Practice Test 2: Answers and Explanations

Section 3

1. **A inflection** and **D implied**

   This is a two blank text completion, so begin by determining which blank is easiest to work with. The second blank has a strong clue, so begin there. The second blank describes something about the actual words. The sentence provides further insight into the blank by discussing the intended meaning, so a good word for the blank is what the actual words "mean." Choice (D), *implied*, is a good match for "mean," so keep it. Choice (E), *repudiated*, means to refuse to be associated with. Eliminate it. Choice (F), *utilized*, is a poor match for "mean," so eliminate it. Now work with the first blank, which describes something about how *a statement is conveyed*. The sentence provides further insight into the blank by stating this is often *more important...in determining the intended meaning than the actual words implied*. The second sentence provides an example of *a compliment delivered sarcastically* being *received as insulting*. Therefore, a good word for the blank is "tone." Choice (A), *inflection*, is a good match for "tone," so keep it. Choice (B), *pitch*, is a poor match for "tone." Eliminate it. Choice (C), *accuracy*, is also a poor match for "tone," so eliminate it. The correct answer is choices (A) and (D).

2. **A expressive, F relegated,** and **H conflict with**

   This is a three-blank text completion, so begin by determining which blank to work with first. The first blank has a strong clue, so begin there. The first blank is describing *works* that *a film studio produces*. The sentence provides further insight into the blank by stating that the works are *artistic*, and by mentioning *creativity* in the context of the works. Use "creativity" as the word for the blank. Choice (A), *expressive*, is a good match for "creativity," so keep it. Choice (B), *tedious*, means dull, so eliminate it. Choice (C), *tiresome*, means causing one to feel bored, so eliminate it.

3. **B axiomatic**

   You are given the clue that the beliefs *are in conflict* and *cannot all be correct*. Therefore, whatever goes into the blank must be synonymous with *correct* or something you can infer correctness from. The correct answer is *axiomatic*, which means self-evident or universally true. *Disputable* is the opposite of what the sentence requires, and *ubiquitous* and *historic* are not synonymous with self-evident. Although *empirical*, meaning derived from observation, might fit science, it is not a good fit for religion.

4. **C staved off, D contributed to,** and **I affliction**

   The clue "Although most preventative medical ointments commonly in use" tells you that most ointments would prevent an infection, the one Helen used did not. Recycle the clue, and put a word that means prevent in the first blank; *staved off* is the best match. Work with the second and third blanks together. The ointment did not prevent an infection, and the clue "much to her dismay" tells you that something bad happened. The only pair that makes sense together is *contributed to* and *affliction* because they tell you that the ointment made her problem worse.

5. **B glib, D spontaneity,** and **H tepid**

   For the first blank, the clue is *offhand remarks,* so the blank means something like "offhand." *Glib,* which means "superficial or showing a lack of concern," is the closest match for this. Sticking to *prepared talking points* can result in a lack of "excitement" or "naturalness," which *spontaneity* matches. For the last blank, you know the crowd's responses are *lukewarm,* so the answer for that blank is *tepid.*

6.   **E shallow**

The clue is the entire clause that follows the semicolon: "its characters take trivial concerns seriously while thoughtlessly dismissing important ones." Look for a word that means superficial or petty to go in the blank. The only one that fits is *shallow*.

7. **B** The third paragraph states that if incorrect quantities of Haber nitrogen were applied, "the wheat crop would grow taller and thicker, eventually toppling over and rotting." Losing a crop would be an undesirable effect, making (B) the correct answer. Eliminate (A) because the passage doesn't compare the effects of Haber nitrogen on different kinds of crops. The passage doesn't provide any information to support (C) and (D). Choice (E) contradicts the passage, which says the farmers were wary of the substance.

8. **E** According to the first paragraph, there has been no sharp decline in the world's population and, therefore, you can surmise that food production has been sufficient to allow for the existing population growth, as in (A). In the second paragraph, the author mentions the invention of the tractor as one of the factors that allowed more crops to be grown for human consumption. This reflects the technological innovation in (B). In the last paragraph, the author notes that the environmental movement has opposed efforts of genetic engineering. Thus, (C) is implied as well. The author notes that increases in crop production through the invention of the tractor and ammonia prevented Malthus's predictions from being realized, and this rules out (D). The extent of the impact of genetic engineering is not clear. You don't know that a Malthusian disaster would have been a *certainty* without genetic engineering. Therefore, the correct answer is (E) because it is not implied.

9. **D** The first paragraph states that Malthus believed that "population increases in a geometric ratio, while the means of subsistence increases in an arithmetic ratio." More simply put, Malthus argued that population growth happens at a significantly faster rate than food production. Only (D) demonstrates this.

10. **E** The first paragraph presents Malthus's prediction about what would happen if population growth were to outstrip food production. If there were too many people and not enough food, you would expect a significant or rapid population decline. Look for a word to replace *precipitous* that is similar to "significant" or "rapid." *Sharp*, (E), is the best word.

11. **B** The "rosy prospect" refers to the previous paragraph's discussion of the booming tourism industry in Australia, which implies a positive future, and the "cloud on the horizon" refers to the conflict between the rights of the Aboriginal people and the need for the money from tourism, a potential problem. Choice (A) incorrectly interprets the quote as referring to a literal horizon and prospect. Choice (C) is also too literal, taking *prospect* to mean "view." Choice (D) is incorrect because, although this may be true based on later information in the passage, it is not an accurate interpretation of this phrase. Choice (E) is too strong because the future is described as generally good, not hopeless.

12.   **A, B,** and **C**

All three statements are given as sources of the conflict. Choice (A), *economic hardships*, is mentioned in the third paragraph. Due to financial difficulties, many regions are unwilling to give up the income derived from tourists visiting Aboriginal lands. Choice (B) is discussed in the second paragraph. The expansion of Western culture is the reason that the Aboriginal people have moved inland and abandoned other sacred sites. Choice (C) is mentioned in the first sentence. Tourism is described as particularly important due to the "dearth of natural resources."

13. **D morose** and **E dour**

The first part of the clue is "mercurial character," which means George's moods change frequently. The second part of the clue is "one moment he was optimistic about his prospects," and the transition is *the next he was.* Thus, the blank should be the opposite of optimistic; look for words that mean pessimistic. Both *morose* and *dour* are similar to pessimistic. *Hopeful* and *buoyant* have the opposite meaning, and *witty* and *immoral* are not related.

14. **A tyro** and **E neophyte**

The clue is that she "began her first job." Also, the contrast of "wealthy suburb" and "llama caretaker on a rural farm" suggests that she'd feel out of place or lacking in experience at her first job. Look for words that mean "beginner." *Tyro* and *neophyte* are the only words that mean "beginner." *Agronomist* and *cultivator* are traps for people who focused too heavily on the farm. *Concierge* and *curator* are traps for people who focused too heavily on *caretaker.*

15. **C embellished** and **F colored**

The clue "King Duncan's death at the hand of Macbeth comprises the play's only historical truth" tells you that the version of events related in Macbeth was not very accurate. Does *anachronistic* mean inaccurate? No; cross it out. What about *effusive*? No. In contrast, *embellished* works well, but *prosaic* and *serpentine* do not. Finally, *colored*—which, like embellished, means *misrepresented* or *distorted*—fits the blank nicely.

16. **A thewy** and **B sinewy**

The word that goes into the blank describes superheroes, of whom the clue phrase states that "every detail of their musculatures would be visible through their clothing." Clearly, something like *muscular* is called for, and both *thewy* and *sinewy* fit the bill. The other four words don't fit: *superfluous* means unnecessary, *pneumatic* means full of air, *flocculent* means covered in wool, and *atrophied* means shriveled due to disuse.

17. **A** and **C**

Choice (A) is correct because the passage states that "…without this mundane structure, every cell division would be a step into senescence, and the onset of old age would begin at birth." Choice (B) is not correct because there is no information about what scientists used to think about telomeres. Choice (C) is correct because you are told that one function of telomeres is to mitigate the loss of DNA bases. If no bases are lost, then this role is not important anymore.

18. **A** The first paragraph says that without telomere buffers "every cell division would be a step into senescence, and the onset of old age would begin at birth," and the last sentence of the passage states that "many ailments associated with normal old age begin only after the telomere buffer has been exhausted through years of cell division." If the protection offered by the buffers didn't exist, you could expect problems related to aging to start sooner, as (A) suggests. Choice (B) goes too far; though the passage speaks on the onset of old age at birth, there is no certainty that almost no one would live past childhood. The passage provides no support for (C), (D), or (E).

19. **B** The passage as a whole provides a short history of two types of early musical education, the rote method and the note method. Nowhere in the passage does the author come out in favor of either method, thereby ruling out (A) and (C). Given that Reverend Walter taught music by the note method he developed, (D) doesn't make sense. While it is true that rote learning was inconsistently practiced, as (E) states, this does not answer the question.

20. **The "note versus rote" controversy in music education continued well into the mid-nineteenth century.**

     The use of the word "controversy" in the final paragraph is the only indication the author gives that the decision between "note" or "rote" as a musical learning technique was in any way contentious.

Section 4

1. **C** The quantities have numbers with great exponents and none of the exponent rules can be applied, so look for a way to factor. In Quantity A, factor 98^7 into its prime factors. The prime factors of 98 are $2 \times 7 \times 7$, so 98^7 can be rewritten as $(2 \times 7^2)^7$. Use the power-multiply rule to combine the exponents and simplify to $2^7 \times 7^{14}$. Quantity A can be rewritten as $\dfrac{2^7 \times 7^{14}}{7^{63}}$. Use the divide-subtract rule to combine the exponents with base 7 to find that $\dfrac{2^7 \times 7^{14}}{7^{63}} = \dfrac{2^7}{7^{49}}$. Therefore, the quantities are equal. The correct answer is (C).

2. **A** Translate and solve each expression. The expression "5 is r percent of 25" becomes $5 = \dfrac{r}{100} \times 25$. So, $r = 20$. The expression "s is 25 percent of 60" becomes $s = \dfrac{25}{100} \times 60$. So, $s = 15$, and Quantity A is greater.

3. **A** Plug In for this question. Let $h = 3$, which makes $g = 6$. Quantity A equals $\dfrac{6}{1} = 6$ and Quantity B equals $\dfrac{1}{3}$. Quantity A can be greater than Quantity B, so eliminate (B) and (C). Because g and h are positive integers, Quantity A will always be greater than 1 and Quantity B will always be less than or equal to 1. Quantity A will always be greater than Quantity B.

4. **B** The average is the sum divided by the number of elements. Because three elements make up both averages, you can simply compare the sum of each set. $67 + 78 + 101 + x = 246 + x$, and $66 + 79 + 102 + x = 247 + x$. Thus, Quantity B is greater.

5. **A** Plug In! Say there were 10 million tons in 2008. The percent increase was $\dfrac{0.79}{10}$. Then in 2009 there were 10.79 tons, so the percent increase from 2009 to 2010 was $\dfrac{0.79}{10.79}$. Quantity A is greater.

6. **D** Plug In. Make $m = 2$ and $n = 3$. For Quantity A, the weight of 2 peanuts at $3 + 3$ mg each is $2 \times 6 = 12$ mg. For Quantity B, the weight of 3 almonds at $2 + 3$ mg each is $3 \times 5 = 15$ mg. Eliminate (A) and (C). Plug In again to see if you can get a different result. Keep $m = 2$, and change n to 2. For Quantity A, the weight of two peanuts at $2 + 3$ mg each is $2 \times 5 = 10$ mg. For Quantity B, the weight of two almonds at $2 + 3$ mg each is $2 \times 5 = 10$ mg. Eliminate (B), and choose (D).

7. **C** Remember, when you have large exponents, try to break them down into their prime factors. You can rewrite Quantity A as $5^{27}(5)(115)$, or $5^{28}(115)$. The quantities are equal.

8. **B** For Quantity A, there are three ways to get an even number (these are 2, 4, 6). So, the probability of "rolling an even" and then "rolling an even" is $\frac{3}{6} \times \frac{3}{6} = \frac{1}{4}$. For multiple independent events, multiply the probabilities. For Quantity B, there are four ways to not get a multiple of 3 (these are 1, 2, 4, 5). The probability of "not rolling a multiple of 3" and then "not rolling a multiple of 3" is $\frac{4}{6} \times \frac{4}{6} = \frac{4}{9}$. Quantity B is greater than Quantity A.

9. **B** There are variables in the answer choices, so Plug In. If $r = 2$, then $4((2) - s) = -2$. Divide both sides by 4 to find $2 - s = -0.5$. So, $s = 2.5$. The target answer is r, which is 2. Go to the answer choices and Plug In 2.5 for s. Choice (B) is the only answer choice that matches your target of 2.

10. **10.5**

    Plug In! Let's say there are 100 employees. 25 percent of the employees take the subway to work, so $\frac{25}{100} \times 100 = 25$. Of the 25 employees who ride the subway, 42 percent of them transfer during the commute, so $\frac{42}{100} \times 25 = 10.5$. Therefore, 10.5 out of 100 employees transfer lines. This is 10.5 percent.

11. **D** Plug In. If $a = 3$, $b = 6$, $c = 3$, $d = 5$, and $e = 10$, the value of the equation is $\dfrac{10\left(3 + \dfrac{6}{3}\right)}{5} = 10$. Half of 10 is your target of 5. Try doubling each variable to find the one that yields 5. The only one that works is doubling d to 10 so that the equation is $\dfrac{(10)\left(3 + \dfrac{6}{3}\right)}{10} = 5$.

12. **C** For this question, you can FOIL: $(\sqrt{5})^2 - (\sqrt{3})(\sqrt{5}) - (\sqrt{5})(\sqrt{3}) + (\sqrt{3})^2$. This simplifies to $5 - 2\sqrt{15} + 3$, or $8 - 2\sqrt{15}$.

13. **A**, **C**, **D**, and **E**

Plug the information given into the formula for the area of a triangle to learn more about the relationship between x and y: $A = \dfrac{bh}{2} = \dfrac{xy}{2} = 108$. The product of x and y is 216, so x needs to be a factor of 216. The only number in the answer choices that is not a factor of 216 is 5. The remaining choices are possible values of x.

14. **B** Europe's electricity production (2,000 megawatt-hours) most closely matches that of Asia (1,900 megawatt-hours).

15. **E** The ratio for North America is 2,300 to 0.083 or, $\dfrac{2,300}{0.083} = 27,710$. This is the greatest ratio of any of the continents.

16. **A** Africa's population is 10.6 percent on the pie chart; South America's is 7.9 percent. Right away, you can eliminate all of the answer choices that are smaller than 368. Now you are left with (A) and (B). Because the question gives you South America's population (368 million), you can use a proportion to find the population of Africa. The proportion would look like this: $\dfrac{0.079}{368} = \dfrac{0.106}{x}$, where x is equal to the population of Africa. Cross-multiplying gives you $0.079x = 0.106 \times 368$, so $x = 493.7$.

17. **A** If the average of 5 crates is 250, then their total $= 5 \times 250 = 1,250$. To find the high end of the range for the fifth crate, make the other crates as light as possible. Make the two lightest crates 200 each, for a total of 400, and the two heaviest crates 300 each, for a total of 600; together, those four crates weigh 1,000 pounds, leaving 250 pounds for x. Because only (A) sets 250 pounds as the high end, you can eliminate (B), (C), (D), and (E).

18. **B** Substitute 6 for x in the equation, $s_x = 2s_{x-1} + s_{x-2}$ and work carefully from there. $s_6 = 2s_{6-1} + s_{6-2}$, which simplifies to $s_6 = 2s_5 + s_4$. However, you don't know s_5 or s_4. Use the equation to find these missing terms. $s_4 = 2s_3 + s_2$ and the problem tells you s_2 and s_3 are equal to 2. $s_4 = (2 \times 2) + 2$, which is 6. Now you need to find s_5. Using the equation, you get $s_5 = (2 \times 6) + 2$, which is 14. Now that you know s_5 and s_4, go back to your original equation, $s_6 = 2s_5 + s_4$, and $s_6 = (2 \times 14) + 6$, which is 34.

19. **7** Always draw a figure when one is not provided. In this case, line segment XZ has a length of 68. Point Y is the midpoint of the segment, because $2XY = XZ$. To find the lengths of these segments, divide 68 by 2. Segment $YZ = 34$. Because $YZ = 4a + 6$, you know that $34 = 4a + 6$, so $a = 7$.

20. **C** Make a spot for each day and fill in the number of guests who could occupy that spot. Burke has 5 choices for Monday, 3 choices for Tuesday, 4 choices for Wednesday (because one politician was chosen on Monday), 6 choices for Thursday, and 10 choices for Friday (because 4 of the 14 potential guests have already been chosen). Multiply these to arrive at 3,600 different schedules.

Section 5

1. **E systematic**

   The clue is "simple, unambiguous, and unchanging." The transition phrase is *in other words.* The transition maintains the direction of the clue. Therefore, find a word that means "regimented." *Systematic* is the best match.

2. **B obdurate** and **D capitulate**

   Try working with the second blank first. The second blank is talking about what a player will be forced to do if he's stubborn. The clue is that the "mistakes" the player makes will lead to the "prevailing strategy of their opponent." Because of these clues, you know that a word that means "to give in" would be a good match. *Capitulate* is the only word that works, as *dissent* means to disagree and *repudiate* means to reject. Now look at the first blank. The first blank is referring to something all great chess players know. The clue tells you that they know "stubbornness will almost surely lead to mistakes that force a player to capitulate to the prevailing strategy of their opponent." As you can see, you needed to solve for the second blank first, as you would not have known what *stubbornness* would lead to without doing so. Recycle the word *stubbornness* as your word for the blank. *Obdurate* is the only word that works for the first blank. *Finicky* means to be overly particular, and *vituperative* means to be combative.

3. **B corruptibility, F venal,** and **G redundancy**

   The first two blanks are related, but there isn't a strong clue for either one in the first part, so start with the third blank. Since the motif is *tiresome,* the third blank must mean something close to "repetitive." *Redundancy* matches this. At the end of the paragraph, each character is "bribed...into giving up...beliefs." So the first two blanks must mean "bribable." *Corruptibility* in the first blank and *venal* in the second both match this.

4. **B illegal** and **F unabashedly**

   For the first blank, the clues "pirating software" and "downloading software from unapproved sources" describe unauthorized activities, so *illegal* is the best fit. *Uncommon* and *difficult* are incorrect because the sentence says that "many people continue to do so." If people are doing something despite its illegality and "almost as if they were unaware that such acts amount to theft," you could describe them as acting *brashly. Unabashedly* is the best fit.

5. **C insolvent**

   The phrase "squandered his life's savings on unprofitable business ventures" tells you that the entrepreneur had no money left. The blank needs a word that means "broke." *Former* and *unlikely* are tempting choices, but they don't match broke. Eliminate them. *Eccentric* also doesn't match, while *perturbed* only describes the entrepreneur's possible feelings. *Insolvent* agrees with the clue, so keep it.

6. **B eschew obfuscation, F recondite,** and **H a limpid**

   The key clue is that the teachers urge students to "use clear, simple language." The transition *instead* indicates that the phrase that goes into the blank will present an alternative to using clear, simple language, while the *and* indicates that the phrase will nevertheless agree with the clue. Something like "avoid difficult language" would be best. Difficult language is the alternative to clear, simple language, but the two phrases still agree because the difficult language is something to avoid. Thus, *eschew obfuscation* is

best. *Eschew* means avoid, while *obfuscation* means the act of hiding the meaning of something. *Exscind obloquy* means to cut out critical language, while *evince ossification* means to show excessive rigidity, neither of which is appropriate here. The second blank needs a word that means difficult or obscure because teachers call into question the use of difficult vocabulary; *recondite* means obscure and hard to understand. *Recreant* means cowardly; *redolent* means fragrant. The final blank requires a word like "clear" because that is the type of language that "conveys one's meaning so much more effectively." *Limpid* means easily understood, so it is correct.

7. **A** and **C**

   Choice (A) is supported because the passage says that myelin protects the brain's circuitry. Choice (C) is supported by the fact that "as humans mature," increasing levels of myelin need to be produced. While the passage suggests that a lack of myelin leaves the brain vulnerable, that doesn't mean that increasing the levels of myelin will reverse damage.

8. **B** In the passage, *byzantine* refers to the "circuitry inside our nervous systems." Previously, the circuitry is described as growing more complex, so you need to find a word with a similar meaning. Choice (A) is an alternate meaning for byzantine, but it is not supported by the passage. Choices (C), (D), and (E) do not have meanings similar to complex.

9. **D** The argument concludes that large universities should utilize work-study students rather than administrative assistants. The premise is that a similar strategy realizes a cost savings at small colleges. This is an argument by analogy. Hence, the argument assumes that there are similar conditions at small colleges and at large universities. Choice (D) says that students at universities are just as qualified to take over the administrative roles as they are in small colleges. In other words, the administrative jobs at universities are not appreciably different than those at colleges. For (A), whether the practice would be of greater benefit to the small colleges is out of scope. For (B), whether large universities usually depend on small colleges for ideas is out of scope. For (C), the issue of non-work-study students is out of scope. For (E), whether anyone has an easier ride than anyone else is out of scope.

10. **A** The first paragraph acts as an introduction to the rest of the passage. The author notes that in the 19th century "investments became increasingly speculative." In the last paragraph, the author explains that due to fluctuating interest rates, the consol was popular with speculative investors. There is no support in the passage for (B), (C), or (D). Although the first paragraph provides a historical framework, as suggested in (E), it does not provide a way "by which the nature of the nineteenth-century investor" could be understood.

11. **To address the problem, the British government instituted a sinking fund, using tax revenue to buy back the bonds in the open market.**

   The second paragraph has five sentences, so this question has five answer choices. The third sentence begins, "To address the problem...." This is a clear indication that the sentence describes a solution to a problem. The correct answer is the third sentence.

12. **C rarefied** and **F meager**

   What sort of atmosphere would make Mars the only planet "whose surface details can be discerned from Earth?" You need a word that means "transparent" or "thin" for the blank. *Viscous* takes you in the wrong direction, so toss it. The next choice, *ossified*, makes no sense; toss that one too. In contrast, *rarefied* works well, so hang onto it. Meanwhile, a *copious* atmosphere would definitely not be easy to see through, so cross out that choice. *Meager* fits nicely and agrees with *rarefied*, making those two the correct answers.

13. **B adversity** and **F tribulation**

   The clue is "Using the hardships of the Joad family as a model." Recycle *hardships* and use POE. Does *reticence* mean *hardships?* No; cross it out. *Adversity* works, so leave it. Do the same for the remaining choices. Only *tribulation* agrees with *hardships,* so that's the other correct answer.

14. **A a venerable** and **D an august**

   The blank is a description of the pyramid. The clue is "imposing structure" because this is the only other description of the pyramid. *Venerable* and *august* are the only words that match *imposing*.

15. **C noisome** and **F mephitic**

   The word that fills the blank must describe "the stench of the livestock," which is so malodorous that it drives the newcomers back to the city; it must mean something like, well, "stinky." Both *noisome* and *mephitic* are appropriate choices. The other words don't work; if you were tempted by *olfactory*, realize that it simply means "related to the sense of smell" and does not actually describe a particular scent.

16. **B** Choice (B) correctly sums up the purpose of the passage. It explores the significance—the creation of a military aristocracy and chivalric culture—of a technological innovation—the stirrup. Choice (A) is incorrect because nothing in the passage suggests that this discussion has a basis in recent discovery. Choice (C) is too broad for the limited subject matter discussed. Choice (D) is too extreme. Choice (E) is incorrect because the physics, while important in connecting the stirrup to its social effects, isn't really the point of the passage—and, in any event, the physics relates to cavalry, not artillery.

17. **E** Choice (E) is supported by the passage because the sixth sentence suggests that the development of the barbed lance serves as an "unusually clear" marker. Choice (A) is incorrect because no additional subjects for research are brought up in the passage. Choices (B) and (C) require comparisons beyond the scope of the information in the passage. No other technology, ancient or medieval, was discussed. Choice (D), finally, is an extreme overstatement. Although the stirrup increased the military value of the horse, nowhere is it suggested that it had previously been considered militarily insignificant.

18. **Stirrups unify lance, rider, and horse into a force capable of unprecedented violence.**

   In this sentence, the author says that stirrups improve the ability of a lance and rider. This is an improvement on the issues discussed earlier when the author states that a "lance couched under the rider's arm, unifying the force of rider and weapon, would throw its wielder backwards off the horse at impact."

19. **D** Choice (D) describes the organization of the passage. Choice (A) can be eliminated because the traditional definition is never amended. Choice (B) can be eliminated because the authorities do not support the traditional theory. Choice (C) can be eliminated because no new definition is proposed. Choice (E) can be eliminated because the "implications of the experiment" are not rejected.

20. **A** and **B**

    The author's dismissal of the traditional definition of randomness rests upon the premises that the results of the same probabilistic mechanism will all have the same likelihood of occurring and, as such, should be considered equally probable. The passage never mentions how the results of different probabilistic mechanisms relate to each other, so eliminate (C).

Section 6

1. **A** Solve for x in the top equation, $\frac{x}{6} + 2 = \frac{6}{2}$, by reducing the right side: $\frac{x}{6} + 2 = 3$. Subtract 2 from both sides, and multiply both sides by 6 to find that $x = 6$. Solve for y in the second equation, $\frac{y}{3} + 2 = \frac{9}{3}$, by reducing the right side: $\frac{y}{3} + 2 = 3$. Subtract 2 from both sides, and multiply both sides by 3 to find that $y = 3$. If $x = 6$ and $y = 3$, Quantity A becomes $\frac{5}{3}$, and Quantity B becomes $\frac{2}{6} = \frac{1}{3}$. The answer is (A).

2. **A** Use the equation *distance = rate × time*. Bob's time is 3 hours, and his rate is 44 miles per hour, so his distance is 3 × 44 = 132 miles. Inez's time is 2.5 hours, and her rate is 50 miles per hour, so her distance is 2.5 × 50 = 125 miles. The answer is (A).

3. **A** Plug In! Let's say that the height is 10, the depth is 20, and the width is 20. If the height is increased by 20%, the new height is 12. If the depth is decreased by 20%, the new depth is 16 and the width remains 20. The new volume is 12 × 16 × 20 = 3,840. If you use those same numbers but make the changes by 40%, the new volume is 14 × 12 × 20 = 3,360. Quantity A is greater. However, make sure you switch the numbers to check all possibilities. Make the height 20, the depth 10 and the width 20. If p is 20, the volume of the new 3D figure is 24 × 8 × 20 = 3,840. If p is 40, the volume of the new 3D figure is 28 × 6 × 20 = 3,360. The quantities are the same regardless of what numbers you Plug In. The answer is (A).

4. **D** Draw the figure. Triangle *ABC* has two adjacent sides, *AB* and *AC*, that are equal in length. The angles that are opposite these sides, angles *B* and *C*, are also equal. One common triangle that has two equal sides is the 45:45:90 triangle. If angles *B* and *C* were both 45°, then their sum would be 90 and the answer would be (C). However, you know nothing about the third side of the triangle, so it is possible that this is equal as well, which creates an equilateral triangle with angles of 60. The sum of the angles in Quantity A is now 120. You cannot determine which is greater, so the answer is (D).

5. **A** Translate: $\dfrac{12.5}{100}k = 80$, so $\dfrac{1}{8}k = 80$, and $k = 640$. Use this information in the other equation:

   $k = 640 = \dfrac{y}{100} \times 80$, and solve for y: $y = \dfrac{10}{8} \times 640 = 800$. Quantity A is greater than Quantity B.

6. **D** Plug In values for each set. If $P = \{1, 2, 3, 4, 5, 6, 7\}$ and $Q = \{1, 2, 3, 4, 5, 6\}$, the range of Q is smaller. Eliminate (B) and (C). If you change P to $\{1, 2, 3, 4, 5, 7, 6\}$, and Q to $\{1, 2, 3, 4, 5, 7\}$, the range of Q is equal to that of P. Eliminate (A), and select (D).

7. **A** One way to attack this problem is to list F_1 to F_{11}: 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40. Notice that F_6 through F_{10} are included in both quantities, so focus on what's different. Quantity A is $F_4 + F_5$ and Quantity B is F_{11}. Quantity A is $19 + 22 = 41$, and Quantity B is 40. Alternatively, you know that F_4 has had 3 changes from F_1. So, $F_4 = F_1 + 3(3) = 10 + 9 = 19$. F_5 has had 4 changes from F_1, so $F_5 = F_1 + 3(4) = 10 + 12 = 22$. F_{11} has had 10 changes from F_1, so $F_{11} = F_1 + 3(10) = 10 + 30 = 40$. Therefore, the answer is (A).

8. **C** Plug In a number for n. Let $n = 5$. Because $5 \times 6 = 30$, the product is 30. Add 24 to get 54. Divide by 3 to get 18 as your target. If you Plug In 5 for n in each answer choice, only (C) matches the target: $2n + 8 = 2(5) + 8 = 18$.

9. **10** If the average of a and b is 10, then $a + b = 20$. Likewise, if the average of c and d is 7, then $c + d = 14$. If the average of a, b, and c is 8, then $a + b + c = 24$. Because $a + b = 20$, $c = 4$. If $c = 4$, then $d = 10$.

10. **C** To find the area of a square, you need the length of a side. To find a side, find the distance between two vertices. If A is at $(3, 7)$ and B is at $(3, 12)$, then the length of a side is equivalent to the difference in the y-coordinates: $12 - 7 = 5$. So, side AB has a length of 5. Square this to find the area: $5^2 = 25$, choice (C). The fact that there are variables for the y-value of points C and D is irrelevant to solving this problem.

11. **B** Get Dylan's median by putting his weekly sales into increasing order and finding the middle value. Dylan's set is $\{2, 3, 9, 10\}$, and his median is the average of 3 and 9, or 6. Next, do the same thing for Peter's sales numbers. Peter's set is $\{4, 4, 6, 10\}$, so his median is the average of 4 and 6, which is 5. The difference between the medians is $6 - 5 = 1$, (B).

12. **A** Order doesn't matter, so remember you must divide by the factorial of the number of decisions made. For the first topping, you have 6 options. For the second topping, you have 5 options. For the third topping, you have 4 options. $\dfrac{6 \times 5 \times 4}{3 \times 2 \times 1} = 20$, (A).

13. **E** Because you know the perimeter of the rectangle, you can figure out that both BC and $AD = 5$. Thus, the area of the rectangle is $3 \times 5 = 15$. The area of the triangle is therefore also 15. Because the area of a triangle $= \dfrac{1}{2}bh$, you can put in the values you know to find $15 = \dfrac{1}{2}(b \times 5)$ and solve for the base, which is 6. LM is the base of the triangle, so $LM = 6$, (E).

14. **C** In 2011, 2012, 2013, and 2014 (4 years), the ratings for Program y were higher than they were in the previous year.

15. **E** There were 95 million times 80 percent, or 76 million, television households in 2013. Thirteen percent of them viewed Program y. 76 million times 13 percent (0.13) is 9.88 million, or approximately 10.

16. **A** The problem asks for the number of households that viewed both Program x and Program y, so this is a group problem. Use the group formula, which is Total = Group 1 + Group 2 − Both + Neither. Evaluate the information in the graph and the question stem to determine the values for the variables in the formula. The total is provided by the question stem, which states there were 80 million television households, so Total is equal to 80. Because this problem asks for approximates, choose numbers that are easy to work with. In 2014, approximately 15% of television households viewed Program x, so there were 0.15× 80 = 12 million households who viewed Program x. Therefore, Group 1 is 12. In 2014, approximately 14.5% of television households viewed program y. This is close to 15%, so use 15% again to determine that approximately 0.15 × 80 = 12 million households who viewed Program y. Therefore, Group 2 is 12. The problem states that 65 million television households viewed neither Program x nor Program y, so Neither is 65. Now insert all of these numbers into the group formula and solve for the value of Both. So, 80 = 12 + 12 − Both + 65 and 80 = 89 − Both, which means that −9 = − Both and Both = 9. Because the value for Program y was rounded up from 14.5% to 15%, this number is greater than the actual number. The only number less than 9 is 8.6. The correct answer is (A).

17. **A** Plug In the Answers, starting with (C). If Susan owns 146, Gavin owns 246, and together they own 392. Matt and Angela together would own 784, and the total number of houses would be 1,176. Choice (C) is too large, so also cross off (D) and (E). Try a smaller number. For (A), if Susan owns 46, Gavin owns 146, and together they own 192. Matt and Angela together would own 384, and the total number of houses would be 576.

18. $\dfrac{7}{45}$

    Plugging In is a great way to tackle this question. Multiply the denominators of $\dfrac{1}{4}$, $\dfrac{1}{5}$, and $\dfrac{1}{3}$ together to get 60, which will be an easy number with which to work. Make the total number of cars 60. $60 \times \dfrac{1}{4} = 15$ sports cars, and $60 − 15 = 45$ sedans. The number of red cars is $60 \times \dfrac{1}{5} = 12$. The number of red sports cars is $15 \times \dfrac{1}{3} = 5$, which means that there are $12 − 5 = 7$ red sedans. The fraction of the sedans that are red is $\dfrac{7}{45}$.

19. **A** and **B**

    Plug In the Answers. Start with one of the middle values, such as (C). If there are 18 grape candies, then there are 40 total candies in the jar. The probability of selecting an orange candy is $\dfrac{8}{40}$, or 20 percent. The question states that the probability of selecting an orange candy is greater than 20 percent, so (C) cannot work. Values larger than 18 also do not work because when the denominator becomes larger than 40, the probability becomes less than 20 percent. The only choices that could work are (A) and (B).

20. **E**   Plug In for k, and let k = 3. *CE* is a radius and also half of the square's diagonal. If k is 3, then *CE* is 3, and the diagonal is 6. The diagonal of a square is also the hypotenuse of a 45:45:90 triangle. To get the hypotenuse from a side, multiply by $\sqrt{2}$; so, to get a side from the hypotenuse, divide by $\sqrt{2}$. The sides of the square are each $\dfrac{6}{\sqrt{2}}$. To find the area, square the side to find $\left(\dfrac{6}{\sqrt{2}}\right)^2 = \dfrac{6^2}{\sqrt{2}^2} = \dfrac{36}{2} = 18.$ Plug k = 3 into the answers to find one that yields your target of 18. Choice (E) yields the target of 18.