

Form 1163

English Test

1. Answer: C. E103 Independent Clauses: Period, Semicolon, Comma and FANBOYS

The start of a new independent clause (that is, an idea that contains both subject and predicate without need of another idea on which to *depend*) signals the need of a period. **D** includes the unnecessary *While*, which would imply another simultaneous action in the following sentence, and thus is not correct.

2. Answer: H. E110 Relevancy: Adding, Deleting, and Replacing Information

The answer must be a *no* because the idea presented is not consistent with the passage, which makes no reference to dancers' careers. We can eliminate **J** because the information does not contradict the passage.

3. Answer: B. E102 Commas

The clauses in this sentence are *Growing up in Mexico in the 1920s* and *Hernandez believed she was born to dance*. Identifying these without any commas makes clear where they are separated. Imagine a movie narrator saying the sentence and emphasizing the pause. Where do you hear it?

4. Answer: G. E114 Transition Words/Phrases

The phrases *despite*, *in fact*, and *on the other hand* are all transitions which introduce a new thought which is by nature contrary to the preceding point. Her father's acquiescence is not counterintuitive; it simply shows the natural result of her persistence.

5. Answer: D. E110 Relevancy: Adding, Deleting, and Replacing Information

The underlined portion and all other options are unnecessary and redundant. We are already told that he acquiesced, so to state that he gave in is already stated and need not be repeated. Omission is grammatically correct and concise.

6. Answer: H. E107 Colons and Dashes

As in number 3, read the options with commas aloud. Where does a pause occur naturally? Or does it? In this case, the underlined portion does not include a change of clause at all. No punctuation is necessary, as it is simply continuing the explanation of Amalia's tutelage.

7. Answer: A. E114 Transition Words/Phrases

Similarly to question 4, some answers here use transition words which are not correct in this context. Answers **C** and **D** would serve to introduce new ideas; however, this is not the case at the end of this paragraph. Option **B** is simply not relevant to the passage, as one can determine from reading. **A**, however, both ties up this paragraph and hints at the start of the next. Reading ahead by a sentence or two is a great way to gain some context for these transition questions.

8. Answer: H. E106 Apostrophes: Possessive, Plural, Contractions

Possessive. There's no trick to this; you just have to know where the apostrophes go. A singular possessive will always have an apostrophe between the word and the s (save the few irregular exceptions).

9. Answer: A. E111 Word Choice: Correct Word

These questions are a hybrid of vocab and inference. If one knows the meanings of all 5 (4 answers + underlined) words, there is only to determine which is different and why. In this case, **A** is the outlier because *grouping* does not imply the homogenization the other options do. In the other 4, the parts are changed to create a whole. In **A**, they are preserved.

10. Answer: G. E120 Parallel Structure

Lists can be tricky. It's important to know that in lists all listed articles must be of the same part of speech. In this case, *life* and *death* are nouns. *To have a rebirth*, as well as options **H** and **J**, are actually verbs phrases using *To have* and *To be*. The option *Rebirth* is consistent with the other words listed.

11. Answer: D. E113 Short and Simple

Often, omissions are the correct choice. You should still check the other options, though, to confirm. In this case, *However*, *Nevertheless*, and *Instead*, all imply a contradiction. Reading the sentence, however, we see that in fact these transitions are not only unnecessary but incorrect.

12. Answer: F. E110 Relevancy: Adding, Deleting, and Replacing Information

Options **G-J** are easily eliminated by their reasoning. **G** and **J** both mention description, however the paragraph was an informative one which did not describe the ballets. **H** can be eliminated because the paragraph did not focus on the MIFA in the first place. **F** is the only reasonable answer because it accurately classifies the addition in relation to the text.

13. Answer: C. E107 Colons and Dashes

The biggest hint here is the em dash immediately following. Em dashes almost always come in pairs, especially when in the middle of a sentence. The other options would improperly separate the portion following the existing dash as a new clause, when it's really being interrupted by an aside.

14. Answer: G. E110 Relevancy: Adding, Deleting, and Replacing Information

The answer here is in the question. Only one answer shows a *valuable contribution*.

15. Answer: B. E119 Writer's Goal

We can eliminate 3 answers easily in this question. **A** is incorrect because the passage does not focus on awards, and **C** and **D** try to make semantic distinctions but fail because they are not actual evidence, seeing as the question does not necessitate artists in general or specific dance forms.

16. Answer: F. E106 Apostrophes: Possessive, Plural, Contractions

Be careful not to mistake a general pronoun for a plural one. *Someone* is singular, so the singular possessive *else's* is already correct.

17. Answer: C. E103 Independent Clauses: Period, Semicolon, Comma and FANBOYS

Here are two independent clauses, which should be their own sentences more often than not. The underlined *which* is unnecessary, so simplifying this into 2 simple sentences is easy. This is another type of question which is good to read aloud or imagine being read by a narrator.

18. Answer: F. E111 Word Choice: Correct Word

This is a vocab question in disguise! What do all these words mean? What do they add to the tone of the text? If you don't know all the words, use context to estimate what they mean. As they're listed together, you can bet they are very similar!

19. Answer: D. E101 Verbs: Agreement/Tense

A matter of redundancy once more. Reading these options aloud should quickly eliminate the unwieldy **B** and **C**, and **D** makes a clear verb-noun agreement.

20. Answer: H. E111 Word Choice: Correct Word

The clue here is in the word *of*. All answers make sense followed by the word *of* except **H**; he doesn't carry *many of pens*.

21. Answer: D. E101 Verbs: Agreement/Tense

This is a trickier question, which can be determined by tense. *I feel* is present, so we can determine we need another present-tense verb. **A** and **B** are both infinitive, while **C** is not even the correct part of speech.

22. Answer: G. E105 Pronouns: Agreement/Case

H and **J** can be easily eliminated because they are, respectively, too vague and blatantly incorrect in numbering. The distinction between **F** and **G** is subtle but important: **G** reinforces the point the author is making. When the pen he is using is run dry he needs another. *They* would mean all of the pens he has with him, in which case it wouldn't matter if he had another as it may also be dry.

23. Answer: C. E117 Moving Sentences

Try rearranging the sentence to get an idea of the clauses. It can be written instead as *Small piles of uncapped ballpoints gather on my night table as if of their own accord*. Here we can see that *as if of their own accord* is a separate clause from the rest of the sentence, which is placed in the middle as a stylistic choice. As it is not dividing the clause in which it is placed, a comma on either side denotes it as a separate thought.

24. Answer: F. E110 Relevancy: Adding, Deleting, and Replacing Information

These questions are almost always easier to solve by elimination. **G-J** can be eliminated because of their reasoning. It does not explain a statement or distract from the focus, nor is it vague. It is a specific, relevant detail, so **F** is correct.

25. Answer: D. E106 Apostrophes: Possessive, Plural, Contractions

It's vs. Its. The way to remember the difference is to remember that *It's* is a contraction of *It is*. In a contraction the apostrophe holds the place of the omitted letter(s). As one cannot ignore the missing *i*, instead the possessive drops the apostrophe as it serves only to denote that it is in fact possessive, which is redundant seeing as there is no preexisting word with which to confuse it (the plural of *it* is not *its*).

26. Answer: J. E114 Transition Words/Phrases

Still, consequently, and instead all suggest a contradiction or a concession. In this case there is neither; the ideas being connected are simply being tied together, so a simple *also* is correct and does not make irrelevant implications.

27. Answer: D. E101 Verbs: Agreement/Tense

Subject-verb agreement! The clothes are the subject, and they aren't capable of decorating. They can only be decorated, and **B** is in the wrong tense. This only leaves **D**.

28. Answer: F. E104 Non-Essential Information: Commas, Dashes, Parentheses

Rearranging the sentence to find the clauses is very useful. In this case, by swapping the clauses presented we can see they are in fact already correct. The other options cannot be moved in the same way, and are grammatically incorrect.

29. Answer: B. E117 Moving Sentences

Use clues in the sentences to connect the dots. Sentence 4 naturally leads into sentence 2, and in the same way 1 and 3 are connected. With these two parts we only have to find which goes in front. As sentence 2 does not lead into sentence 1, we can determine that 1, 3, 4, 2 is the correct order.

30. Answer: F. E110 Relevancy: Adding, Deleting, and Replacing Information

G is obviously incorrect because the friend is not only irrelevant but also not even identified. Options **H** and **J** just don't matter; neither is a reason to not include the opening paragraph, as they reference no rules of writing. **F**, however, correctly identifies the purpose of the intro to establish subject and tone with an anecdote.

31. Answer: D. E104 Non-Essential Information: Commas, Dashes, Parentheses

Options **A** and **B**, despite punctuation, are in the wrong tense. The sentence should be in the past tense to match the text, as with **C** and **D**. **C**, however, is not punctuated correctly, so only **D** is correct, even though it omits the detail.

32. Answer: H. E106 Apostrophes: Possessive, Plural, Contractions

Possessive, not a contraction. *It is* would not fit, and the other options are entirely incorrect.

33. Answer: C. E110 Relevancy: Adding, Deleting, and Replacing Information

Because *work* and *live* are used specifically above, it should be an immediate indicator that answer **C** is redundant. Once you check that the others are indeed not better options, **C** can be determined as the answer.

34. Answer: F. E120 Parallel Structure

The changes provided, while not glaringly wrong, are all unnecessary and only add confusion. As written, *outside* is specific and concise enough.

35. Answer: B. E108 Adjectives and Adverbs

Read it out loud! Where does it make sense? *Greatly* is an adverb, and thus must modify a verb. The trickiness here is that they ask what it comes *after*, which is not actually being modified. The verb *extends* is being modified by *greatly*, and to come before *extends* it must be after *ability*.

36. Answer: H. E110 Relevancy: Adding, Deleting, and Replacing Information

The reasoning in the first two options is not relevant; neither camaraderie nor comfort pertains to the passage. **J** is also incorrect because the lack of description has nothing to do with whether it should be included in relation to the rest of the passage.

37. Answer: D. E104 Non-Essential Information: Commas, Dashes, Parentheses

The extra specification of depth should not influence the existing clauses, so by nesting it between commas it becomes an aside that does not change the structure of the sentence while still adding the detail in a correct and relevant place.

38. Answer: J. E103 Independent Clauses: Period, Semicolon, Comma and FANBOYS

This marks the start of a new idea in no way dependent on the prior sentence. Thus, a period and a start of a new sentence is appropriate. The semicolon in option **C** would only be necessary if the following independent clause needed to be tied to the preceding sentence.

39. Answer: B. E101 Verbs: Agreement/Tense

Subject and verb. The verb at the start is *Bolted*, so what is bolted? The research outpost. **A**, **C**, and **D** would all be saying the scientists are bolted to the sea floor.

40. Answer: F. E110 Relevancy: Adding, Deleting, and Replacing Information

G does not offer a complete answer, **H** adds the *at odds* portion for no reason, and **J** is far too vague. **F** offers all the necessary specifications.

41. Answer: A. E111 Word Choice: Correct Word

One of these things is not like the other! A classification is not similar to the other answers which all describe a number of objects.

42. Answer: F. E104 Non-Essential Information: Commas, Dashes, Parentheses

A special air pocket that keeps the ocean outside, is not a complete sentence. It is a dependent clause, so it must be attached to an independent clause by a comma as in the text.

43. Answer: C. E108 Adjectives and Adverbs

We must have an adverb (ending in -ly) to describe the verb *returned*, because *gradual* must be describing some sort of change. Pressure cannot be gradual, but a return can. **C** is correct because the *and* is superfluous in option **B**.

44. Answer: H. E117 Moving Sentences

An important clue is the word *this* in sentence 1. It must be referring to something before it, so which sentence has a decompression to which it may be referring? Sentence 2. Similarly, sentence 3 implies another object as the price to pay, so it must come after something. This gives us the final order of 2, 1, 3.

45. Answer: D. E119 Writer's Goal

The key word here is *generally*. **A** and **B** reference description, which is not relevant. **C** incorrectly states that the essay focuses on the role of UNC. **D** correctly points out the generality of the essay.

46. Answer: F. E105 Pronouns: Agreement/Case

The word *in* makes no sense here. Grant was not inside his own accomplishments! The others are simply rewordings meant to confuse you.

47. Answer: D. E113 Short and Simple

The other options are exceedingly redundant. When discussing his invention, it is already implied that he created it.

48. Answer: F. E106 Apostrophes: Possessive, Plural, and Contractions

G implies the golfers invented them. **H** is not even usable. **J** is a contraction and would not make sense. Attributing the invention to Grant, as is in the original text, is the most correct option.

49. Answer: A. E101 Verbs: Agreement/Tense

In this case the tense must be in its infinitive form, as it already is. The other options incorrectly conjugate the verb and add extraneous words to mix you up.

50. Answer: J. E111 Word Choice: Correct Word

The word being verb'd in this question is *problem*, so which is most appropriate? Would he correct, alleviate, fix, or rescue a problem? Even if you don't know all the words used, if you know *rescue*, you know it doesn't fit.

51. Answer: B. E110 Relevancy: Adding, Deleting, and Replacing Information

Read the paragraph! This gives you the context to figure out what needs to introduce them. Once you identify the subject of the paragraph to be Grant's dental achievements, **B** is the clear choice.

52. Answer: G. E106 Apostrophes: Possessive, Plural, Contractions

This question tests you on both apostrophes and commas. Because the design is possessed by Grant, we must have an apostrophe before the s. The comma is unnecessary because *Those constructed according to Grant's design*, is only a subject with no predicate and thus may lead straight into the predicate.

53. Answer: B. E101 Verbs: Agreement/Tense

Finding the subject for the verb is key here. What is the subject? *The general health of his patients*, more specifically *health*. This is singular, and the plural *patients* after may throw you off. As our subject is singular and we are in the past tense, *was* is the correct option.

54. Answer: F. E102 Commas

In this case, the temptation to put a comma at the end comes from the mistake that two articles make a list; they do not. **J** is not correct, and the comma after *invention* in **G** and **H** is also unnecessary. Although it's a mouthful, the text is correct as is.

55. Answer: A. E113 Short and Simple

Answers **B-D** are redundant. Each is simply another, more confusing way of saying *a need*. The need is of course out there, in existence, and by definition the lack of something. It can be left as is for conciseness and clarity.

56. Answer: H. E111 Word Choice: Correct Word

The key here is to recognize the word *focus* a few words before. One does not focus at something, nor for something, nor to something. *On* is the correct preposition to accompany the word *focus*.

57. Answer: D. E114 Transition Words/Phrases

Remember to always pay special attention to omissions. In this case, there is no need to include one of these transition words because none of them make sense following the conclusion of the prior paragraph.

58. Answer: H. E104 Non-Essential Information: Commas, Dashes, Parentheses

A brilliant professor of dentistry is not an independent clause, and so cannot support much of the punctuation. A comma, however, simply makes it a statement describing the subject *he*, with the antecedent *Dr. George Franklin Grant*.

59. Answer: D. E101 Verbs: Agreement/Tense

In this case, an infinitive verb must follow the conjugated *making it possible*. This is necessary to prevent two separate predicates from forming out of one. *To concentrate* does just that.

60. Answer: H. E119 Writer's Goal

This question is tricky. The first two options are tempting because the descriptions are true to the essay, however they do not address the question properly. The question refers to *key innovations*, plural. This means there must be multiple. **H** mentions this, and while **J** is the correct in its conclusion the reasoning is completely irrelevant.

61. Answer: C. E104 Non-Essential Information: Commas, Dashes, Parentheses

A period cannot be correct because the leading sentence would be a fragment. It must have a comma, however, to indicate the phrase *the year our house was built* does not begin the predicate.

62. Answer: J. E111 Word Choice: Correct Word

G and **H** can be readily eliminated because they do not fit with the surrounding sentence, however determining between **F** and **J** can be difficult because it's less readily determinable. It can be deduced, however, because the *scheme* was one *for* the collection of garbage. Although it is *about* it as well, *for* is more specific.

63. Answer: A. E105 Pronouns: Agreement/Case

This is not suggesting a reasoning, so **B-D** are not correct. *Being that*, *so that*, and *since*, all imply an explanation, which is unnecessary and incorrect.

64. Answer: H. E112 Word Choice: Tone

It's important to get some context before answering this question, so read ahead to understand how the sidewalks are being portrayed. As the author is trying to contrast with the image of unclean trash cans, **H** is the most appropriate to showcase how the trash cans hurt the image.

65. Answer: B. E111 Word Choice: Correct Word

None of the options here are fantastic, and indeed the correct one even sounds a little off. Try reading them aloud to eliminate the more obviously incorrect options like **A** and **D**.

66. Answer: J. E201 Verbs: Tense/Agreement

The *were have* and *would have* in **F** and **G** are not correct because they *did* work that way. It is past tense and fact, so there is no catch. **H** is incorrect because the *that* is unnecessary, and **J** is both definite and concise.

67. Answer: A. E112 Word Choice: Tone

The question specifically references *the writer's description*, so the first thing you should do is go and find it. The words *narrow* and *slender* are used to describe the alleys, so it makes sense that the large trucks had to *squeeze through*. The other options do not make reference to the scarce description provided, so are incorrect.

68. Answer: H. E110 Relevancy: Adding, Deleting, and Replacing Information

There's no trick to a question like this. **F**, **G**, and **J** simply don't have anything to do with the text, whereas **H** is a natural inclusion with the descriptions of large trucks traversing narrow alleys.

69. Answer: C. E103 Independent Clauses: Period, Semicolon, Comma and FANBOYS

Be careful! The *NOT* in the question is easy to miss. Colons and semicolons can be confusing, so if you aren't sure about them make sure you use all your comma knowledge first. If you do this, recognizing that **C** is definitely wrong (even if **B** and **D** are maybes) gets you the answer. As a new, independent thought is started, a comma is indeed incorrect.

70. Answer: G. E101 Verbs: Agreement/Tense

This is another tricky one. The subject is unclearly *what*, so we have to determine it by looking at the verbs. Since *what was*, in the past tense, it makes sense that in the present tense *what is*. The word *now* clues you into that change of tense, and if you're careful with the subject you should find the answer readily.

71. Answer: B. E111 Word Choice: Correct Word

Attraction has a connotation unlike the other 4 words. While *display*, *exhibition*, *spectacle*, and *showing*, all merely denote the trash cans' being put out for all to see, *attraction* has a connotation which would imply they are put out with the intention of drawing people to see them. This is a subtle difference; however, the others are so similar that even this small distinction is key.

72. Answer: F. E105 Pronouns: Agreement/Case

In this case, eliminating the answers provided is the best bet. *Whom* is used with prepositions, *which* would not be used for people, and *whose* is possessive. None of these apply to the children, who thus remain *who*.

73. Answer: B. E106 Apostrophes: Possessive, Plural, Contractions

Watch the *NOT* in the question! It should be clear that something is needed to join these ideas, and the scarcity in option **B** is as glaring as it appears. The others all provide some means of conjunction or transition (and, comma, that is) which allow the two ideas to remain together. Simply squishing them into one sentence is not allowed.

74. Answer: G. E107 Colons and Dashes

Colons are used most commonly to present an example or list. In this case, a list of features immediately follows, so a colon is appropriate to lead the list.

75. Answer: C. E117 Moving Sentences

The clue for this question is the word *them* in sentence 4. To whom is it referring? As garbage trucks are also mentioned, *them* must be referring to the children mentioned in sentence 2, so it would best fit immediately following it.

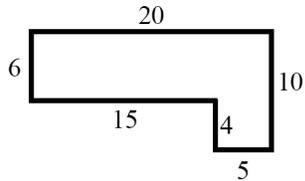
Mathematics Test

1. Answer: C. M501 Mean, Average

1998: $\frac{1417}{394} = 3.59$

C. 3.6

2. Answer: H. M308 Multiple Figures



$$20 + 10 + 5 + 4 + 15 + 6 = 60$$

H. 60

3. Answer: B. M203 Inequalities



B. $-2 \leq x < 3$

4. Answer: J. M205 Exponents & Roots

$$3 \times 2^{x+y} = 3 \times 2^{4-1} = 3 \times 2^3$$

$$3 \times 8 = 24$$

J. 24

5. Answer: D. M103 Properties of Integers

$$ab = 8$$

If $a = -6$ $b = \frac{-8}{6}$

NOT an integer.

D. -6

6. Answer: J. M307 Solids

$$4^3 = 64$$

J. 64

7. Answer: B. M201 Algebraic Operations

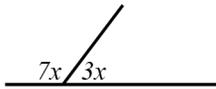
\$40 for large

\$25 for small

$$40L + 25 \cdot 50$$

B. $40L + 1250$

8. Answer: G. M301 Lines & Angles



$$7x + 3x = 180$$

$$10x = 180$$

$$\div 10 \quad \div 10$$

$$x = 18$$

$$7x = 7 \times 18 = 126$$

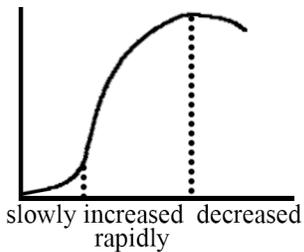
G. 126

9. Answer: E. M503 Probability

Note: Probability cannot be greater than 100%

E. $\frac{34}{31}$

10. Answer: K. M212 Linear Function: Rate



K.

11. Answer: E. M109 Rate & Proportion

$$60 \times 80 = 4800$$

$$\frac{4800}{250} = 19.2$$

E. 20 cans

12. Answer: F. M109 Rate & Proportion

$$12 \times 14$$

$$\frac{1}{4}'' = 1ft$$

$$\frac{12}{4} \times \frac{14}{4} = 3 \times 3\frac{1}{2}$$

F. $3 \times 3\frac{1}{2}$

13. Answer: E. M110 Percent

$$20 + 40 + 20 = 80$$

$$100\% - 80\% = 20\% \text{ tomato}$$

$$\begin{array}{r} (.2)x = 250 \\ +.2 \quad +.2 \end{array}$$

$$x = 1250$$

E. 1250

14. Answer: H. M305 Circles

$$\begin{array}{r} C = 50'' \\ \frac{300(12)}{50} = 72 \end{array}$$

H. 72

15. Answer: A. M201 Algebraic Operations

$$(4x^2 - 3x + 7) - (-1 + 5x + 2x^2) = 4x^2 - 3x + 7 + 1 - 5x - 2x^2 = 2x^2 - 8x + 8$$

A. $2x^2 - 8x + 8$

16. Answer: H. M104 Fractions

$$\$5.00 = \text{ticket}$$

$$\begin{array}{r} \frac{1}{2}(x) - \$1.00 = \$5.00 \\ +\$1.00 \quad +\$1.00 \end{array}$$

$$\begin{array}{r} \frac{1}{2}x = 6 \\ +\frac{1}{2} \quad +\frac{1}{2} \end{array}$$

$$x = 12$$

H. 12

17. Answer: B. M110 Percent

Only one gives a whole number.

$$(.85)(20) = 17$$

B. 85%

18. Answer: F. M106 Sequence

Geometric sequence means multiply or divide.

$$.375 \quad -1.5 \quad 6 \quad -24 \quad 96$$

$$\text{Multiplier} = \frac{-24}{6} = -4$$

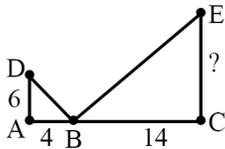
$$(96)(-4) = -384$$

F. - 384

19. Answer: A. M217 Factoring & FOIL

$$(2x - 3y)^2 = 4x^2 - 6xy - 6xy + 9y^2 = 4x^2 - 12xy + 9y^2$$

A. $4x^2 - 12xy + 9y^2$

20. Answer: J. M302 Triangles

Since two angles are congruent, the triangles must be similar; their sides are in proportion.

$$\frac{6}{4} = \frac{x}{14}$$

$$84 = 4x$$

$$\div 4 \quad \div 4$$

$$x = 21$$

J. 21

21. Answer: C. M202 Solving Equations

$$7x - (x - 3) = 6$$

$$7x - x + 3 = 6$$

$$6x + 3 = 6$$

$$\quad -3 \quad -3$$

$$6x = 3$$

$$\div 6 \quad \div 6$$

$$x = \frac{1}{2}$$

C. $\frac{1}{2}$

Tip: Be very careful distributing negative signs. Be sure to get these problems right by being mindful when executing.

22. Answer: G. M302 Triangles; M101 Word Problems - Translation and Vocabulary

$$A = \frac{1}{2}bh$$

$$32 = \frac{1}{2} \times 8 \times h$$

$$32 = 4h$$

$$\div 4 \quad \div 4$$

$$8 = h$$

G. 8

23. Answer: D. M214 Functions $f(x)$

$$f(x) = 2x^2 - 5x + 7$$

$$f(-10) = 2(-10)^2 - 5(-10) + 7$$

$$= 200 + 50 + 7$$

D. 257

24. Answer: J. M109 Rate & Proportion

$$(.4)(200) + (.5)(300) + (.6)(x) = 350$$

$$80 + 150 + .6x = 350$$

$$230 + .6x = 350$$

$$\begin{array}{r} -230 \qquad -230 \end{array}$$

$$.6x = 120$$

$$\div .6 \quad \div .6$$

$$x = 200$$

$$200 + 300 + 200 = 700$$

J. 700

25. Answer: E. M110 Percent

At least 16 means everyone 16, 17, and 18.

$$26 + 31 + 9 = 66\%$$

E. 66%

26. Answer: H. M110 Percent

$$\left(\frac{x}{100}\right)\left(\frac{2}{3}\right) = \frac{1}{3}$$

$$\div \frac{2}{3} \quad \div \frac{2}{3}$$

$$x = 50$$

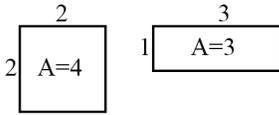
H. 50%

27. Answer: B. M104 Fractions

$$(84) - (.75)(84) = 21$$

B. \$21.00

28. Answer: K. M108 Ratio



K. 4 : 3

29. Answer: A. M209 Variation: Direct, Inverse

y varies directly to product of w^2 and x

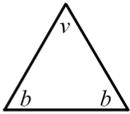
$$y = kw^2x$$

y varies inversely as z^3

$$y = \frac{k}{z^3}$$

A. $y = \frac{kw^2x}{z^3}$

30. Answer: H. M302 Triangles



$$b = 2v$$

$$v + b + b = 180$$

$$v + 2v + 2v = 180$$

$$5v = 180$$

$$\begin{array}{r} +5 \\ +5 \end{array}$$

$$v = 36$$

$$b = 2v = 2 \times 36 = 72$$

H. 72°

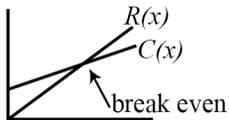
31. Answer: E. M217 Factoring & FOIL

$$p = n^2 - 300n - 100,000$$

$$p = (n - 500)(n + 200)$$

E. 500

32. Answer: F. M207 Linear Functions: $y = mx + b$

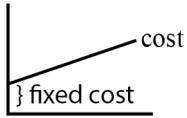


Break even is where lines cross.

Cost = Revenue

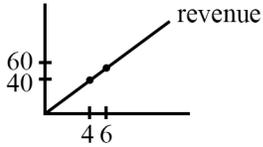
F. 10,000

33. Answer: D. M207 Linear Functions: $y = mx + b$



D. \$30,000

34. Answer: H. M207 Linear Functions: $y=mx+b$



$$\frac{60,000-40,000}{6,000-4,000} = \frac{20,000}{2,000} = \$10 \text{ each}$$

H. \$10.00

35. Answer: E. M218 Polynomials

$$2x + 2xy + 6x^2y$$

$$2x(1 + y + 3xy)$$

E. $2x(1 + y + 3xy)$

36. Answer: G. M207 Linear Functions: $y=mx+b$

Plug in points

$$G: 4(1) - 3 = 1$$

$$4(-3) - (-13) = 1$$

$$-12 + 13 = 1$$

G. $4x - 7 = 1$

37. Answer: B. M308 Multiple Figures

$$\text{Area} = \pi r^2$$

$$36\pi = \pi r^2$$

$$r = 6$$

$$\text{Perimeter square} = 4s$$

$$4 \times 6 = 24$$

Trap: The biggest mistake is to solve for area of a square and get $(c) = 36$.

B. 24

38. Answer: G. M210 Systems of Equations

$$3x + 6y = 52$$

$$x + 6y = 24$$

Elimination

Subtract bottom from top

$$3x + 6y = 52$$

$$-x - 6y = -24$$

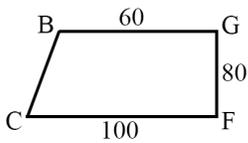
$$2x = 28$$

$$\div 2 \quad \div 2$$

$$x = 14$$

G. 14

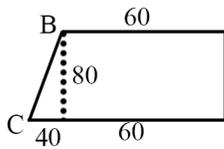
39. Answer: C. M303 Quadrilaterals



$$\left(\frac{60+100}{2}\right)(80) = 6400$$

C. 6400

40. Answer: J. M302 Triangles



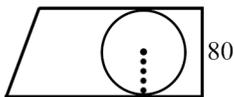
$$40^2 + 80^2 = \overline{BC}^2$$

$$8000 = BC^2$$

$$BC = \sqrt{8000}$$

J. $\sqrt{8000}$

41. Answer: A. M308 Multiple Figures



Fit the circle inside!

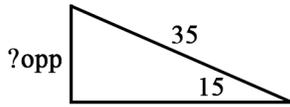
$$\text{Radius} = \frac{80}{2}$$

$$= 40$$

A. 40

42. Answer: J. M400 Trigonometry

S_H C_H A_H T_H O_A



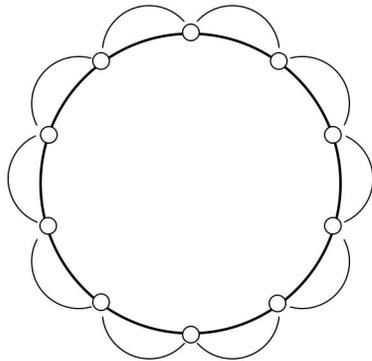
$$\sin 15 = \frac{?}{35}$$

$$(.259) = \frac{?}{35}$$

$$9.065 = ?$$

J. 9.1

43. Answer: B. M103 Properties of Integers



Draw circle, label it, count.

2- skips all the odds

3- right answer, ultimately hits every mark

4- ultimately only hits evens

5- only hits by fives

6- only evens, never odds

B. 3

44. Answer: H. M205 Exponents & Roots

$$y = Ca^t$$

Since the exponent t is a positive real number, the only way for y to decrease is for a to be a decimal or fraction.

$$0 < a < 1$$

$$\text{Ex: } \frac{1}{2} \quad \left(\frac{1}{2}\right)^2 = \frac{1}{4} \quad \left(\frac{1}{2}\right)^3 = \frac{1}{8}$$

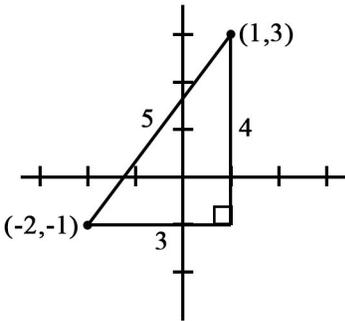
H. $0 < a < 1$

45. Answer: D. M208 Coordinate Geometry & XY-Plane

Distance formula

$$\begin{aligned} & \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ & \sqrt{(-2 - 1)^2 + (-1 - 3)^2} \\ & \sqrt{(-3)^2 + (-4)^2} \\ & \sqrt{9 + 16} \\ & \sqrt{25} \\ & 5 \end{aligned}$$

Or draw it

**D. 5****46. Answer: F. M207 Linear Functions: $y=mx+b$**

$$\begin{array}{l} \text{Sula} \\ \left(\frac{2 \text{ meters}}{\text{second}}\right)t + 10 \text{ meters ahead} = \left(\frac{2.4m}{s}\right)(t) \end{array}$$

$$\mathbf{F.} \quad 2t + 10 = 2.4t$$

47. Answer: D. M203 Inequalities

$$x \leq 6$$

$$\begin{array}{r} 4 + 2x \geq 0 \quad \text{solve} \\ -4 \quad \quad -4 \end{array}$$

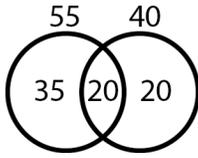
$$\begin{array}{r} 2x \geq -4 \\ +2 \quad +2 \end{array}$$

$$x \geq -2 \quad \text{flip}$$

$$-2 \leq x \leq 6$$

$$\mathbf{D.} \quad -2 \leq x \leq 6$$

48. Answer: K. M504 Counting, Permutations, & Combinations



$$55 + 40 - 20 = 75$$

$$120 - 75 = 45$$

K. 45

49. Answer: C. M207 Linear Functions: $y=mx+b$

$$m = 3$$

perpendicular slope is opposite reciprocal

$$mp = \frac{-1}{3}$$

C. $-\frac{1}{3}$

50. Answer: J. M208 Coordinate Geometry & XY-Plane

$$\left(\frac{x_2+x_1}{2}\right), \left(\frac{y_2+y_1}{2}\right)$$

$$\frac{2a+2a}{2} = 12$$

$$\frac{6a}{2} = 12$$

$$3a = 12$$

$$\div 3 \quad \div 3$$

$$a = 4$$

J. 4

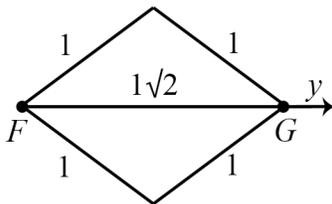
51. Answer: D. M504 Counting, Permutations, & Combinations

NOT REPEATED

$$5 \times 4 \times 3 \times 2 \times 1 = 120$$

D. 120

52. Answer: H. M208 Coordinate Geometry & XY-Plane



\overline{HD} has length of 1

H. $(0, \sqrt{2}, 1)$

53. Answer: B. M206 Logarithm

First part: combine like terms (same base).

$$2\log_3 x - \log_3 z$$

Coefficient of a log is an exponent.

$$2\log_3 x = \log_3 x^2$$

$$\log_3 x^2 - \log_3 z$$

Subtraction in logarithm is division.

$$\log_3 \left(\frac{x^2}{z} \right)$$

Next part:

$$\frac{1}{2}\log_6 y = \log_6 (\sqrt{y})$$

Put it all together:

$$\log_3 \left(\frac{x^2}{z} \right) + \log_6 (\sqrt{y})$$

$$B. \log_3 \left(\frac{x^2}{z} \right) + \log_6 (\sqrt{y})$$

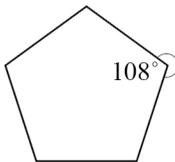
54. Answer: G. M203 Inequalities, M204 Absolute Value

$$|-4 - 2(5)| = |-14|$$

G. 14

Tip: The ACT loves to put inequalities and absolute values together.

Tip: Maximum value for an absolute value almost always means the most negative.

55. Answer: D. M304 Polygon

$$\frac{(5-2)180}{5} = \frac{(3)180}{5} = \frac{540}{5} = 108$$

Individual angle of a regular pentagon: 108

$$360 - 108 = 252$$

D. 252°

56. Answer: F. M400 Trigonometry

$$f(x) = \sin(x) \quad \text{parent function}$$

$$f(x) = A\sin(Bx + c) + D$$

$$\text{Amplitude} = A$$

$$\text{Period} = \frac{2\pi}{B}$$

$$\text{Phase shift} = \frac{-C}{B}$$

$$\text{Vertical shift} = D$$

For an amplitude of 2, $f(x) = A\sin(x)$

$$A = 2$$

$$f(x) = 2\sin(x)$$

$$\mathbf{F.} f(x) = 2\sin(x)$$

Tip: For trig functions such as $f(x) = A\sin(Bx + c) + D$, the ACT likes to focus on amplitude, A , and vertical shift, D .

57. Answer: A. M201 Algebraic Operations

Solve for r

$$S = \frac{(rt-3)}{(r-t)}$$

$$\div (r-t) \quad \div (r-t)$$

$$S(r-t) = (rt-3) \quad \text{distribute}$$

$$Sr - St = rt - 3 \quad \text{move } r \text{ terms to one side}$$

$$-rt \quad -rt$$

$$Sr - St - rt = -3 \quad \text{isolate } r \text{ terms}$$

$$+St \quad +St$$

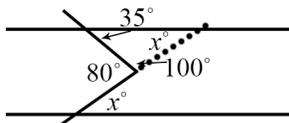
$$Sr - rt = St - 3 \quad \text{factor out } r$$

$$r(S-t) = St - 3$$

$$\div (S-t) \quad \div (S-t)$$

$$r = \frac{St-3}{S-t}$$

$$\mathbf{A.} \frac{St-3}{S-t}$$

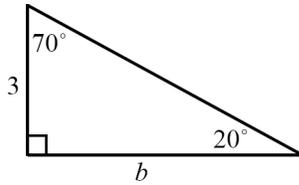
58. Answer: G. M301 Lines & Angles; M302 Triangles

$$180 - (100 + 35) = 45$$

$$\mathbf{G.} 45^\circ$$

59. Answer: E. M400 Trigonometry

S $\frac{O}{H}$ C $\frac{A}{H}$ T $\frac{O}{A}$



b is adjacent to 20, but opposite to 70

3 is opposite to 20, but adjacent to 70

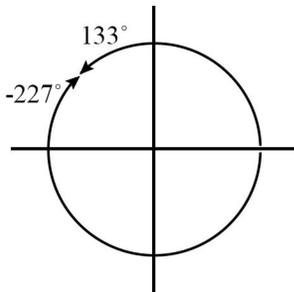
$$\tan(70) = \frac{b}{3}$$

$$3 \tan(70) = b$$

E. $3 \tan(70)$

60. Answer: K. M301 Lines & Angles

$$1573 \div 360 = 4 \text{ remainder } 133$$



A. $-227 - 360 = -587$ TRUE

B. $133 - 360 = -227$ TRUE

C. $133 = 133$ TRUE

D. $133 + 360 = 493$ TRUE

E. $573 - 360 = 213$ FALSE

K. 573°

Reading Test

1. Answer: D. R203 Inference/Assumption

This question is particularly tricky because the answer is not clearly stated and must be inferred. Skim the passage to find the mentioned details, which are found in lines 27-29 and 38-39. It is important to note that these details are found among other positive experiences, such as the T-shirt for Piggy and trips to the beach, so the answer can only be **D**, showing what she appreciates about the trip.

2. Answer: H. R203 Inference/Assumption

Skim the passage to find mention of the other children, and you easily see that the children are part of positive experiences such as playing sports, going to the beach, and listening to stories about other beaches. There is no mention of the other children talking about the appearance of the ocean, so the only reasonable answer is **H**.

3. Answer: B. R203 Inference/Assumption; R102 Paragraph Number

Always look back at the listed paragraphs, because information elsewhere in the passage will confuse you. These two paragraphs illustrate how the grandmother was initially harsh and rigid, scolding the kids when they got tan and correcting Marty's use of chopsticks, but in the second paragraph, she compromises with forks and hamburgers. The only answer choice that shows the grandmother's compromising ways is **B**.

4. Answer: J. R204 Main Idea/Function: Paragraph

This question appears difficult at first, because the answer is not clearly stated in the mentioned paragraph, but if you read through the answer choices, you can see that **J** is the only reasonable answer. There is nothing in the text to imply that the grandmother has any hopes for the girls or that she is exaggerating her experiences.

5. Answer: D. R201 Detail

If you read carefully, you might be able to answer without looking back in the passage, but you should always double-check the text if you have time. By skimming the text for mention of each of the answer choices, you will see that the baby T-shirt, white gloves, and coconut lotion are only mentioned briefly, but the perfume is mentioned in lines 69-71 in an imaginative way. The text even has the word *imagine* relating to the perfume, in line 69.

6. Answer: G. R201 Detail

The answer is explicitly stated in lines 2-5.

7. Answer: D. R203 Inference/Assumption, R101 Line Number

Although you need to infer the answer here, you should still go back to the text and review the paragraph that contains the mentioned line. A previous line states that the narrator is *way too old* to bring Piggy and that Marty didn't bring her doll. The line about the grandmother not laughing is immediately after this information, which makes it clear that the grandmother is not laughing about bringing Piggy. The best answer is **D**, which shows the grandmother understands why the narrator brought Piggy.

8. Answer: H. R201 Detail

Unless you happen to recall all of these details, skim the text to find where they were mentioned. In lines 46-47, the narrator mentions Monterey, where she was born, which implies that she was there first.

9. Answer: B. R203 Inference/Assumption

Although you need to infer the answer, the text makes the answer clear. The narrator states that her mother doesn't look different but her father is unrecognizable. In comparing those too, she implies that he *does* look different now, so the answer is **B**. Answer **D** is tricky because of the words *to her surprise*; she is not surprised he looks younger.

10. Answer: F. R201 Detail

The narrator's father is only mentioned twice: once at the start, where he gets a teaching job in Taiwan, and once at the end, where the narrator mentions that his young father hadn't had anything bad happen to him. From this second mention, in lines 75-77, it can easily be inferred that he has had bad things happen to him, as in **F**.

11. Answer: A. R201 Detail

Although the question sounds like a big picture question, the answer can be found in one specific detail. In lines 31-33, the text states that the enrichment programs at zoos are *mental puzzles disguised as toys and treats*, suggesting that they provide the mental stimulation mentioned in **A**.

12. Answer: F. R203 Inference/Assumption

For a question like this, it is important to first look back in the text to find out what we know about the people mentioned. Dennett and Terrace are described in line 73 as skeptics of animal consciousness. The only answer choice that does not assume animal consciousness is **F**.

13. Answer: D. R204 Main Idea/Function: Paragraph; R102 Paragraph Number

Reread the given paragraph to find examples supporting animal consciousness, and then skim the passage to find mention of the answer choices. All except for Dennett, **C**, support the idea of animal consciousness.

14. Answer: H. R104 Big Picture

This question asks you to step back and think about the purpose of the passage. The author is arguing in favor of animal enrichment programs because of the evidence that animal consciousness, which fits choice **H**.

15. Answer: B. R201 Detail

If you read carefully, you might be able to answer without looking back in the passage. The text implies over the first four paragraphs that scientists never considered animal consciousness until Griffin published his book.

16. Answer: H. R201 Detail; R102 Paragraph Number

This question is tricky. After rereading the given paragraph, it might appear the paragraph is about robots, but Dennett is actually arguing that it is easy to intuit (infer) human traits from non-humans as long as they are similar to humans, as mammals are. The best answer to describe this is **H**.

17. Answer: A. R204 Main Idea/Function: Paragraph

The last paragraph shows Dr. Griffin's explanation that even though the search for animal consciousness is a *wild goose chase* (a crazy adventure with no clear path forward), the biology (brain neurons and synapses) supports its existence. The incorrect answer choices can be eliminated because they mention incorrect details.

18. Answer: G. R202 Vocabulary in Context

The answer is explicitly stated in lines 18-19.

19. Answer: B. R201 Detail

Dr. Griffin calls the early work on primate gestures *grossly misinterpreted* in lines 39-40, which most closely means badly misconstrued, choice **B**.

20. Answer: F. R201 Detail

The answer is explicitly stated in lines 50-52.

21. Answer: D. R301 Main Idea/Function: Passage; R104 Big Picture

This question asks you to step back and think about the passage as a whole. Don't be tricked by answer choices that mention specific details from the text, such as **A** and **B**. **D** is the only reasonable answer that talks about the relationship between storytellers and audiences.

22. Answer: F. R204 Main Idea/Function: Paragraph

This question is tricky because the answer choices seem mostly correct. Make sure to read the answer choices carefully and eliminate one if any part of it is wrong. **G** can be eliminated because it is not an opinion. **H** can be eliminated because of the word *not* - the image *is* explained. **J** can be eliminated because the author never says writing is easy.

23. Answer: A. R203 Inference/Assumption; R101 Line Number

Although the answer is not explicitly stated in the text, reread the lines around the given lines. *Little pitchers* implies children that can be filled up with information by listening. Children then become *blurters at the dinner table*, implying they share information they shouldn't because they don't have a sense of what is or isn't private, or a sense of propriety.

24. Answer: G. R201 Detail; R102 Paragraph Number

You might be able to answer this question based on memory, but always reread the given paragraph if you have time. The author specifically states that a writer will produce a *dead work* if the *only excuse for what is on the page is that it really happened*.

25. Answer: B. R201 Detail

For these types of questions, start by rereading the lines mentioned. The author describes *mere literature* as *things that happen only in stories*, or fiction.

26. Answer: J. R201 Detail

If you read carefully, you might be able to answer this question by memory, since the primary purpose of the passage is to talk generally about the relationship between storyteller and audience, including adults and children. The answer is directly supported by the text in line 40, where the author states that children and the author both want their attention held by a story.

27. Answer: C. R102 Detail; R401 Least/Not/Except

Skim the text to find mention of the riddle and the joke, which is in line 62. Reading from here, the answer is explicitly stated in lines 62-64.

28. Answer: H. R104 Big Picture

Although the question first appears tricky, read carefully through the answer choices. It is clear that choices **F**, **G**, and **J** can be eliminated because they argue that overhearing voices has a negative impact on the child's life, which is the opposite of the author's main argument.

29. Answer: A. R201 Detail

The answer is explicitly stated in lines 41-42.

30. Answer: F. R201 Detail

Skim the passage to find the first mention of urgency, which is in line 76. By reading the line before it, you can see that *urgency* is used to elaborate on the idea of giving children your full attention in order to get their full attention.

31. Answer: D. R104 Big Picture

The best way to answer this question is by eliminating the answer choices that don't make sense. **A** can be eliminated because there is no mention of specific stars and constellations in other solar systems. **B** can be eliminated because the author specifically mentions that direct observation is impossible (lines 34-35). **C** can be eliminated because there is little discussion of Earth and its inhabitants.

32. Answer: J. R201 Detail; R401 Least/Not/Except

If you read carefully, you may be able to answer this question without looking back in the passage. However, if you skim through the passage to find what astrophysicists have calculated, you can eliminate choices **F**, **G**, and **H** after reading lines 30-35.

33. Answer: C. R201 Detail

This question is much easier if you realize that the purpose of the first paragraph is that scientists are trying to simulate controlled fusion outside the Sun, so obviously the Sun is not necessary. If you missed that idea, choices **B** and **D** can easily be eliminated because they are explicitly mentioned in lines 6-11. Choice **A** can be eliminated because it is the definition of fusion, as explained in lines 1-4.

34. Answer: G. R201 Detail

To answer questions like these, skim the passage to find the specific detail needed to answer the question. This answer is found in lines 26-28, before the author stops discussing the Sun's life cycle after line 29.

35. Answer: C. R201 Detail; R102 Paragraph Number

For questions like these, always reread the given lines, and a few lines above and below. The paragraph discusses the observations and calculations made for the Sun. Lines 38-41 explain how we can use the snapshot of other stars to infer information about our own Sun. Choices **B** and **D** can be eliminated because they talk about the difficulties astrophysicists face, whereas the lines mentioned talk about a helpful strategy they have. Choice **A** can be eliminated because there is no mention of locating stars.

36. Answer: H. R104 Big Picture; R401 Least/Not/Except

If possible, to save time, try to answer this question without referring back to the passage. If you need, or if there is extra time, the incorrect choices can be eliminated by finding evidence in the text. Choice H is correct because there is no mention of Earth's size in the passage.

37. Answer: A. R204 Main Idea/Function: Paragraph

The purpose of the last paragraph is evident by the rhetorical question it asks and answers, *What possible relevance do these things have?* The closest answer is **A**, which mentions stressing the significance of this information.

38. Answer: J. R203 Inference/Assumption; R102 Paragraph Number

For questions like these, always refer back to the given lines and read a sentence before and after. The sentence before lines 70-71 mentions astronomers, and then asks about the relevance to *all the others*, implying those that are not astronomers.

39. Answer: D. R201 Detail

Although the question is framed as a *author would most likely agree with* question, it is actually asking about a detail in the text. The author almost exactly states answer choice **D** in lines 74-76.

40. Answer: G. R202 Vocabulary in Context

This question is a vocab-in-context question in disguise, asking about the definition of *stymied* in line 6. These attempts have been *stymied* by the *difficulty of achieving the requisite temperatures* and *it is even more of a problem* to contain fusion in a lab, so *stymied* clearly means unsuccessful. There is no mention of financial issues.

Science Test

1. Answer: D. S304 Table: Increase/Decrease

In Table 1, the number of mice (third column) increases moving up the column. The number of larvae/mouse (fourth column) does not appear to follow an increase/decrease pattern.

2. Answer: G. S206 Figure

Figure 1 states that the bacteria can only be passed on through mice (upper right corner of figure).

3. Answer: C. S201 Science Math; R302 Table: Data Point

In Table 1, the percent of households infected (last column) have an average of 53%, which is closest to 50%. This can be calculated by adding up the 5 values and dividing by 5.

4. Answer: F. S306 Table: Infer

Zone A most likely has the most infected deer tick larvae because Table 1 shows that Zone A has the most mice and the most infected households.

5. Answer: D. S310 Bar Chart: Data Point

In Figure 2, the total of new cases in a month is represented by the entire bar. The only pair of months that has two different height bars are August (5) and November (3).

6. Answer: G. S305 Table: Extrapolate

In Table 1, which describes the results of Experiment 1, 150°C would fall between 140°C and 160°C. Thus, the value for OFC1 should fall between 442 and 218, and the value for OFC2 should fall between 301 and 133.

7. Answer: B. S302 Table: Data Point

According to the text describing Experiment 1, the fastest decomposition is the shortest induction period. In Table 2, FeF₃ had the shortest induction period (3 seconds), and therefore has the fastest decomposition.

8. Answer: H. S101 Text: Experimental Design

According to Table 1, OFC1 and OFC2 were both studied, so answers F and G are incorrect. According to Table 1, temperature was varied, so choice H is correct.

9. Answer: D. S101 Text: Experimental Design; S302 Table: Data Point

According to the text describing Experiment 1, the induction period is the time for the pressure to rise to 0.20 atm. If the induction period for OFC2 at 100°C is 998 seconds, it takes 998 seconds for the air pressure to rise (increase) to 0.20 atm.

10. Answer: J. S302 Table: Data Point

In Table 1, at each temperature (each row), OFC1 is greater than OFC2, so OFC2 will always break down in a shorter time (more quickly).

11. Answer: A. S100 Text

The first sentence in the text states that OFCs are composed of only C, F, and O. A is the only molecule that doesn't contain any additional elements.

12. Answer: H. S101 Text: Experimental Design

In Experiment 2, the bags would keep out insects, but not wind, so only wind pollination would occur. Student two states that without insects, pollination decreases by 50%.

13. Answer: B. S100 Text

In the second paragraph of Student 2, the text states that the shape of the female cones creates air currents that help pollen enter the cones.

14. Answer: F. S100 Text

Student 1 explains that wind and insect pollination are the only ways the flower can be pollinated, so if insects and wind were excluded, there would be no pollination.

15. Answer: B. S100 Text

Student 1 states that wind pollination isn't common because the pollen is large and heavy, implying that the wind cannot carry the pollen very far.

16. Answer: F. S100 Text

Both students state that insects and wind pollinate the flowers, so they would agree that the pollination would be highest in flowers that are not covered at all.

17. Answer: D. S200 Science Knowledge; S101 Text: Experimental Design

A control group is the untested group used for comparison to the experimental groups. Everything except the tested variable remains constant. In experiment 1, the experimental group consists of female cones covered with bags that exclude insects and wind, so the control group would be female cones not be covered with bags.

18. Answer: J. S100 Text

Student 2 states that excluding insects would result in a 50% decrease in pollination and that excluding wind would results in a 50% decrease in pollination. Experiment 2 would exclude insects and Experiment 3 would exclude wind, so Student 2 would expect the pollination in Experiment 2 and Experiment 3 to be the same.

19. Answer: B. S301 Table; S107 Text: Explain

In Table 1, the fourth column shows clay content increasing down the column and the fifth column shows water content increasing down the column. Thus, as clay content increased, water content increased.

20. Answer: G. S301 Table

In Table 1, clay content (fourth column) increases as water content (last column) increases. Following this pattern, a clay content of 12% would fall between 8.5% and 14.8%, so the water content should fall between 2.9% and 6.8%.

21. Answer: D. S101 Text: Experimental Design; S302 Table: Data Point

According to Table 1, the water content of Soil C was 21.3% when collected from the study area. After being saturated for 24 hours, the water content would likely increase, so the water content would be greater than 21.3%, and therefore greater than 15%.

22. Answer: H. S302 Table: Data Point

In Table 2, the second column describes the results of Study 2 before sand was added. The three results, 0.31, 0.30, and 0.31, are almost exactly the same.

23. Answer: A. S302 Table: Data Point

In Table 2, the third column describes the results of Study 2 after sand was added. Each of the values in the third column is about $\frac{1}{3}$ less than each of the values in the second column, which shows the wind speed before sand was added.

24. Answer: H. S305 Table: Extrapolate

In Table 2, the third column describes the results of Study 2 after sand was added. The value for Soil A was 0.22 and Soil C was 0.21. If Soil A and Soil C were combined, the value would likely be between those values, which is between 0.20 and 0.25.

25. Answer: B. S304 Table: Increase/Decrease

Experiment 1, which is described in Table 1, shows that voltage (second column) increases down the column and capacitance (third column) decreases down the column as plate separation (first column) increased down the column.

26. Answer: G. S301 Table

Table 2, which shows the results of Experiment 2, shows a variation in surface area of the plates (first column).

27. Answer: C. S302 Table: Data Point

In Table 1, the smallest plate separation has the highest capacitance. In Table 2, largest surface area has the highest capacitance. In Table 3, the titanium dioxide plate has the highest capacitance. The correct answer has the smallest separation, largest surface area, and is made of titanium dioxide.

28. Answer: H. S304 Table: Increase/Decrease

According to the question, as K decreases, suitability decreases. In order of decreasing K and therefore decreasing suitability, the materials are titanium oxide, water, and mica.

29. Answer: A. S100 Text; S200 Science Knowledge

According to the text, a charge of -1×10^{-8} coulomb flowed to Plate B before the switch was reopened, so an equal charge would have left plate A, leaving Plate A with a charge of $+1 \times 10^{-8}$ coulomb.

30. Answer: F. S108 Text to Data

The text states that negatively-charged electrons flowed from Plate A through the ammeter, resistor, and battery, to Plate B. This sequence is represented by diagram **F**.

31. Answer: D. S318 XY Graph: Infer

All of the values for solubility on Figure 3 are below 0.03 and all of the values for solubility on Figure 2 are above 0.1, so there is no point at which the solubilities are the same.

32. Answer: H. S100 Text; S201 Science Math

The text defines 1 mole as a certain number of molecules, so 1 mol/L would have twice the number of molecules as 0.5 mol/L.

33. Answer: B. S206 Figure; S107 Text: Explain

According to Figure 1, Compound B dissolves exothermically. In Figure 3, solubility of Compound B decreases as temperature increases, which matches the chemist's claim.

34. Answer: F. S206 Figure; S100 Text

According to the text, a positive ΔH represents heat being absorbed from a solution, which would cause the temperature of the solution to decrease. If the solution is getting colder, the compound is A because it has a positive ΔH in Figure 1.

35. Answer: A. S105 Text: Infer; S206 Figure

Compound A has a greater positive ΔH than ammonium nitrate, so ammonium nitrate will absorb less heat from the solution than Compound A.

36. Answer: G. S314 XY Graph: Data Point

The question is referring to the solid line on the first graph in Figure 2. This line passes the 30 km/sec line twice, once around 90° and once around 270° .

37. Answer: C. S102 Text: Experimental Parameters; S316 XY Graph: Increase/Decrease

The text states that perihelion is at 0° and aphelion is at 180° . It can be inferred from Figure 1 that at 360° (an entire circle), the planet reaches perihelion again. In Figure 2, in all graphs, when a planet moves from perihelion (0°) to aphelion (180°), the speed decreases. As a planet moves from aphelion (180°) to perihelion (360°), the speed increases.

38. Answer: J. S314 XY Graph: Data Point

The question is referring to the solid line on the first graph, which never reaches a speed above 33 km/sec (even at perihelion), and so will not reach escape velocity and leave orbit.

39. Answer: A. S318 XY Graph: Infer

In Figure 2, the variation is greater with a greater eccentricity because in the first graph, the eccentricity of 0.10 ranges from 33 km/sec to 27 km/sec, and the eccentricity of 0.30 ranges from 40 km/sec to 22 km/sec. Thus, the speed will likely have no variation with no eccentricity.

40. Answer: F. S314 XY Graph: Data Point

The question is referring to the middle graph in Figure 2. The planet with an eccentricity of 0.1 has a speed of around 23 km/sec at 0° , and speed at 0° decreases as eccentricity decreases, so the speed must be less than 23 km/sec.