for “sense” than “detect” is.
- It’s NOT Choice C because while “sense” is general, “smell” implies a very specific sense and puts words in the author’s mouth, who probably was not thinking of smell specifically (and probably not at all).
- It’s NOT Choice D because “hear” relates to sound, which is exactly what the sentence is trying to move on from and talk about other forms of stimuli instead.

#### QUESTION 48

**Choice B is best.** Lines 35-38 (“The plant... its leaves”) provide clear evidence of plant adaptation to external stimuli, so that we could reasonably expect plants to be able to adapt to new threats.

- It’s NOT Choice A because there is no evidence for this claim, and clearly it is unreasonable to expect plants to feel emotions.
- It’s NOT Choice C because lines 16-18 directly contradict this answer choice.
- It’s NOT Choice D because while lines 46-47 argue that they retained the memory for four weeks of the specific lesson, we do not have enough evidence to conclude that plants thus cannot retain *any* memories for more than four weeks.

#### QUESTION 49

**Choice A is best.** Lines 43-46 (“When the... their leaves”) provide further justification for the prior claim that plants can learn to adapt to new threats and, additionally, to remember their responses to these external stimuli.



- It's NOT Choice B because this answer choice highlights an inherent defense mechanism, not a learned behavior of adaptation.
- It's NOT Choice C because this sentence on its own provides an example of plants eventually forgetting their lessons and doesn't provide an unambiguous argument that plants can adapt.
- It's NOT Choice D because lines 53-55 have nothing to do with whether plants can adapt to new threats.

**QUESTION 50**

**Choice A is best.** In the graph, we can see that the greatest increase comes from the line of black dots. From the chart, we know that this is HL.

- It's NOT Choice B because LL actually decreases slightly from 0 min to 6 hours.
- It's NOT Choice C because the controls don't increase.
- It's NOT Choice D because the controls don't increase.

**QUESTION 51**

**Choice D is best.** We see that the Mimosa plants were *not* numbered to stimuli, an argument that is supported by the passage in lines 40-43 ("When the... their leaves") where the plants still collapse their leaves when then are shaken, and by the graph, as the degree of leaf openness of mimosa plants varies over time and they the plants close their leaves at when they are shaken in the graph at DIS-hab.

- It's NOT Choice A because while lines 35-37 demonstrate that the plant was not endangered by the drop and thus did not close its leaves, the graph does not obviously support this concept. If unconvinced, try thinking about what conclusions you could draw from the graph alone without having read the passage. Choice A is not a conclusion that the graph directly supports.
- It's NOT Choice B because the passage doesn't support this contention. If anything, lines 40-43 seem to imply that shaking the plant actually does endanger it, since the mimosa collapses its leaves when it is shaken, even as it keeps its leaves open if it is dropped.
- It's NOT Choice C because neither the passage nor graph make this claim. As "slowly" is fairly subjective, we can rule out this answer choice by realizing that the passage never describes the plant learning as "slow". If anything, lines 33-35 present a stronger case that the mimosa plants learned quickly.

**QUESTION 52**

**Choice B is best.** The graph shows an increase in the degree of openness even after the plants have been shaken, which is exactly the author's point in lines 43-45 ("When the... original lesson").

- It's NOT Choice A because it actually shows an increase in the degree of openness.

- 
- It's NOT Choice C because this doesn't necessarily support the author's point on remembering, and only one of the mimosa plants obviously increased their degree of openness over time. collapses its leaves when it is shaken, even as it keeps its leaves open if it is dropped.
  - It's NOT Choice D because this measurement doesn't provide evidence for a phenomenon of remembering.

# SECTION 2 - WRITING

## QUESTION 1

**Choice C is best.** “Growth” is something one can experience. When referring to something that can be “experienced” (line 2), it should be a noun rather than a verb, as in choices A, B, or D.

- It’s NOT Choice A because “growing” is a verb and cannot follow the past tense verb “experienced”.
- It’s NOT Choice B because “grow” is a verb and cannot follow the past tense verb “experienced”.
- It’s NOT Choice D because “increased” is a verb and cannot follow the past tense verb “experienced”.

## QUESTION 2

**Choice C is best.** Sentence 2 provides information that gives a particular example of how “the hotel industry has experienced growth” (line 1-2) in staff automation through describing how countries such as Japan and China have begun implementing robotic hotels. “For instance” is a transitional phrase that introduces examples of previously introduced ideas.

- It’s NOT Choice A because “moreover” is a transitional phrase that means “in addition” and sentence 2 is not introducing an additional detail that adds onto sentence 1.
- It’s NOT Choice B because “however” is a contrast transitional phrase and sentence 2 does not introduce a contrasting idea from sentence 1.
- It’s NOT Choice D because “on the one hand” is a transitional phrase that is usually succeeded by “on the other hand”, or a contrast transition, and sentence 3 does not provide that kind of transition.

## QUESTION 3

**Choice B is best.** “Have led” is the present perfect tense and is typically used when an action is recently completed. The “projections” (line 11) mentioned about the hotel industry’s employment “is expected to decrease”, which is in the present perfect tense, so references to this projection must also parallel the present perfect tense.

- It’s NOT Choice A because “had led” is the past perfect tense and is typically used when an action has happened earlier in the past, usually before another previous event. In this case, the projections were a recent prediction and hence, the present perfect tense is preferred.
- It’s NOT Choice C because “will” is a future tense verb that cannot be a helping verb for a past tense verb such as “led”.

- It's NOT Choice D because the insertion of "which have" converts the sentence into a dependent clause.

#### QUESTION 4

**Choice D is best.** The current sentence introduces the idea that robots can replace human tasks in a general sense. Hence, the sentence can be enhanced through adding on a list elaborating upon the types of tasks that they have the potential to replace.

- It's NOT Choice A because the additional information is relevant to the current sentence - in fact, it gives specific examples of the idea that the current sentence discusses.
- It's NOT Choice B because while the addition provides different details, they are not distracting and do not deter from the passage's main point.
- It's NOT Choice C because while the addition does improve the current sentence, it does not provide additional unconventional observations about robots, it merely presents examples of replaceable human tasks.

#### QUESTION 5

**Choice A is best.** It demonstrates that the customized robots were created by scientists to be used in the hospitality industry.

- It's NOT Choice B because it creates ambiguity in the sentence - specifically, it implies that the robots are already used in the hospitality industry, rather than being the scientists' creation.
- It's NOT Choice C because "using" is not the correct verb tense to express that the scientists created the robots *for* the industry.
- It's NOT Choice D because it is slightly redundant - there is no need to repeat "them" at the end of the sentence.

#### QUESTION 6

**Choice B is best.** This is an example of parallel structure - the other phrases in this sentence have the future tense (might converse, (might) entertain), and therefore, the future tense of wait must be used to match the parallelism.

- It's NOT Choice A because "waiting" is the present participle of wait and not the future tense
- It's NOT Choice C because "to wait" is in the present tense and not in the future tense
- It's NOT Choice D because the "being" in "being a waiter" is in the present participle tense, not the future tense

#### QUESTION 7

**Choice A is best.** The relationship between the sentence "However...experiences." (lines 30-31) and "For example...hotels." (lines 32-34) is that the former provides a more general description that the latter gives an example of. Choice A most effectively combines the two sentences because it uses "like", which introduces the example.

- It's NOT Choice B because in separating the two sentences with a semicolon, their original relationship is lost. The second sentence is an example of the first, which is not adequately eluded to through using a semicolon.
- It's NOT Choice C because the implied meaning of the two sentences is that bed-and-breakfast style hotels are an example of how people look for more human experiences, rather than the idea that the bed-and-breakfast style hotel is the sole avenue for people to experience more human interactions.
- It's NOT Choice D because the sentences are rephrased in a way that loses the transition from the previous paragraph into the current one. Namely, "however" is needed to show a contrast from ideas in the previous paragraph into the present one.

### QUESTION 8

**Choice D is best.** This sentence begins with a subordinating conjunction "while" (paragraph 3, line 1), and so the clause that proceeds the comma (paragraph 3, line 2) needs to be an independent clause for the sentence to be an independent clause overall. Deletion of the underlined portion leaves us with an independent clause.

- It's NOT Choice A because having "however" (paragraph 3, line 2) after the comma makes the following clause dependent. The clause that follows a subordinating clause should be independent.
- It's NOT Choice B because "while" adequately expresses the contrast between the clause "While...resorts" (paragraph 3, lines 1-2) and the clause "they...service" (paragraph 3, lines 2-3), and so "on the other hand" is redundant.
- It's NOT Choice C because ",and" is used as a coordinating conjunction to connect two independent clauses, but in this case, the first clause is dependent.

### QUESTION 9

**Choice C is best.** Based on the context of the rest of the sentence, we are looking for phrase that is in the point of view of visitors getting greeted warmly by hotel employees. Choice C presents the phrase in the point of view of visitors and with the presumed goals of the visitors.

- It's NOT Choice A because the location of the hotel employees is not relevant to the preferences of the tourists for a friendly greeting.
- It's NOT Choice B because there is no context given as to why the preference for friendly hotel employees is limited to difficult circumstances.
- It's NOT Choice D because the preface for this sentence should focus on the priorities and preferences of the tourists as opposed to the hotel employees' obligations.

### QUESTION 10

**Choice A is best.** This is an example of parallelism. Each of the other phrases in this sentence have the present singular tense (keeps, supports), and therefore the present tense of stimulate (stimulates) must be used to match the parallelism.

- It's NOT Choice B because "while stimulating" does not align with the present singular tense parallel structure of the other verbs in the sentence.
- It's NOT Choice C because "stimulated" does not align with the present singular tense parallel structure of the other verbs in the sentence.
- It's NOT Choice D because "can stimulate" does not align with the present singular tense parallel structure of the other verbs in the sentence.

**QUESTION 11**

**Choice B is best.** The author's primary claim is that there are numerous pros and cons to utilizing robots to replace humans in the hotel industry, and ultimately, having an all-robot service industry might not be the most ideal solution. Choice B successfully discusses that while there are benefits to robots, those benefits don't necessarily outweigh the loss of human interactions.

- It's NOT Choice A because the comparison of e-readers to books (paragraph 6, line 7) is a slightly random and irrelevant to the overall idea of the passage.
- It's NOT Choice C because it states that robot hotels would replace human hotels, which does not support the overall claim of the passage that robot hotels have numerous benefits but would not replace human hotels.
- It's NOT Choice D because the rebellious nature of robots is not the primary reason in the passage as to why they will not replace humans in the hotel industry.

**QUESTION 12**

**Choice D is best.** Sentence 2 ("When...architecture") states that the author's initial focus for his/her trip to Paris was food. Sentence 3 states that the author became fascinated with architecture instead, so a transition word that focuses on an unanticipated result is needed here. "Unexpectedly" is the best choice here.

- It's NOT Choice A because although "nevertheless" expresses a contrasting tone, it lacks the surprise factor of the author's ultimate fascination with architecture instead of food.
- It's NOT Choice B because "additionally" is a transition word that introduces extra detail to a preceding phrase, rather than introducing a different result altogether.
- It's NOT Choice C because "otherwise" introduces a clause "in light of" a preceding clause, rather than a different result altogether.

**QUESTION 13**

**Choice A is best.** "The Sun King" (sentence 6) is a description of Louis XIV, and so must be enclosed in commas.

- It's NOT Choice B because the clause that proceeds the semicolon is a dependent clause, which is grammatically incorrect.
- It's NOT Choice C because "the Sun King" (sentence 6) is a description of Louis XIV, and so must be separated from Louis XIV as a primary subject.
- It's NOT Choice D because "the Sun King" (sentence 6) is a description of Louis XIV, and so must be separated from Louis XIV as a primary subject.

**QUESTION 14**

**Choice D is best.** The correct form is “its” as opposed to “it’s”, because we are referring to the palace’s (possession of a) massive size, rather than “it is”. Additionally, “during...60,000” (paragraph 2, sentences 2-4) is an independent clause and so must be separated by a semicolon as opposed to a comma from the rest of the sentence.

- It’s NOT Choice A because “during...60,000” (paragraph 2, sentences 2-4) is an independent clause and so cannot be separated out from the rest of the sentence by a comma.
- It’s NOT Choice B because the correct form is “its” as opposed to “it’s” since we are referring to the palace’s (possession of a) massive size, rather than “it is”.
- It’s NOT Choice C because the correct form is “its” as opposed to “it’s” since we are referring to the palace’s (possession of a) massive size, rather than “it is”.

**QUESTION 15**

**Choice D is best.** There is no need to discuss the specific composition of the population of Versailles, as the rest of the paragraph does not reference the specific members of the population in further detail and so does not need more elaboration.

- It’s NOT Choice A because the discussion of the specific composition of the population of Versailles is not necessary to understand the rest of the passage.
- It’s NOT Choice B because the previous paragraph discusses the architecture rather than the population of Versailles.
- It’s NOT Choice C because the information introduced is an additional detail about the population of Versailles and is not redundant information.

**QUESTION 16**

**Choice B is best.** “a system that vested power and privilege in an absolute monarchy” is a phrase that describes the Ancien Régime. It does not need any additional transition word or prepositions to introduce it other than a comma.

- It’s NOT Choice A because the inclusion of both a comma and “that is” (paragraph 2, line 10) is incorrect. This choice would be more grammatically correct with the inclusion of just a comma or just “that is”.
- It’s NOT Choice C because the “for” is unnecessary. The phrase “a system that vested power and privilege in an absolute monarchy” is a phrase that describes the Ancien Régime and does not need to be introduced by a preposition.
- It’s NOT Choice D because the lack of a comma to separate the Ancien Régime from its descriptive phrase makes the sentence a run-on sentence.

**QUESTION 17**

**Choice C is best.** The context of the sentence is that every discrete sound is amplified during these event. Wink is the most appropriate and similar choice to “laugh” and “cough” in this case (paragraph 3, line 10).

- It’s NOT Choice A because movement is a visible action, and in this case, we are looking for something that is discrete and not normally noticed.

- It's NOT Choice B because outburst is a deliberate movement and not as discrete as the other examples given.
- It's NOT Choice D because death is unrelated to any of the discrete components of the given examples.

**QUESTION 18**

**Choice C is best.** The relationship between these two sentences is that the second sentence is an elaboration discussed in the first. A semicolon therefore effectively combines these two independent clauses since they are related to one another.

- It's NOT Choice A because the two sentences both talk about a related topic and that relationship is better exposed through connecting them with a semicolon rather than having them remain as separate sentence.
- It's NOT Choice B because "so" is not the right transition word to introduce the famous part of Versailles that is mentioned in the first sentence "Another...palace" (paragraph 4, lines 1-2).
- It's NOT Choice D because the use of a comma and a coordinating conjunction is not suited in a case where the name of the "famous part of Versailles" is introduced for the first time in the subsequent sentence (paragraph 4, line 1).

**QUESTION 19**

**Choice B is best.** This is an example of parallelism. Each of the other phrases in this sentence are nouns (Corinthian pillars, a geometric garden), therefore "Rococo architecture" matches the stylistic pattern.

- It's NOT Choice A because "it also features Rococo architecture" does not align with the stylistic pattern of the other nouns in the sentence.
- It's NOT Choice C because "its architecture is Rococo" does not align with the stylistic pattern of the other nouns in the sentence.
- It's NOT Choice D because "has Rococo architecture" does not align with the stylistic pattern of the other nouns in the sentence.

**QUESTION 20**

**Choice D is best.** The context is that the author heard a tourist making a remark and the quote transcript is presented. "Remark" is the best choice in this question because while he/she walked through the rooms, he/she heard the tourist (during that time) making the remark, so "remark" should be in the present tense.

- It's NOT Choice A because "tourists' remark" is a noun that is less suited to introduce a quote of the remark than the verb version of remark.
- It's NOT Choice B because "remarking" implies that the remarking is still happening, and the remark was made in the past.
- It's NOT Choice C because "remarked" is in the past tense and cannot be used as a verb of an object.



**QUESTION 21**

**Choice D is best.** “Savoring their part of history” (paragraph 5, line 8) is descriptive of the ghosts. Choice D is the only choice where the phrase directly refers to the ghosts.

- It’s NOT Choice A because “savoring their part of history” is incorrectly referring referencing “you”.
- It’s NOT Choice B because contextually, you are not the one savoring the history of the ghosts.
- It’s NOT Choice C because contextually, you are not the one savoring the history of the ghosts.

**QUESTION 22**

**Choice D is best.** Paragraph 3 introduces the Hall of Mirrors, which is one of the most well-known attraction in Versailles. This paragraph is located appropriately right after the paragraph introducing Versailles and before the paragraph introducing another famous Versailles attraction.

- It’s NOT Choice A because Paragraph 3, which discusses the Hall of Mirrors in Versailles, should not be placed before Versailles is introduced in Paragraphs 1-2.
- It’s NOT Choice B because Paragraph 4 talks about another famous part of Versailles, which should follow and not precede the introduction of the first attraction in Paragraph 3.
- It’s NOT Choice C because Paragraphs 3 and 4 should be retained in their current order, as the former introduces one attraction and the later introduces another attraction, and Paragraph 5 is most suited as a subsequent paragraph.

**QUESTION 23**

**Choice C is best.** The subject of the sentence “The presence...humans” (lines 1-3) is presence, which is a singular noun. Hence, the correct form of the verb “help” would be “helps”, because “helps” is also a singular verb.

- It’s NOT Choice A because “would help” is in the future tense, but the tense of this sentence should be in the present tense.
- It’s NOT Choice B because “help” is a plural verb, but the noun it modifies in this case is “presence”, which is a singular verb. Therefore, “presence help” would be a case of subject-verb disagreement.
- It’s NOT Choice D because having “helping” as a verb without a helping verb makes the sentence a dependent clause.

**QUESTION 24**

**Choice C is best.** Every other choice is unsupported by the data in the graph, and according to the graph, customer satisfaction (white bar) has increased from 0.2 to over 0.7, which is an increase of greater than fifty percent.

- It’s NOT Choice A because the graph shows frog population and customer satisfaction, and does not provide information about the mosquito population at all.
- It’s NOT Choice B because the introduction of frogs has shown an increase in customer satisfaction, as opposed to a decrease.

- It's NOT Choice D because the graph shows customer satisfaction when frogs are eating mosquitoes, but does not provide any information about whether or not customers would be most satisfied if the frogs did not eat the mosquitoes.

**QUESTION 25**

**Choice D is best.** There is no need for a transitional word here, since we are merely noting the effect of the lack of frogs in the tropical/swampy areas.

- It's NOT Choice A because "additionally" implies that this is an added detail to a point stated previously in the passage, which is incorrect.
- It's NOT Choice B because "thus" implies that the sentence is meant to be a conclusion or summary of the passage, which is incorrect.
- It's NOT Choice C because "furthermore" implies that this is an added detail to a point stated previously in the passage, which is incorrect.

**QUESTION 26**

**Choice B is best.** This question tests your ability to distinguish between the homophones their, there, and they're. In this case, we are looking for the possessive form of they to replace frogs, which is "their".

- It's NOT Choice A because "there" refers to a more location-oriented use, and here, we want the possession usage.
- It's NOT Choice C because "they're" is short for "they are", and here, we want the possession usage.
- It's NOT Choice D because "its" is in a singular possessive form, and frogs is plural and therefore, requires the plural possessive form.

**QUESTION 27**

**Choice A is best.** In this sentence, we are trying to convey the meaning that the the hotel managers did not know about the frogs playing a role in reducing the number of mosquitoes. Hence, we need the plural possessive form here, which is "their".

- It's NOT Choice B because "its" is the singular possessive form and frogs is plural and requires the plural possessive pronoun "their".
- It's NOT Choice C because it is missing a preposition, such as "of", to introduce the phrase.
- It's NOT Choice D because it is missing a preposition, such as "of", to introduce the phrase.

**QUESTION 28**

**Choice C is best.** The additional information is relevant to add in this situation, since it provides us with more details about the reasoning behind and location of why customer complaint rates have lowered drastically.

- It's NOT Choice A because the information is relevant to the passage's topic, since it provides detail about how frogs were able to reduce customer complaints about mosquitoes.

- It's NOT Choice B because the example provided is not trivial and the details are relevant, since the paragraph explores the relationship between frogs, mosquitoes, and tourism.
- It's NOT Choice D because this information is an additional detail for the hotel managers' claims, as opposed to a transition from the discussion about frogs' role in preventing hotels from being overrun with flies.

**QUESTION 29**

**Choice B is best.** "That" is used in this case to introduce the subordinate clause "that...experience" (paragraph 3, lines 11-14), and does not need any punctuation before or after the verb "asserts."

- It's NOT Choice A because colons are generally used to introduce a list or emphasize a point, neither of which is presented in this situation.
- It's NOT Choice C because the use of one em-dash is used mostly to emphasize an idea, which is not the case in this situation.
- It's NOT Choice D because semicolons are used to separate two independent clauses, and in this case, neither of the clauses that the semicolon separates are independent.

**QUESTION 30**

**Choice D is best.** The overall purpose of this passage is that frogs improve customers' hotels experiences because they eat mosquitoes and prevent them from infiltrating hotels. Hence, we are looking for a choice that emphasizes the happy experience of customers, which is best explained by "satisfied with."

- It's NOT Choice A because the customers are generally happy with their hotel experience due to the frogs' role, not questioning of it.
- It's NOT Choice B because the frogs are not entertaining the customers as much as giving them a more comfortable and relaxing hotel experience.
- It's NOT Choice C because here, we are looking for a description of happier customers, rather than customers being merely "accepting" of an improved situation.

**QUESTION 31**

**Choice C is best.** The context of the additional sentence is that the guests are happy with the frogs' contribution to their hotel experience. The addition of this sentence should therefore occur after the sentence that discusses a study that details customer perception of their hotel experiences featuring frogs.

- It's NOT Choice A because information about the hotel managers' perception of customer satisfaction is introduced in sentence 5, so a sentence about the customers' acceptance of the frogs' contribution to the hotel ambiance should not be added before the introduction.
- It's NOT Choice B because it is too early to introduce the guests' perception of the frogs before introducing the relationship between the frogs, mosquitoes, and tourism.

- It's NOT Choice D because the introduction of the customers' experience with the frogs comes in the second half of paragraph 3 - placing the additional sentence after sentence 1 is too early.

**QUESTION 31**

**Choice C is best.** The context of the additional sentence is that the guests are happy with the frogs' contribution to their hotel experience. Therefore the addition of this sentence should occur after the sentence that discusses a study that discusses customer perception of their hotel experiences that feature frogs.

- It's NOT Choice A because information about the hotel managers' perception of customer satisfaction is introduced in sentence 5, so a sentence about the customers' acceptance of the frogs' contribution to the hotel ambiance should not be added before the introduction.
- It's NOT Choice B because it is too early to introduce the guests' perception of the frogs before introducing the relationship between the frogs, mosquitoes, and tourism.
- It's NOT Choice D because the introduction of the customers' experience with the frogs comes in the second half of paragraph 3 - placing the additional sentence after sentence 1 is too early.

**QUESTION 32**

**Choice C is best.** Here we are looking for a word that discusses negative consequences of importing foreign frog species into a new environment. Because these frogs are new to the environment, the appropriate way to discuss their incorporation would be "introducing".

- It's NOT Choice A because the connotation here is that bringing in the foreign frog species can have a negative impact. Hence, a word with a positive connotation such as "welcoming" is not suited.
- It's NOT Choice B because the key word here is "exotic", which refers to a foreign group. Therefore "putting" is not as appropriate as "introducing", since this is referring to a new frog group.
- It's NOT Choice D because the exotic frog species already exists and is not being created.

**QUESTION 33**

**Choice A is best.** The key relationship in this question is that the the introduction of foreign amphibians can lead to two independent situations; it can disrupt local wildlife and also lead to ecological imbalances. Choice A connects the sentence correctly by using the conjunction "and" (as opposed to "or", since both situations occur) without a comma (a comma is only necessary when separating two independent clauses).

- It's NOT Choice B because the ecological imbalances are caused by the introduction of the foreign amphibians and not the disruption of local wildlife.
- It's NOT Choice C because using a comma with a coordinating conjunction is used to separate two independent clauses, and in this case, the clause after the conjunction is not an independent clause.

- It's NOT Choice D because "or" suggests that the introduction of the amphibians causes one or the other to occur, which is incorrect.

**QUESTION 34**

**Choice B is best.** "That" is used to introduce a subordinate clause as a complement to a statement made, which is most appropriate in this question.

- It's NOT Choice A because "that" is a more straightforward usage of "for which", so "that" is preferred in this situation.
- It's NOT Choice C because "whereby" has a similar meaning to "where", and ruins is not a referring to a place in this context.
- It's NOT Choice D because "who" is typically used to describe a person, and the ruins are not people.

**QUESTION 35**

**Choice D is best.** In this sentence, "the site where archaeologists now think Julius Caesar died" is a phrase that describes Pompey's Theater (lines 8-9). Because it directly comes after the introduction of Pompey's Theater it should be separated from Pompey's Theater via a comma.

- It's NOT Choice A because semicolons are used to separate two independent clauses and the clause that follows the semicolon is not an independent clause.
- It's NOT Choice B because the lack of punctuation that separates out the Theater from its descriptive phrase makes the sentence a run-on sentence.
- It's NOT Choice C because the "or" is not necessary when introducing a phrase that describes what the theater is.

**QUESTION 36**

**Choice A is best.** The relationship here between the ruins and the infrastructure is that the discovery of this site has halted the development of modern infrastructure, so the two have competing interests and goals that limit the growth of the other. Hence "conflicts with" is the best choice here.

- It's NOT Choice B because "unsettles" has a connotation of making another entity uneasy or uncomfortable, which is not true in this situation.
- It's NOT Choice C because "mitigates" means to lessen and while the ruins lessen the *growth* of the infrastructure, it does not lessen the infrastructure itself.
- It's NOT Choice D because the ruins don't destroy the infrastructure as much as they reduce its success and its growth.

**QUESTION 37**

**Choice B is best.** The context of this question is articulating the balance between preserving the infrastructure and discovering new ruins. Choice B correctly explains how the review process of the construction projects is altered to accommodate the ruins.

- It's NOT Choice A because the focus is on accommodate both the new developments and the old infrastructure, and not on whether the sites are less valuable than preserving the past.
- It's NOT Choice C because the discussion of the death of Julius Caesar is not relevant to the context.
- It's NOT Choice D because the focus is on accommodate both the new developments and the old infrastructure, and not on evaluating the negative impact of the discovery of new ruins in terms of tourism.

**QUESTION 38**

**Choice B is best.** This is a case of a comparison of the difficulty levels of Rome's construction vs. its stray cat infestation. In cases of comparison we use "than" rather than "then", which is used to demonstrate transition. Commas are not necessary in this case.

- It's NOT Choice A because in cases of comparison, we use than rather than then, which is used to demonstrate transition.
- It's NOT Choice C because the use of a comma after "than" is not necessary in cases of comparison.
- It's NOT Choice D because in cases of comparison, we use than rather than then, which is used to demonstrate transition.

**QUESTION 39**

**Choice C is best.** We use "who" when referring to subjects and "whom" when referring to objects. In this case the subject is "visitors", so "who" should be used. The appropriate tense of "tour" is the present tense since the sentences before and after are also in the present tense.

- It's NOT Choice A because tour should not be in past tense - later parts of the sentence have future tense presentations, such as "may find" (sentences 2, line 4), and so past tense is not the appropriate tense here.
- It's NOT Choice B because "who" is used when referring to subjects and "whom" is used when referring to objects. In this case, visitors is the subject, so "whom" is incorrect.
- It's NOT Choice D because in this case, the tense should not be "who are touring" since we are speculating if the visitors "may find the ruins overrun with feral cats", so the visitors are not currently physically touring.

**QUESTION 40**

**Choice D is best.** "Because" is used to introduce a phrase that stands for a clause expressing an explanation or reason and it doesn't require any punctuation as a transition.

- It's NOT Choice A because colons are generally used to introduce a list or emphasize a point, neither of which is presented in this situation.

- It's NOT Choice B because "nevertheless" is used when a situation occurs *despite* another situation. In this case, we are not presented with any prior reason for why cats would not be attracted to these sites for any particular reason.
- It's NOT Choice C since "because" is used to introduce a phrase that stands for a clause expressing an explanation or reason, and it doesn't require any punctuation as a transition.

**QUESTION 41**

**Choice A is best.** "While" (paragraph 2, line 11) suggests that the action is currently occurring, so "visiting" is the most appropriate choice.

- It's NOT Choice B because "they" is a plural pronoun, and "visits" is a singular verb, so this is a case of subject-verb disagreement.
- It's NOT Choice C because "while" (paragraph 2, line 11) suggests that the action is currently occurring, so any form of past tense is not correct to use in this case.
- It's NOT Choice D because "while" (paragraph 2, line 11) suggests that the action is currently occurring, so any form of past tense is not correct to use in this case.

**QUESTION 42**

**Choice C is best.** Sentence 5 introduces how they approached the cat problem; it is most appropriate to introduce prior to a sentence that introduces a specific solution that was implemented (sentence 4). Therefore, placing it after sentence 3 is most appropriate.

- It's NOT Choice A because the introduction to the cat problem should precede the specific solution of the implementation.
- It's NOT Choice B because cats aren't introduced until sentence 3, so sentence 5 cannot be introduced before sentence 3.
- It's NOT Choice D because the introduction to the cat problem should precede the specific solution of the implementation.

**QUESTION 43**

**Choice C is best.** The number of churches that Rome houses is not relevant to the overall context of describing Rome's vivid history and culture.

- It's NOT Choice A because the additional information does not support any counterargument introduced previously.
- It's NOT Choice B because providing a quantitative number of churches does not add to the detail of the city's history.
- It's NOT Choice D because while the addition is not needed, it does not contradict any claims made in the paragraph.

**QUESTION 44**

**Choice D is best.** All other choices use redundant terminology. The sentence without the underlined portion adequately indicates the dual unique position of Rome in both worlds.

- It's NOT Choice A because "in addition to that" does not add additional information that justifies its length.
- It's NOT Choice B because "on top of that" is redundant and unnecessary to express Rome's unique position.
- It's NOT Choice C because "moreover" does not fit grammatically at the end of the sentence, and adds needless length.



## SECTION 3 - MATH (NO CALC)

### QUESTION 1

**Choice C is correct.**

The first step is to use the equation  $9x + 10 = 15$  to solve for  $x$ . Subtract 10 from both sides, and then divide the resulting  $9x = 5$  equation by 5. Therefore  $x = \frac{5}{9}$ . Now, substitute this value into  $18x + 7$ , which results in  $18(\frac{5}{9}) + 7$ .  $18(\frac{5}{9})$  multiplies to 10.  $10 + 7 = 17$ .

### QUESTION 2

**Choice B is correct.** Use the equation  $x + y = 0$  to solve for either  $y$  or  $x$ . Solving for  $x$  requires subtracting both sides of the equation by  $y$ , which results in  $x = -y$ . Then substitute this value into  $5x - 3y = 8$ , which results in  $5(-y) - 3y = 8$ . Combining like terms results in  $-8y = 8$ , which when divided by  $-8$  yields  $y = -1$ . Substitute this value into the original  $x = -y$  equation, which results in  $x = -(-1)$ , or  $x = 1$ . The final answer is **(1,-1)**

### QUESTION 3

**Choice A is correct.** Since the total price of the paint job increases by 15 whenever  $n$  or  $h$  increases, we can infer that if two workers work for an hour ( $n = 2$ ), then the price is 30 in total. Similarly, whenever a single worker works for 2 hours ( $h = 2$ ), the price also is 30 dollars. Therefore, the correct answer is that **the company charges 15 per hour for each painter.**

*Something to keep in mind is that choice C is incorrect because even though increasing  $h$  by 1 does in fact increase the total cost by 15, two workers working for only 1 hour also will increase the cost by 15 WITHOUT  $h$  increasing*

### QUESTION 4

**Choice A is correct.** The best way to analyze this question is ask what 2 terms, when each is squared, equal 4 and 3 respectively, but when multiplied to each other equals half of 24 (the reason why it is half is that the two terms will be multiplied twice). The square root of 16 is 4 as  $4 \times 4 = 16$  and  $c \times c = c^2$  and the square root of 9 is 3 since  $3 \times 3 = 9$  and  $d \times d = d^2$ . 4 multiplied by 3 equals 12 and this term when doubled equals 24. Therefore, the correct answer is  $(4c^2 + 3d^2)^2$ .

### QUESTION 5

**Choice C is correct.** First substitute 6 for  $x$  in the equation, resulting in  $\sqrt{3k^2 + 9} - 6 = 0$ . Then add six to both sides rearranging to  $\sqrt{3k^2 + 9} = 6$ . Then square both sides of the equation yielding  $3k^2 + 9 = 36$ . Subtract 9 from both sides and then divide by 3, which

results in  $k^2 = 9$ . Taking the square root of both sides results in  $k = +3$  or  $-3$ , but since  $k > 0$ . Therefore,  **$k = 3$** .

*Be sure to clarify why the answer is +3 and not -3. Also great learning opportunity to tell students that everything provided in a question is essential to solving the equation.*

### QUESTION 6

**Choice D is correct.** Since line e is parallel to line k, their slopes are the same. First we find the slope of line e using  $\frac{(y_2 - y_1)}{(x_2 - x_1)}$ . Substituting the points (0,4) and (-7, 0) in to this equation results in  $\frac{4-0}{0-(-7)} = \frac{4}{7}$ .

Therefore the equation is  $y = \frac{4}{7}x + b$ . We can substitute p for b since p is the y value where  $x = 0$ , or the y- intercept. Therefore, the equation is now  $y = \frac{4}{7}x + p$ . Substituting the point (21, 0) that lies on line k results in  $0 = \frac{4}{7}(21) + p$ , which results in  $0 = 12 + p$ . Subtract 12 from both sides. The solution is then  **$p = -12$** .

### QUESTION 7

**Choice A is correct.** Because  $\frac{x^{a^2}}{x^{b^2}} = x^{36}$  shares a common variable term in the numerator and denominator, you are able to use exponent rules to isolate the exponents. Therefore, we know that  $a^2 - b^2 = 36$  which can be rewritten as  $(a - b)(a + b) = 36$ . Since  $a + b = 9$ , the equation is now  $(a - b)(9) = 36$ . Divide both sides by 9, and the equation is now  $a - b = 4$ . Therefore, since the question only asks what a-b is, the answer is that  $a - b = 4$ .

*Explain to the student that solving for a and then b independently is very time consuming. If the equation only asks for what a-b is, it is much simpler to simply solve for that as opposed to each variable.*

### QUESTION 8

**Choice C is correct.** Since the angle has to be greater than 25, we can assign 26 to the measure of the exterior angle. The equation is now  $n(26) = 360$ . Divide both sides of the equation by 26, and the result is 13 with a remainder of 12. Since the regular polygon has to account for all the angles, it must have more than 13 sides. Therefore, the answer is **14**.

*A common error would be to assume that the correct answer is 13 angles. Explain to the student why the remainder means that another angle must be used. Although not related mathematically, a common way of describing the concept in itself is explaining something along the lines of "if you have 13 gallons of water and jugs that can hold 5 gallons each, you still need 3 jugs even if the third one isn't completely filled".*

### QUESTION 9

**Choice B is correct.** The first step is to find the equation with the slope of 8 and the point (1,6). Using the point-intercept form, the equation is  $y = 8x + b$  (Note, this is not the b from

the equation), and by substituting (1,6) the equation now becomes  $6 = 8(1) + b$ . Subtract 8 from both sides, and  $b = -2$ . The equation is now  $y = 8x - 2$ . The slope of the second equation with points (4,3) and (2,5) can be found using  $\frac{y_2 - y_1}{x_2 - x_1}$ , which results in  $\frac{3-5}{4-2}$ , simplifying to  $-\frac{2}{2}$  or -1. The equation is now  $y = -x + b$ , where  $b$  (Note, also not  $b$  from the equation) can be found by substituting (2,5).  $(5) = -(2) + b$  results in  $b = 7$ , and the equation becoming  $y = -x + 7$ . Using the two equations  $y = 8x - 2$  and  $y = -x + 7$ , we can substitute (a,b) for (x,y) in both equations, resulting in  $b = 8a - 2$  and  $b = -a + 7$ . These two equations can be combined resulting in  $8a - 2 = -a + 7$ . Adding  $a$  and 2 to both sides of the equation results in  $9a = 9$ , or  $a = 1$ . Substituting  $a = 1$  into the equations results in  $b = -1 + 7$ , or  $b = 6$ . Adding  $a + b = 7$ .

**QUESTION 10**

**Choice C is correct.** Since  $y$  can never be less than or equal to -3, we know that  $y > -3$ . If you plug in 0 for  $x$  in all of the equations, option  $a = -4$ , choice  $b = -4$ , and choice  $d = -4$ . Therefore, by process of elimination,  $y = (x - 4)^2$  is the correct answer, which can be confirmed as an  $x - 4$  is always squared and therefore can never be negative. Therefore,  $y = (x - 4)^2$  is correct.

**QUESTION 11**

**Choice C is correct.** First multiply both the numerator and the denominator of the equation by the complex conjugate  $4 - i$  yielding  $\frac{(6-10i)(4-i)}{(4+i)(4-i)}$ . Multiplying correctly using FOIL (First, Outer, Inner, Last) results in  $\frac{24-6i-40i+10i^2}{16-4i+4i-i^2}$ . Combine like terms, which results in  $\frac{14-46i}{17}$  since  $i = \sqrt{-1}$ ,  $i^2 = -1$ . This can then be rewritten as  $\frac{14}{17} - \frac{46i}{17}$ .

**QUESTION 12**

**Choice B is correct.** Since the goal is to rewrite the equation in terms of good reviews, or isolate  $G$  on one side of the equation, multiply both sides of the equation by  $(G-B)$ . This results in  $R(G - B) = G$ , or  $G = RG - RB$ . Subtract  $RG$  from both sides. Now,  $G - RG = -RB$  can be rewritten as  $G(1 - R) = -RB$ . Divide both sides by  $(1 - R)$ , which results in  $G = \frac{-RB}{1-R}$ .

**QUESTION 13**

**Choice D is correct.** First divide the equation by 3, which results in  $m^2 - 3m + 6 = 0$ . Since the equation cannot be factored, use the quadratic formula, or  $m = \frac{3 \pm \sqrt{(-3)^2 - 4(1)(6)}}{2(1)}$ . This yields  $\frac{3+i\sqrt{15}}{2}$  or  $\frac{3-i\sqrt{15}}{2}$ . Since the question is asking for the sum of all values of  $m$ , we can add  $\frac{3+i\sqrt{15}+3-i\sqrt{15}}{2}$ . Combine like terms yielding  $\frac{3+3}{2}$ , which equals **3**.

Note that even though  $i$  is an unreal number, the positive and the negative cancel each other out.

**QUESTION 14**

**Choice A is correct.** Since the car depreciates at a value of 8%, the annual value is then multiplied by  $(100\% - 8\%)$ , or 92%. This can be written as 0.92, and since it depreciates annually, this can be written as  $0.92^t$  where  $t$  is every year. Since the starting value is 27,500, the final equation can be written as **27,500(0.92)<sup>t</sup>**.

*Answers C and D are both wrong because when  $t = 0$ , or prior to any years passing, the equations would equal 0.92 and 0.08 respectively. Answer B is wrong because again this would imply that every year the car depreciates 92% of its value.*

**QUESTION 15**

**Choice D is correct.** The optimal way to solve this problem is through the use of polynomial long division. This is more easily described through a video such as [this one](#) from Khan Academy. Off to the side, the solved long division problem is shown, with explanation below. First, rearrange the problem into long division form  $x + 5 \overline{)7x - 8}$ , then divide the first term of the dividend by the first term of the divisor, yielding  $\frac{7x}{x} = 7$  and place this in the quotient.

$$\begin{array}{r} 7 - \frac{43}{x+5} \\ x+5 \overline{)7x-8} \\ \underline{-(7x+35)} \\ -43 \end{array}$$

Then, multiply the divisor by the first term of the quotient yielding  $7(x + 5) = 7x + 35$ .

Subtract  $7x + 35$  from the dividend, yielding  $(7x - 8) - (7x + 35) = -43$ .

Since the first term of the divisor ( $x$ ) cannot go into  $-43$ , you must write it as a remainder. The remainder is written as  $\frac{-43}{x+5}$ , leaving you with the finished quotient of  $7 - \frac{43}{x+5}$ .

*A common incorrect answer would be A, as the student would be tempted to plug in  $x = 0$  into the original equation. However, this is incorrect as option A is only  $(7-8)/5$ , whereas the variable-based equation can equal multiple number depending on what is inserted for  $x$ . Similarly, B can only equal a single number.*

**QUESTION 16**

**6 is correct.**

First assign variable to each type of bouquet, which we can call S and L.

These will be written as 10S and 20L as one bouquet has 10 roses per bouquet while the other is 20 roses per bouquet.

If 80 roses were received, we know that  $80 = 10S + 20L$  where neither S or L is 0 as the question stipulates that at least one of each type was sold.

However, since we are just looking for a possible number of S bouquets sold, we can substitute 1 for L.

This results in  $80 = 10S + 20(1)$ .

Subtract 20 and divide by 10 by both sides

This results in  $6 = S$ .

**Therefore 6 bouquets of 10 roses could have been sold.**

*Other possible answers are 2 or 4, which can be found by substituting 2 or 3 for L.*

### QUESTION 17

**36 is correct.**

First, the equation can be rewritten by distributing all the terms as

$$20x^2 + 24x + 12x + 6 = ax^2 + bx + c.$$

Combine the like terms, and the equation is now  $20x^2 + 36x + 6 = ax^2 + bx + c$ .

Since the equation is true for all values of x, the variables a, b, and c have to be 20, 36, and 6 respectively.

Therefore, **b = 36**.

### QUESTION 18

**16 is correct.**

Since lines AE and CD are parallel and angles, angle CBD and angle ABE are the same due to being vertex angles

*angle BCD and BEA are congruent due to being alternate interior angles*

*triangle BCD and BEA are congruent through the AAS theorem.*

Since the ratio of line BD to AB is 3 (6:18), the length of line BE is 3 times line CB, or  $4 \times 3$ , or 12.

The line CE is length BE + CB, or  $4 + 12$ .

Therefore, **CE = 16**.

**QUESTION 19****0.75 is correct.**

Because we know the height and base of this triangle are both  $\sqrt{2}$  in length, we know the triangle formed between O, A, and the x-axis is a 45:45:90 right triangle, and therefore the angle is  $180^\circ - 45^\circ = 135^\circ$ . Alternatively, on the unit circle, the point A is at 135 degrees (students should know the common angles and their respective points within the unit circle). Therefore, angle AOB is  $135^\circ$ .

Convert this into the fraction  $\frac{135^\circ}{180^\circ} = \frac{3}{4}$  and multiply by  $\pi$  yielding  $.75\pi = x\pi$

Therefore the answer is  **$x = \frac{3}{4}$ , or 0.75**

**QUESTION 20****2 is correct.**

If the equations have infinitely many solutions, that means that the two lines on the xy plane lie on top of each other, or that they are equal.

Therefore, dividing  $4x + 6y = 40$  by 8 results in  $(4/5)x + (6/5)y = 8$ .

Now, since both equations equal eight, we can equate them to each other.

Now,  $(4/5)x + (6/5)y = ax + by$ .

Therefore,  $a = (4/5)$  while  $b = (6/5)$

Sum these together, and the result is  $10/5$  or **2**.

## SECTION 4 - MATH (CALC)

### Question 1

**Choice C is correct.** We know that the developer earns \$0.99 every time the app is downloaded (variable  $x$ ) and \$0.005 everytime the app is opened (variable  $y$ ). So, you would multiply the amount earned by the number of times the activity is conducted (downloaded or opened) and add the two values together, giving us  $0.99x + 0.005y$ .

### Question 2

**Choice B is correct.** Since we know the rate of inspection is 12 steaks for every 600, we would divide 30,000 by 600 yielding  $(30,000 \div 600 = 50)$ , which shows us how many sets of 600's there are in 30,000. Since there are 50 sets of 600 in 30,000, we would multiply the inspection rate of 12 by 50 yielding  $(12 \times 50 = 600)$ .

Alternatively, you could start by finding of inspection per 1 steak  $(12/600 = 0.02)$  and multiply that by the total number of steaks  $(30,000 \times 0.02 = 600)$ , which would give you **600 steaks**.

### Question 3

**Choice A is correct.** Here, we input the value of 90 for  $p$ . This gives us  $90 = 36 + 4.5n$ . Next, we rearrange the equation isolating  $n$   $90 - 36 = 4.5n$ , giving us  $54 = 4.5n$ . Then we divide both sides by 4.5 and get **12** as the value for  $n$ .

### Question 4

**Choice C is correct.** Since the number of playbills printed is directly proportional to the number of tickets sold, we would need to find out what the playbill to tickets sold ratio is. If 210 playbills are printed for 180 tickets sold, the ratio is  $210/180 = 1.1667$  and can be formatted as  $p = 1.6667t$ , where  $p$  is the number of playbills and  $t$  is the number of tickets sold. From here, we would input the value of  $t$  as 450 and solve for  $p$ , giving us  $p = 1.1667 \times 450 = 525$ , so our answer is **525**.

### Question 5

**Choice C is correct.** Because we know the total number of playbills printed will be 525 if 450 tickets were sold, we can multiply  $525 \times 0.88 = 462$  to find our answer, **462**. We multiply by 88% because 12% of the playbills are unusable, so  $100\% - 12\% = 88\%$

### Question 6

**Choice B is correct.** We would start by forming an equation that illustrates the first part of the question:  $6x + 18 = 6$ . Next, we would solve for  $x$ ,  $6x = 6 - 18 = -12/6 = -2$ . Since  $x = -2$ , we can plug it in to the equation  $4(-2) + 5 = -3$  and find our answer, **-3**.

### Question 7

**Choice D is correct.** The best way to format an equation to readily find the x-intercepts of the parabola is  $y = (x + a)(x + b)$ . Knowing this,  **$y = 2(x + 4)(x + 5)$**  is the best answer choice as it is the only answer choice that has an equation in this format.

### Question 8

**Choice D is correct.** We would set up the question as an equation equal to a variable (e.g.  $x$ ) that represents the student's score  $59 = h - 3(7)$ . From here, we would solve for  $h$ , giving us  $59 + 21 = h = 80$  and derive the answer, which is **80**.

### Question 9

**Choice A is correct.** There are two limits to our train: the number of cars it can pull (24 cars) and the total tonnage it can pull (500 tons). Only answer choices A and B represent this correctly. From here, we know that each iron car weighs 40 tons and each coal car weighs 10 tons each, making  **$40i + 10c \leq 500$ ,  $i + c \leq 24$**  the right answer.

### Question 10

**Choice B is correct.** Since we know  $g(7) = 6$ ,  $f(g(7))$  is the same as  $f(6)$ , which we already know is **4**.

### Question 11

**Choice B is correct.** Emma plans on typing 2 hours per day; that is 120 minutes per day. Emma types 90 words per minute, meaning she types 10800 words per day. Since there are 60,799 words in the article, it will take her about **6 days** to complete the entire draft.

### Question 12

**Choice D is correct.** Since we are trying to figure out the number of days until the lagoon is filled, we will set the inequality to 450,000, the capacity of the lagoon. We know there are already 85,000 liters in the lagoon and 9,000 liters are filled every day. We will sum these two values together, giving  **$85,000 + 9,000t \leq 450,000$**

### Question 13

**Choice D is correct.** In this case, the small sample size makes the results unrepresentative of the larger student body. Where the survey was given can also detract from a reliable conclusion as those who go to the student dining hall likely enjoy the food quality on campus enough to continue going and the survey ignores the potentially large percentage of students who do not eat on campus because of food quality. When the survey was given can also detract from a reliable conclusion because it was given on a Saturday night when the people at the dining halls might represent a particular segment of the student body.



The number of people who refused to respond does not detract from the reliability of the conclusion as it is the factors impacting who answers the survey that would impact its reliability the most.

**Question 14**

**Choice A is correct.** Looking at the graph, **1999** is the only year where the GDP appears to be anywhere near \$475 billion.

**Question 15**

**Choice A is correct.** There are 24 hours in a day and 672 hours in 28 days. To find the average speed in miles per hour, we would divide  $1,500,000 \div 672 = 2200$ .

**Question 16**

**Choice B is correct.** We are looking for the probability a person did not take the review course (50) out of the students who passed the MCAT (78). This can be formatted as  $50/78$ , which can be simplified to **25/39**.

**Question 17**

**Choice C is correct.** If the 40" TV costs 35% less than the \$1500 55" TV, it is 65% the value of the 55" TV. Hence,  $1500 \times 0.65 = 975$

**Question 18**

**Choice C is correct.** A big difference in mean and median can often be explained by a few outliers in the data set that skew the mean in one way or another. Here it is clear that there are a few houses making much more money than the others, which is **C**.

**Question 19**

**Choice B is correct.** One way to approach this question is to create a third column to the right of Town B's that has the sum of families that have each number of pets (e.g. 175 for 0 pets, 190 for 1 pet, etc.). From there, work your way downwards from 0 pets and upwards from 4 pets at the same time, leaving us with **1** as the correct answer.

**Question 20**

**Choice C is correct.** From the survey we know that about  $4/250 = 1.6\%$  of people in Town A and about  $10/250 = 4\%$  of people in Town B have 4 pets. We then multiply these percentages by the number of people in Town A and Town B to find the total expected number of families with 4 pets. We get  $1250 \times 1.6\% = 25$  for Town A and  $1750 \times 4\% = 70$  for Town B, thus the number of families with 4 pets in Town B is expected to be **45 more** than in Town A.

**Question 21**

**Choice D is correct.**  $a - h$  gives us the difference between the estimate and the duration of the actual trip. Since the difference can be negative or positive (the biker could ride much

faster or slower than expected), the answer should account for this in its inequality, therefore the answer is  $-5 < a - h < 5$

**Question 22**

**Choice B is correct.** Solve for  $r^2$ . Begin by multiplying both sides by 5, then divide both by 2, then divide both sides by  $m$ . This rearranges the equation from  $I = \frac{2}{5}mr^2$  to  $r^2 = \frac{5I}{2m}$

**Question 23**

**Choice A is correct.** Assume the moment of inertia for A is 36, set  $I = 36$ . Since we know that mass ( $m$ ) is identical for both A and B, we can ignore it for this problem. Solving for  $r$  in  $36 = \frac{2}{5}r^2$ , we find that  $r^2$  for A is 90 and  $r = 9.5$ . Now do the same for B, setting  $I = 1$ , since A's moment of inertia is 36 times greater than B's. Solving for  $r$  in  $1 = \frac{2}{5}r^2$ , we find that  $r^2$  is 2.5 and  $r = 1.5$ . The radius of B is  $\frac{1}{6}$  the fraction of A's ( $1.5/9.5 = \frac{1}{6}$ ).

**Question 24**

**Choice A is correct.** To solve this, we must put the equation into the  $(x - h)^2 + (y - g)^2 = r^2$  format. Start by creating binomials for both  $x$  and  $y$  by adding integers to both sides:  $(x^2 - 6x + 9) + (y^2 + 8y + 16) = -16 + 9 + 16$ . This leaves us with  $(x - 3)^2 + (y + 4)^2 = 9 = r^2$ . Take the square root of 9, leaving us with **3**.

**Question 25**

**Choice A is correct.** Since  $a + b = 0$  and  $a \neq b$ , we know that one or the other is negative while the other is positive. Use a small number like 1 and -1 to try graphing this on paper or mentally. If the points are (1,0) and (0,-1), the slope would be negative. If the points are (-1,0) and (0,-1), **the slope would be negative.**

**Question 26**

**Choice D is correct.** When  $x = -2$ ,  $f(-2)$  is equal to 2 on the graph. When  $x = 1/2$ ,  $f(1/2)$  is equal to 2 on the graph. When  $x = 5$ ,  $f(5)$  is equal to -2 on the graph. Hence, **I and II only.**

**Question 27**

**Choice D is correct.** In the beginning, the line depicting the propellor drops much faster than the jet engine's. At the 5 to 6 minute mark, the line for the jet engine continues to decline while the line for the propellor actually seems to begin to go up, becoming positive, therefore the answer is **D**.

**Question 28**

**Choice B is correct.** The line that passes through M and O must have a negative slope, making A and B the only viable options. Since P is the center of the square and line MO would run through P, the x-intercept for the equation for line MO should equal 2, therefore  **$y = -\frac{1}{8}(8x - 4)$  is correct.**

**Question 29**

**Choice A is correct.** When  $a = -4$  and  $b = 4$ , you may solve for  $x$  in the following way:

$$y = -4x^2 + 4 \rightarrow y = -4(x^2 - 1) \rightarrow y = 4(x + 1)(x - 1)$$

This results in exactly two real solutions for  $x$  (1,-1). All other options provide one real solution.

**Question 30**

**Choice A is correct.** Divide the hexagon into 6 equilateral triangles, each one should have an edge of the hexagon as its base and one point at the center of the hexagon. Each one should have an area of  $16\sqrt{3}$ , totalling  $96\sqrt{3}$  together. Split one of these triangles in half, making it a 30/60/90 triangle, with an area of  $8\sqrt{3}$  or  $8\sqrt{3} = \frac{1}{2}bh$ . Since  $bh = x^2\sqrt{3}$  in a 30/60/90 triangle, we can set it as such:  $8\sqrt{3} = \frac{1}{2} \cdot x^2\sqrt{3}$ . Solving for  $x$ , we get  $x = \sqrt{\frac{8 \cdot 2\sqrt{3}}{\sqrt{3}}} = 4$ . Since  $x$  is half the length of the hexagon's edge, the edge is 8. The hexagon and square both have edges of the same length, so  $lw = 8 \cdot 8 = 64$  gives us the area of the square, **64**.

**Question 31**

**26 is correct.** Set this up as an equation:  $4500x = 117,000$ . Solve for  $x$ ,  $x = \frac{117000}{4500} = 26$ .

**Question 32**

**34 is correct.** Set this up as an equation. Because there are 12 inches per foot, the equation would be  $12(x) + 7 = 415$ . Solve for  $x$ .

**Question 33**

**1.78 is correct.** Input the values given in point (6,32):  $32 = a(6^2) - 12(6) + 40$ . Solve for  $a$ .

**Question 34**

**3300 is correct.**  $D + T = 7800$ . Since  $D$  earned 1200 more than  $T$ ,  $D = T + 1200$ . Inputting  $T + 1200$  in place of  $D$ , we get  $T + 1200 + T = 7800$ . This results in  $2T + 1200 = 7800$ . Solve for  $T$ .

**Question 35**

**2450 is correct.** There is no math to calculate for this question.  $x$  is the total amount Steven has donated over his lifetime.  $t$  represents the number of yearly contributions he has made. Since 150 is multiplied by  $t$ , each of Steven's yearly contributions has been \$150. This leaves \$2450 which represents the initial donation he made at age 20.

**Question 36**

**45.5 is correct.** First find the size of the angle AOC. We know that a quadrilateral has a total of  $360^\circ$ . So the four angles AOC, OAB, ABC, and BCO must add up to 360. We know angle ABC is  $55^\circ$ . Since AB and BC are tangent to the circle, OAC and BCO are both  $90^\circ$ . So, the size of angle AOC is  $360 - 50 - 90 - 90 = 130$ . The proportion of the circle taken up by minor

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arc AC is  $130/360$  since the circle is  $360^\circ$  in total. So, to find the length of the minor arc, we multiply the total circumference 126 by  $130/360$  to get 45.5.

**Question 37**

**265 is correct.** Use the formula provided to find the number of students two years from now. It is given that  $T=1000$  and the initial enrollment ( $S_0$ ) is 150, so the number of students one year from now is  $150 + 0.4(150)(1 - \frac{150}{1000}) = 201$ . For the number of students two years from now,  $S_0$  is now 201, the number of students one year from now and thus the answer is  $201 + 0.4(201)(1 - \frac{201}{1000}) = 265$ .

**Question 38**

**3000 is correct.** Solve the given formula for  $T$ .  $S_0$  is the number of students this year, 150, and  $S_1$  is the number of students next year, 207. This gives us  $207 = 150 + 0.4(150)(1 - (150/T))$ . Solve for  $T$  to get 3000.