

2005: Form 59F

English Test

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

If you read the sentence just following the underlined portion, you'll notice it lists things which might be seen in a subway. This supports only option **B**, as it has nothing to do with speed, cost, or calmness. The context here is essential to finding the answer.

2. Answer: F. E102 Commas

The commas in this sentence are confusing, so identifying the subject and predicate can help determine where breaks are necessary. The subject is a list from *A musician...* to *...stockbrokers in crisp, charcoal gray suits...* The predicate is *get on at Wall Street*. Commas in this sentence are only needed to separate list articles, as there is no compounding or complexity. The end of a list does not need another comma, as there is no new article, so **G** is out. *Charcoal gray* is a phrase, not two separate adjectives, so separating them is incorrect (unless the suits are literally made of charcoal). Similarly, there is no need to separate *suits* from its descriptor *charcoal gray*.

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

The difference between the possessive *whose* and conjunction *who's* is the key here. Remember that an apostrophe is a placeholder for missing letters. *Who is* has the space and *i* replaced.

4. Answer: G. E111 Word Choice: Correct Word

Prepositions are difficult because there is not a rule to follow. You just need to *know* from hearing and speaking English that *as* is appropriate. *Even if*, implies an unexpected consistency, but the implication of each are not definite and rely nearly entirely on your English fluency.

5. Answer: B. E103 Independent Clauses: Period, Semicolon, Comma and FANBOYS

It's important to recognize that this sentence is compound. The word *subways* marks the end of one independent clause, as followed by another. Most compound sentences are linked simply with a comma and a conjunction (FANBOYS).

6. Answer: J. E113 Short and Simple

The existing *I think maybe* adds more than enough uncertainty to this statement, so all but answer **J** are redundant with their extra expressions of indefiniteness.

7. Answer: A. E114 Transition Words/Phrases

The options provided all add unnecessary transitions. While it may be difficult to determine when a transition is necessary, if you notice that *they all mean the same thing* it becomes clear that one can't be correct and the others incorrect, thus eliminating them all.

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

Make sure you know the difference between these before going into the ACT! Remember that the apostrophe is a placeholder for the missing space and *i* in *It is*.

9. Answer: C. E113 Short and Simple

All the other options here are wordy to the point of just being confusing; don't let that fool you! If a one-word answer sounds correct, it often is.

10. Answer: H. E101 Verbs: Agreement/Tense

Note the *NOT* in the question! **H** is the only unacceptable answer because the existing past-tense verb *watched* is the active verb of the sentence. *Playing* is only a modifier/descriptor of the elderly man, and thus should be either present or past tense with appropriate pronoun pairings. If you don't know all the rules, just listen: which sounds right?

11. Answer: D. E111 Word Choice: Correct Word

This is another tricky preposition question. You just need to know that one sits *across from*, not *across with*. English is tricky to learn fluently!

12. Answer: G. E116 Modification: Moving Modifiers

The phrase underlined is describing the *woman*, thus it fits most appropriately right alongside her to avoid confusion.

13. Answer: A. E112 Word Choice: Tone

The question here specifically asks for a choice emphasizing *the rapid speed*, so the verb *hurtle* is the most fitting option. It is a strong action verb with much more implication than *continued*, *proceeded*, and *moved*, which are hardly descriptive.

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

If the sentence is read, it should take little elimination to determine which answers are irrelevant. There is no physical description, nor reference to the opening, nor explanation for actions: only evidence of friendliness in their consideration of his flowers.

15. Answer: C. E119 Writer's Goal

In yes-or-no questions, keep in mind that what matters is the *supporting evidence*, not the yes/no. In this case, **C** is correct because it accurately portrays the essay and how it is not about economics. The others, while in many cases referencing the passage, do not provide sound reasoning based off of these references.

16. Answer: F. E104 Nonessential Information: Commas, Dashes, Parentheses

The clause *known as the Navajo code talkers* is non-essential to the sentence and thus does not affect its structure. Placed between two commas, no additions are necessary; most will incorrectly transform the sentence's existing clauses.

17. Answer: C. E102 Commas

There should be no commas or other punctuation in the underlined portion, as there is nothing to separate. A preposition does not need to be preceded by a comma. A colon at the end is incorrect because it would no longer be an independent clause. The same is true for **D**.

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

Had is correctly in the past perfect tense, as the action began at a time preceding the relevant time in the past. No other option is in the correct tense.

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

These adjectives each have different meanings. If you are unsure of a definition, see if you can rule out those you do know. Otherwise, use context to determine what is the best description for the particular subject.

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

The word *whereas* is often misused, so don't be daunted by its presence. Instead, consider and rule out the simpler answers. We have two independent clauses in need of separation: **G** and **F** have no comma, so they can be ruled out. While **H** has a comma, it has no conjunction to go with it. Although *whereas* is not in FANBOYS, it serves a similar purpose and is correct in this usage.

21. Answer: D. E114 Transition Words/Phrases

Here we see just how non-essential these transitions can be. *Nevertheless* implies exception, *similarly* implies comparison, and *still* implies some sense of despite-the-odds. Each of these is irrelevant in the context of the sentence, thus they are best foregone.

22. Answer: H. E102 Commas

No comma is necessary in the underlined portion because nothing is being separated (that is, neither clauses nor lists). Even reading the options aloud should make clear that the commas do not make sense, as no pause would fit there.

23. Answer: C. E105 Pronouns: Agreement/Case; E101 Verbs: Agreement/Tense

The antecedent to the pronoun underlined is *the Navajo language*. As such, we know we need a singular pronoun; this narrows us down to **B** and **C**. Only **C** correctly agrees the verb, too.

24. Answer: F. E111 Word Choice: Correct Words

Ah, the confusing prepositions never end. Again, you just need to know that one has exposure *to* something, not from, with, or of it.

25. Answer: B. E103 Independent Clauses: Period, Semicolon, Comma and FANBOYS

This is another *NOT* question, so be careful not to pick the first right answer! Remember that on the ACT a semicolon and a period are functionally the same, so they are both correct. **B** is obviously not because it provides neither punctuation nor conjunction. Independent clauses can never just be put right together.

26. Answer: J. E105 Pronouns: Agreement/Case

In this sentence, the antecedent to the pronoun is unclear. Because of the ambiguity, it's better to just state the intended subject instead of using a pronoun.

27. Answer: A. E110 Relevancy: Adding, Deleting, and Replacing Information

No. No it isn't. Height and weight are irrelevant, and thus should be excluded.

28. Answer: J. E113 Short and Simple

It's redundant to state that the peril was dangerous, as that's just what *peril* means—danger.

Tip: Remember to always give special attention to options for omission, as they are often correct.

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

The compound predicate here can be combined with only the conjunction *and*. The sentence is not entirely compound as it does not repeat or introduce a subject for the second predicate, so no comma is needed as we do not have a new independent clause.

30. Answer: F. E112 Word Choice: Tone

The phrase *secret work* is concise and accurate, while the other options contain expressions which aren't particularly proper for this passage. *Hush-hush* and *under wraps* are idioms better kept for creative passages, rather than informative.

31. Answer: D. E102 Commas

Consider how this sentence would best be rearranged. *Everybody listens when storyteller...* makes the most sense. No *and* is included here, and only one clause is moved. Only one comma is needed to separate two clauses, so **D** is the best answer.

32. Answer: F. E114 Transition Words/Phrases

The transition *indeed* is appropriate here because it expands upon the previous point. The other options bear implications which do not fit this context. Unfortunately, this does not have much of a trick; you just need to know how each is used.

33. Answer: B. E105 Pronouns: Agreement/Case

As the antecedent is *the griots*, a group of people, *who* is appropriate because it refers to people rather than objects. *Whom* needs a paired preposition, and the other two options are also incorrect.

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

The trickiest option in this question is **H**, which appears incorrect due to lack of comma. In this case, however, it can be considered a compound predicate instead of a compound sentence, in which case a comma is not needed. The lack of any conjunction after the comma in **J**, however, is not an allowable omission.

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

Consider what the phrase in question means out of context, as well as in context. It is by no means an essential transition, as in **A**, nor a comparison as in **B**. It may be argued to be unnecessary, but it is not a detail; in fact, it is rather vague. Thus we can rule out **D**. **C** correctly describes its purpose.

36. Answer: H. E113 Short and Simple

The redundancy in this sentence (as redundancy should always be considered when deleting) is the inclusion of both her being in education and public schools, as one can hardly be one without the other.

37. Answer: A. E104 Nonessential Information: Commas, Dashes, Parentheses

This phrase serves as further description of *Cindy Ellie*, and thus is only a modification and not a new clause. As such, only a comma before is needed. Were the sentence to continue past this modification, a comma would follow as well. As the sentence ends, however, a period supersedes it.

38. Answer: J. E110 Relevancy: Adding, Deleting, and Replacing Information

Remember that in yes/no questions it is the supporting evidence which determines the right answer, not the yes or no themselves. It should be clear that **J** is the best option because the reasoning behind the others is either untrue (**H**) or irrelevant.

39. Answer: D. E104 Nonessential Information: Commas, Dashes, Parentheses

Note that the portion from *who had* to *in Gambia* is all one clause serving to further describe her friend. These non-essential clauses are always nested between twin commas, so we can be sure that one must follow *Alex Haley* to match the one following *Gambia*.

40. Answer: G. E113 Short and Simple

While the other options listed are not all inherently incorrect, it is always best to choose the shortest correct answer. Because *for* is just as correct as any other and states it in the simplest, most concise manner, it is correct.

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

The use of *this* over something like *which* means a new independent clause is started here, which *this* as the subject. The easiest way to separate two independent clauses is just to insert a period and capitalize.

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

The most (and indeed only) relevant quote provided is that already in the passage. It provides an analogy appropriate to the situation, whereas the others do not fit this section at all.

43. Answer: D. E113 Short and Simple

It's redundant to state that she could speak *for twelve hours straight and consecutively*, as that's implied by the word *straight*. Redundancy begs omission.

Tip: Remember to always pay attention to options for omission, as the ACT loves them!

44. Answer: F. E102 Commas

There's no need for a comma here as there is no change of clause in the underlined portion. Also note the difference between the possessive *Its* and the contracted *It's*.

45. Answer: D. E119 Writer's Goal

Be sure not to overvalue the *yes or no* aspect of the question, and to focus on the supporting details. In this case, **D** is the only option which addresses both the story *and* the question. Others fail to accurately do both.

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

They is too ambiguous a pronoun to be used here, as there is no plural noun which could be the antecedent. As such, replacing it with such a plural removes ambiguity and provides an antecedent for the later *they're* pronoun in the sentence.

47. Answer: C. E107 Colons and Dashes

The colon is used here to separate an independent clause from a list of examples. **D** is incorrect because the extra comma at the end incorrectly separates the article *dirt* from the parenthetical description (which is part of the *dirt* list article).

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

These sorts of pronoun questions can be difficult to pin down because there are no easy rules to reference. The best approach is to read the sentence with each option and determine which sounds correct; if you're comfortable speaking English,, you should have an ear for what is correct.

49. Answer: B. E117 Moving Sentences

This sentence is difficult to place because it does not contain any strong clue words like pronouns or transitions. Instead, we must consider what the implications are of having *doubts* to serve the purpose of amplifying. To have doubts, there needs to be a belief stated: something to doubt. The only sentence which has any such statement is 2, which is amplified with a humorous understatement to display the lack of mentioned organization.

50. Answer: F. E114 Transition Words/Phrases

The transition word *since* loosely means *because of*. This implication of causation is correct given the cause-and-effect relationship of the clauses later in the sentence. Also, all other answers have very similar connotations, which should be a strong indicator that they are wrong (there can only be one correct answer).

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

Be careful you don't miss the *NOT* in this question. The key to answering this question is identifying the clauses. The *If-Then* structure of this sentence mandates two independent clauses, the first led by *if*, followed by an independent clause (the effect for the cause, so to speak). Answer **C** incorrectly changes this clause into a subject with no predicate. The use of *who* creates a modification instead of a predicate, leaving us with a fragment.

52. Answer: J. E112 Word Choice: Tone

What do the phrases in question say? To determine what is lost, first determine what they contribute. These phrases emphasize the commonness of the described actions, which is necessary to explain why the umpire need be patient. While admiration may be implied by the sentence (and the word *patient*) the phrases in question do not impact that aspect of the sentence.

53. Answer: A. E113 Short and Simple

The other two grammatically correct choices in this question are wordy and add no meaning to the sentence which is not already provided by *ends up*. The shorter option always wins between two similar choices.

54. Answer: F. E114 Transition Words/Phrases

Just because it's in the middle of the sentence does not mean the underlined portion is not a transition! It is important to consider what each transition means. *Instead* implies replacement, *likewise* a similarity through comparison, *meanwhile* a simultaneous action. *Therefore* correctly implies a correlation of causation.

55. Answers: A. E110 Relevancy: Adding, Deleting, and Replacing Information

What does the proposed addition have to do with the rest of the sentence? Answer: It doesn't. There is no reason to add it. The fact that **B-D** are all synonymous and grammatically valid should be a strong clue that one can't be correct, because they would all be.

56. Answer: J. E102 Commas

No clauses or articles are being separated here, so there is no need for an additional comma.

57. Answer: C. E105 Pronouns: Agreement/Case

It is the correct pronoun here, not *that*, because we do not have a need for a relative pronoun. The *What* is incorrect without an additional *is* after *about* to keep our clause functionally the same. Only *It's about* serves this purpose out of the given options.

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

Remember that a plural-possessive needs an apostrophe *after* the *s*. The comma answer is only there to distract you.

59. Answer: C. E113 Short and Simple

So many wordy answers. *They're not* is short and adequately communicates the exception stated in the sentence. The other options are wordy and confusing, adding no new thought to the sentence.

60. Answer: J. E119 Writer's Goal

Don't overvalue the *yes* or *no* portion of each answer; the supporting evidence is what determines the correct choice. Only **J** both addresses the question and the essay, while the others fall short, often misinterpreting one or both.

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

The word *slowly* is immediately before the underlined portion, so it should be easy to determine what type of description is needed. **A** is the only option which does not imply a sudden or immediate loss of feathers.

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

Not only is the word *diurnal* unelaborated upon, it is also irrelevant to this sentence. While this information may be included elsewhere in the passage, this placement is inappropriate and warrants deletion.

63. Answer: C. E111 Word Choice: Correct Word

It is difficult to recognize sure-fire patterns and rules in these questions, however an English-speaker is likely to have a natural intuition and understanding of connotations which helps immensely (and is impossible to teach). *Total*, while of a very similar meaning, is not used this way in English, but rather to refer to the noun form of an action (ex: *Total destruction*).

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

The most relevant option is the one which supports the statement of pain following the underlined portion. The option which would most explain this is **G**, as the others would not imply any sort of difficulty in removing them.

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

The singular antecedent *a quill stub* mandates a singular pronoun. This rules out **B** and **C** which are plural. The relative *that* is also incorrect, leaving only the simple *it*.

66. Answer: H. E103 Independent Clauses: Period, Semicolon, Comma and FANBOYS

The clause beginning with *the implanting...* is dependent, as it has no predicate. As such, it cannot be treated like an independent clause and separated with only a period, or else it will be a fragment.

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

The incorrect answers here are confusing, and exist to try and fool you. Trust your gut when you think *birds have* sounds simple and correct—it is.

68. Answer: H. E108 Adjectives and Adverbs

The descriptive words in the underlined portion are meant to describe *shaped*, a verb. As such, adverbs much be used, not adjectives. Only one answer is free of adjectives.

69. Answer: B. E112 Word Choice: Tone

Consider the implications of the removed words *carefully* and *small*. These most support the idea of delicacy in option **B**, as they do not address limitations, differentiation, or ease as the other options imply.

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

The preposition *to* is not underlined, which is essential to identifying the correct answer. Similarly, *be is* is underlined. These subtleties make a big difference in choosing the correct answer. Some of these could be correct if the underlining were placed differently, so beware of speeding through and not carefully reading each answer in the actual context.

71. Answer: A. E114 Transition Words/Phrases

Next correctly shows the sequence of events. While *Finally* does show sequence, it improperly makes this step seem to end the process.

72. Answer: J. E101 Verbs: Agreement/Tense

The subject-verb agreement is key here. As-written, the subject of the sentence is *glue*, which also shifts the sentence into passive voice. The real problem, however, is this causes *glue* to be the one doing the *sliding* at the start of the sentence, when it is really the rehabilitator. The same is true for all other options

73. Answer: B. E103 Independent Clauses: Period, Semicolon, Comma and FANBOYS

These questions have a pattern which should be clear by this point in the test: they often have an independent or dependent clause separated in three correct ways and one incorrect way. In this case, the independent clause is incorrectly put after a comma with no conjunction in option **C**.

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

This question is between spellings of *It's*, and should quickly reveal itself as such due to the glaring errors in **H** and **J**. Remember the apostrophe's role as *placeholder* for the missing space and *i* in the phrase *it is*, and it's easy to solve.

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

Don't be distracted by the yes/no part of these questions. Instead, focus on the supporting evidence. It should be clear that the claims in each other option do not adequately reference both the question and the passage. In these questions, it pays off to have read the entire passage, posing a risk for the read-as-you-need strategy, however good inference can often help eliminate nonsense answers.

Mathematics Test

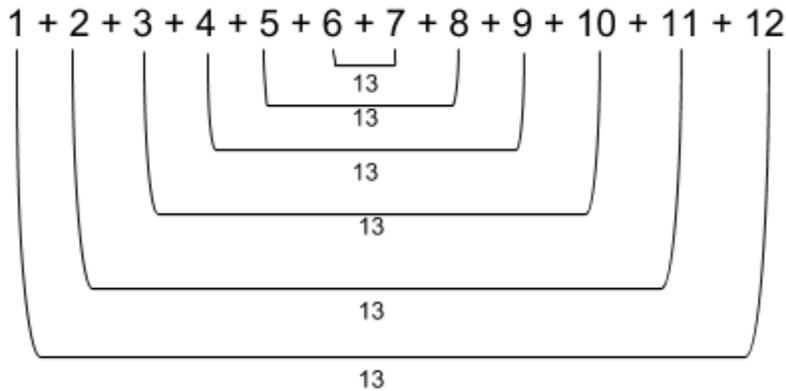
1. Answer: B. M106 Sequence

The sum of an arithmetic sequence is $(\frac{n}{2})(a_1 + a_n)$.

In this problem, $n = 12$, $a_1 = 1$, $a_n = 12$

$$(\frac{12}{2})(1 + 12) = 6 \times 13 = 78$$

If you don't know the formula, you have to do it the long way:



$$1 + 12 = 13$$

$$2 + 11 = 13$$

$$3 + 10 = 13$$

$$4 + 9 = 13$$

$$5 + 8 = 13$$

$$6 + 7 = 13$$

$$\Sigma = 6 \times 13 = 78$$

B. 78

Tip: Know how to add up a long list of consecutive or sequential numbers.

2. Answer: J. M110 Percent

$$40 + 22\%$$

$$40 + 40(.22)$$

$$40(1.22) = 48.80$$

J. 48.80

3. Answer: B. M109 Rate & Proportion

$$\frac{112}{800} = \frac{x}{1400} \quad \text{cross multiply}$$

$$(112)(1400) = 800x$$

$$\frac{112 \times 1400}{800} = x$$

$$196 = x$$

B. 196

4. Answer: G. M202 Solving Equations

$$7 + 3x = 22$$

$$3x = 15$$

$$x = 5$$

$$2x = 2 \times 5 = 10$$

Trap: Answer **F** is $x=5$, but you are solving for $2x$!

G. 10

5. Answer: C. M212 Linear Function: Rate

$$\frac{\$30}{\text{day}} + \frac{28.5c}{\text{mile}}$$

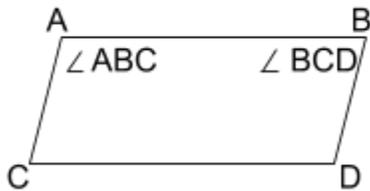
$$28.5c = \$.285$$

$$5 \text{ days} \times \frac{30}{\text{day}} + (350 \text{ miles})(.285 \text{ mile})$$

$$150 + 99.75 = 249.75$$

C. \$249.75

6. Answer: F. M303 Quadrilaterals



$\angle ABC$ and $\angle BCD$ are supplementary

F. add up to 180°

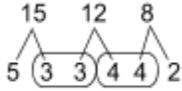
7. Answer: B. M104 Fractions

The TI-84/83 LCM (least common multiple) function:

MATH>NUM>LCM(15,12)ENTER=60

LCM(60,8)=120 (you can only do 2 at a time)

Old school solution:



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

B. 120

8. Answer: H. M201 Algebraic Operations; M205 Exponents & Roots

$$(2x^4y)(3x^5y^8)$$

$$(2 \times 3)(x^{4+5})(y^{1+8})$$

H. $6x^9y^9$

9. Answer: C. M101 Word Problems - Translation & Vocabulary; M204 Absolute Value

First off, it's a #9, so it has to be easy. Second, the word *difference* means subtract. The only answer choice with subtraction is C!

The absolute value is used because you don't know which ticket is more expensive, and the *difference* should not be a negative value.

C. $|12a - 18s| = 36$

10. Answer: F. M205 Exponents & Roots

Plug in a number $x > 1$, so make $x = 2$.

F. $\sqrt{2} = 1.414$ Winner!

G. $\sqrt{2} \times 2 = 2$

H. $\sqrt{2 \times 2} = 2$

J. $2 \times \sqrt{2} = 2.828$

K. $2 \times 2 = 4$

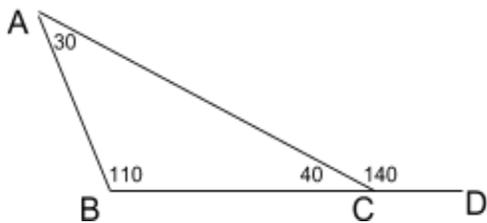
F. \sqrt{x}

11. Answer: B. M214 Functions $f(x)$

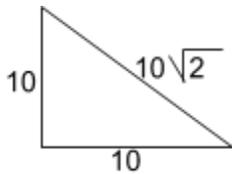
This style of question used to be on both the ACT and SAT (especially the SAT), but isn't very common anymore.

$$(a, b) \blacklozenge (c, d) = \frac{ac+bd}{ab-cd}$$

$$\begin{aligned} (2, 1) \blacklozenge (3, 4) &= \frac{2 \times 3 + 1 \times 4}{2 \times 1 - 3 \times 4} \\ &= \frac{6+4}{2-12} \\ &= \frac{10}{-10} \\ &= -1 \end{aligned}$$

B. - 1**12. Answer: G. M302 Triangles; M301 Lines & Angles**

$$\begin{aligned} 30 + 110 + 140 \\ \angle C = 180 - 140 = 40 \end{aligned}$$

G. 140° **13. Answer: E. M302 Triangles****E.** $10\sqrt{2}$

Tip: Know the relative side lengths of 45-45-90 and 30-60-90 right triangles.

14. Answer: H. M503 Probability; M110 Percent

400 bags, 25% are red, 75% are not red
 $75\% = \frac{3}{4}$

H. $\frac{3}{4}$

15. Answer: D. M201 Algebraic Operations

$$x^2 - 2x + 6 + (?) = 3x^2 + 7x \quad \text{isolate the unknown}$$

$$3x^2 + 7x - (x^2 - 2x + 6) = ?$$

$$3x^2 - x^2 + 7x + 2x - 6 =$$

$$2x^2 + 9x - 6$$

D. $2x^2 + 9x - 6$

16. Answer: G. M210 Systems of Equations; M207 Linear Functions: $y=mx+b$

$$8x + 9y = 3 \quad \text{put into slope-intercept form}$$

$$-8x \quad -8x$$

$$9y = -8x + 3$$

$$\div 9 \quad \div 9$$

$$y = -\frac{8}{9}x + \frac{1}{3}$$

Parallel lines have the same slope.

G. $-\frac{8}{9}$

Tip: Know how convert to slope-intercept form quickly; the ACT loves this question!

17. Answer: D. M208 Coordinate Geometry & XY-plane

The midpoint is simply the average of the x's and y's.

Trick: Notice the answer choices with x are all equal, but the y's are different. Because of this, you only need to do the y's.

$$\frac{6+4}{2} = \frac{10}{2} = 5$$

D. (6, 5)

18. Answer: G. M201 Algebraic Operations

$$y = x^2$$

$$-y = -x^2$$

G. $-x^2$

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

$$h(x) = 4x^2 - 5x$$

$$h(-3) = 4(-3)^2 - 5(-3)$$

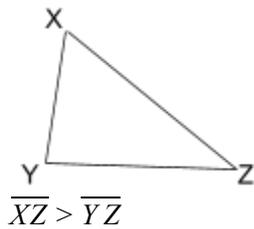
$$= 4 \times 9 + 15$$

$$= 36 + 15$$

$$= 51$$

D. 51

20. Answer: F. M302 Triangles



The angle opposite the longer side has a greater degree measure.

F. The measure of $\angle X$ is always less than the measure of $\angle Y$.

21. Answer: C. M204 Absolute Value

$$|7(-3) + 2(4)|$$

PEMDAS → treat absolute value as a grouping symbol (parentheses). Do the math inside first, then take the absolute value.

$$|-21 + 8| = |-13| = 13$$

Trap: Many students mistakenly make everything positive and then do the operation, making this problem $|23 + 8| = 29$, answer **E**.

C. 13

22. Answer: G. M204 Absolute Value

$$x > |y|$$

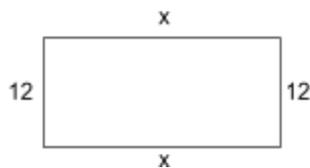
$$x > |-4|$$

$$x > 4$$

G. $x > 4$

23. Answer: C. M303 Quadrilaterals

$$\text{perimeter} = 72$$



$$2x + 2(12) = 72$$

$$2x + 24 = 72$$

$$2x = 48$$

$$x = 24$$

C. 12, 24, 24

24. Answer: K. M108 Ratio; M302 Triangles

Similar triangles have congruent angles and sides in ratio.

2 : 5, smaller side is 5 ("matches" 2)

$$\frac{2}{5} = \frac{5}{x} \quad \text{cross multiply}$$

$$2x = 25$$

$$\begin{array}{r} +2 \\ +2 \end{array} \quad \begin{array}{r} \\ +2 \end{array}$$

$$x = 12.5$$

K. 12.5

25. Answer: A. M208 Coordinate Geometry & XY-plane; M303 Quadrilaterals

Square with side 3. Vertex at (3,0).

This problem is ultra simple: add 3 to the x and y value of the coordinate pair.

$$3 + 3 = 6$$

(6, 0) is 3 units from (3, 0).

A. (6, 0)

26. Answer: K. M305 Circles

F. $\angle TMU$ is 65° . TRUE.

True, $\triangle TMU$ is isosceles, so $\angle TUM$ and $\angle UTM$ are congruent. Calculate their measures by:

$$50^\circ + 2(x) = 180$$

$$\begin{array}{r} -50 \\ -50 \end{array} \quad \begin{array}{r} \\ -50 \end{array}$$

$$2x = 130$$

$$\begin{array}{r} +2 \\ +2 \end{array} \quad \begin{array}{r} \\ +2 \end{array}$$

$$x = 65$$

G. \overline{TU} to \overline{RS} . TRUE.

Chords formed by two intersecting diagonals are parallel.

H. Arc TXY measures 50° . TRUE.

Vertical angles!

J. $\overline{RM} \cong \overline{TM}$. TRUE.

All radii are congruent.

K. $\overline{RS} \cong \overline{SM}$. FALSE.

\overline{RS} is a chord that forms at the base of an isosceles triangle. Since $\angle RMS$ measures 50° , the base and sides are not congruent.

K. $\overline{RS} \cong \overline{SM}$

27. Answer: A. M207 Linear Functions: $y=mx+b$

Linear Profit Model:

(selling price - cost of each item)(number of items) - cost

$$(20,000 - 7,000)(x) - 10,000,000$$

A. $(13,000)x - 10,000,000$

28. Answer: G. M216 Quadratics & Parabolas; M217 Factoring & FOIL

$$\begin{array}{r} 2x^2 + 6x = 36 \\ +2 \quad +2 \end{array}$$

$$\begin{array}{r} x^2 + 3x = 18 \\ -18 \quad -18 \end{array}$$

$$x^2 + 3x - 18 = 0 \quad \text{factor}$$

$$(x + 6)(x - 3) = 0$$

Trick: Backsolve by putting answers into the equation.

G. - 6 and 3

29. Answer: C. M212 Linear Function: Rate

You know this is a linear function problem because it is a constant rate.

Plug in values of t and x into equations.

Start with $t = 0$ to find $x = 10$.

A. $10 = 0 + 10$ YES

B. $10 = 4(0) + 6$ NO

C. $10 = 4(0) + 10$ YES

D. $10 = 10(0) + 4$ NO

E. $10 = 14(0)$ NO

Only **A** and **C** remain. Now put in $t = 1$ and find $x = 14$.

A. $14 = 1 + 10$ NO

C. $14 = 4(1) + 10$ YES

Note: This is a question that many students get incorrect. Know how to do this one. It is easy and very common.

C. $x = 4t + 10$

30. Answer: J. M501 Mean, Average

To solve, you can PLUG IN your own numbers.

$$\frac{(1+2+3+4)}{4} = \frac{10}{4} = 2.5$$

To increase by 2, add $2 + 2.5 = 4.5$

Let x be the increase.

$$\frac{10+x}{4} = 4.5 \quad \text{Solve for } x$$

$$\begin{array}{r} 10 + x = 18 \\ -10 \quad -10 \end{array}$$

$$x = 8$$

J. 8

31. Answer: D. M305 Circles

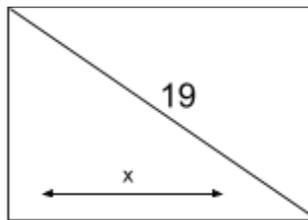
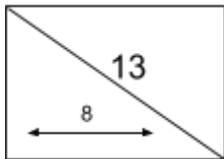
$$r = 9$$

$$Area = \pi r^2$$

$$Area = \pi(9)^2 = \pi(81) = 254.34$$

D. 254

32. Answer: G. M302 Triangles



Similar means proportional.

$$\frac{8}{13} = \frac{x}{19} \text{ cross multiply}$$

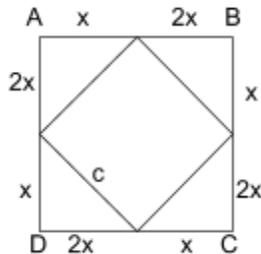
$$152 = 13x$$

$$\div 13 \quad \div 13$$

$$11.69 = x$$

G. 12

33. Answer: D. M308 Multiple Figures; M302 Triangles



$$Area \text{ of } ABCD = (x + 2x)^2 = (3x)^2 = 9x^2$$

Use Pythagorean Theorem to find the shaded area.

$$x^2 + (2x)^2 = c^2$$

$$x^2 + 4x^2 = c^2$$

$$5x^2 = c^2$$

$$Shaded \text{ area} = c^2 = 5x^2$$

$$\frac{Shaded \text{ area}}{Area \text{ of square}} = \frac{5x^2}{9x^2} = \frac{5}{9}$$

D. $\frac{5}{9}$

34. Answer: K. M404 Law of Sines/Cosines

Use the Law of Cosines, because none of the other answer choices makes sense.

K. The law of cosines: For any ABC , where a is the length of the side opposite $\angle A$, b is the length of the side opposite $\angle B$, and c is the length of the side opposite $\angle C$, $a^2 = b^2 + c^2 - 2bc \cos(\angle A)$

Tip: You should be familiar with the Law of Sines and Cosines. See video lesson.

35. Answer: A. M207 Linear Function: $y=mx+b$

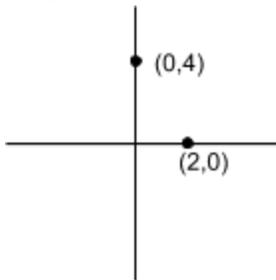
$$2x + y = 4$$

Solve for intercepts:

x	y
0	$y = 4$
$2x = 4$ $\div 2 \quad \div 2$ $x = 2$	0

Intercepts: (0, 4) (2, 0)

Graph:



A.

Tip: Know how to graph a line in standard form quickly by solving for the intercepts. Do not waste time converting to slope-intercept.

36. Answer: F. M301 Lines & Angles

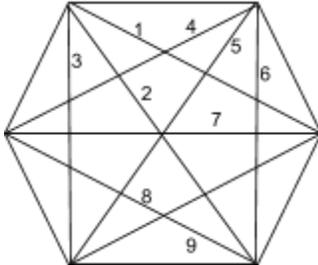
A line separates a plane into two parts. None of the others do. Geometry knowledge!

F. A line

37. Answer: D. M304 Polygon

- Solution: 1. Draw & Count
2. Know the formula!

1.



2. $\frac{n(n-3)}{2} = \frac{6(6-3)}{2} = \frac{6 \times 3}{2} = 9$

38. Answer: G. M215 Equation of a Circle

Tip: The equation of a circle, $(x - h)^2 + (y - k)^2 = r^2$, where (h, k) is the coordinate pair of the center of the circle and r is the radius. Memorize this; it appears on almost every test.

Here, the center of the circle is at $(4, 0)$. The circle is *tangent* to the y -axis, so the radius is 4 units. So, pick the correct equation, **G**.

G. $(x - 4)^2 + y^2 = 16$

39. Answer: A. M104 Fractions

Trick: Use your calculator to turn each fraction into a decimal and list them in order.

$\frac{5}{3} = 1.67$
 $\frac{7}{4} = 1.75$
 $\frac{6}{5} = 1.2$
 $\frac{8}{7} = 1.125$

A. $\frac{9}{8} < \frac{6}{5} < \frac{5}{3} < \frac{7}{4}$

40. Answer: F. M300 Geometry

The perimeter of an ellipse is not a common question; notice that they give you the equation! It is a simple plug and chug.

$$w = 3 \quad h = 4$$

$$P = \frac{\pi}{2} \sqrt{2(4^2 + 3^2)}$$

$$P = \frac{\pi}{2} \sqrt{2(16 + 9)}$$

$$P = \frac{\pi}{2} \sqrt{2(25)}$$

$$P = \frac{5\pi}{2} \sqrt{2}$$

F. $\frac{5\pi}{2} \sqrt{2}$

41. Answer: C. M104 Fractions; M103 Properties of Integers

$$\frac{A}{30} + \frac{B}{105} = \frac{7A+2B}{x}$$

Trick: Use your Ti-83/84 to find the LCM or common denominator. $lcm(30, 105) = 210$.

C. 210

42. Answer: H. M212 Linear Function: Rate; M506 Table

36 months at 10% interest is \$32.27 per \$1000 borrowed

$$\frac{\$6500 \text{ borrowed}}{\$1000} = 6.5$$

$$6.5 \times \$32.27 = 209.755$$

H. \$209.76

43. Answer: D. M212 Linear Function: Rate; M506 Table

60 month at 5% interest is \$18.87 per \$1000

$$\frac{300}{18.87} = 15.898$$

$$15.898 \times 1000 = \$15,898$$

D. \$15,000

44. Answer: G. M506 Table; M501 Average

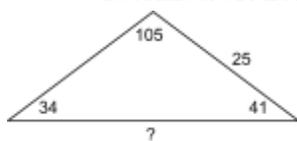
To find 9%, you must average 8% and 10%.

8%, 60 month is \$20.28

10%, 60 month is \$21.24

$$\frac{20.28+21.24}{2} = 20.76$$

G. \$20.76

45. Answer: B. M404 Law of Sines/Cosines; M302 Triangles

$$\frac{25}{\sin(34^\circ)} = \frac{?}{\sin(105^\circ)} \text{ solve for ?}$$

$$\text{B. } \frac{25\sin(105)}{\sin 34}$$

46. Answer: J. M219 Complex Numbers; M217 Factoring & FOIL

$$i^2 = -1$$

$$\begin{aligned} (4+i)^2 &= (4+i)(4+i) \\ &= 16 + 4i + 4i + i^2 \\ &= 16 + 8i - 1 \\ &= 15 + 8i \end{aligned}$$

$$\text{J. } 15 + 18i$$

47. Answer: E. M203 Inequalities; M103 Properties of Integers

$$2r + s = 15, s > 10$$

If $s > 10$, make $s = 11$. Substitute and solve.

$$2r + 11 = 15$$

$$2r = 4$$

$$r = 2$$

r cannot be greater than 2; that would make $x < 10$. Thus, r must be less than or equal to 2.

$$\text{E. } r \leq 2$$

48. Answer: K. M103 Properties of Integers; M205 Exponents & Roots

To solve, simply plug in your own numbers using a positive number for x and a negative number for y . Pick $x = 3$ and $y = -3$.

$$\text{F. } -3 - (3) = -6 \text{ NO.}$$

$$\text{G. } 3 + (-3) = 0 \text{ NO.}$$

$$\text{H. } (3^3)(-3) = -81 \text{ NO.}$$

$$\text{J. } \frac{(3^2)}{(-3)} = -3 \text{ NO.}$$

$$\text{K. } \frac{3}{(-3)^2} = \frac{1}{3} \text{ Yes!}$$

$$\text{K. } \frac{x}{y^2}$$

49. Answer: A. M206 Logarithm

$$\log_2 8 = 3$$

$$2^3 = 8$$

A. 3

50. Answer: F. M401 SOHCAHTOA

Solve for \overline{AC}

$$(AC)^2 + 2^2 = 5^2$$

$$AC^2 + 4 = 25$$

-4 -4

$$AC^2 = 21$$

$$AC = \sqrt{21}$$

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

$$\tan B = \frac{\sqrt{21}}{2}$$

F. $\frac{\sqrt{21}}{2}$

51. Answer: D. M209 Variation: Direct/Inverse

\$50 + fee

varies directly with square root of time

$$y = k\sqrt{x}$$

$$\underset{-40}{\$90} = \underset{-40}{\$50} + k\sqrt{16} \quad \text{solve for } k$$

$$\underset{+4}{40} = \underset{+4}{4k}$$

$$10 = k$$

Substitute

$$y = \$50 + 10(\sqrt{36})$$

$$y = 50 + 10 \times 6$$

$$y = 50 + 60$$

$$y = 110$$

D. \$110

52. Answer: H. M401 SOHCAHTOA

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

$$\sin(d) = .8$$

$$\sin(d) = \frac{\text{opp}}{\text{hyp}} = \frac{AC}{6}$$

$$\frac{AC}{6} = .8$$

$$AC = 4.8$$

$$AC^2 + CD^2 = 6^2$$

$$(4.8)^2 + CD^2 = 36$$

$$23.04 + CD^2 = 36$$

$$-23.04 \quad -23.04$$

$$CD^2 = 12.96$$

$$CD = \sqrt{12.96}$$

$$CD = 3.6$$

H. 3.6

53. Answer: D. M204 Absolute Value

To solve, plug in sample integers.

A. For *always*, use A=1, B=1

$$|1 + 1| = |1 - 1|$$

$$2 = 0 \text{ NOT TRUE.}$$

B. Same as A. NOT TRUE.

$$\text{C. } |0 + 0| = |0 - 0|$$

0 = 0 True, but not the only case.

$$\text{D. } |0 + 1| = |0 - 1|$$

$$1 = 1$$

or

$$|1 + 0| = |1 - 0|$$

$$1 = 1$$

True!

E. Obviously wrong since **C** and **B** are true.

D. only when a = 0 or b = 0

54. Answer: K. M216 Quadratics & Parabolas

$$L = x \times x = x^2$$

$$R = x \times y$$

$$S = y \times y = y^2$$

Count the number of L, R, S

$$2(L) + 13LR + 15(S)$$

$$2x^2 + 13xy + 15y^2$$

K. $2x^2 + 13xy + 15y^2$

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

$y = (A + 1)x + 8$ pass through (2, 6)

substitute and solve for (A + 1), the slope

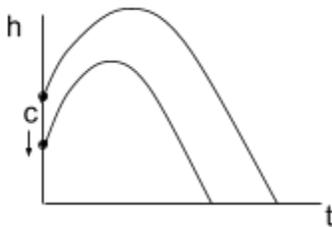
$$6 = (A + 1)2 + 8$$

$$-2 = (A + 1)2$$

$$-1 = (A + 1)$$

C. - 1

56. Answer: K. M216 Quadratics & Parabolas



To solve: If you alter the c-term, the graph of the parabola changes at the h -intercept, the maximum, and the t -intercept.

K. I, II, and III

57. Answer: E. M207 Linear Functions: $y=mx+b$; M210 Systems of Equations

$$x = -3 \quad y = x - 3$$

substitute

$$y = (-3) - 3$$

$$y = -6$$

E. (-3, -6)

58. Answer: K. M304 Polygon

See lesson M304 on angles of polygons.
A pentagon has 540 degrees.

$$540 - 50 = 490^\circ$$

K. 490

59. Answer: E. M101 Word Problems - Translation & Vocabulary

$$3c = b, \text{ so } c = \frac{b}{3}$$

What is $c + 3$?

$$\frac{b}{3} + 3$$

E. $\frac{b}{3} + 3$

60. Answer: K. M305 Circles

radius = R , *circumference* = $2\pi R$

$$3 \text{ laps} = 3 \times (2\pi R) = 6\pi R$$

K. $6\pi R$

Reading Test

1. Answer: D. R104 Big Picture

You should be able to answer this question from memory. It is clear that there is only one narrator discussing his own life, so **A** and **B** can be eliminated. **D** is a more accurate representation of the passage, since the boy is not agonizing over mixed messages (**C**).

2. Answer: F. R301 Main Idea/Function: Passage

You should also be able to answer this one without looking back in the passage, since choice **F** is the only one that makes sense. However, if you can't, a skim through the answer choices and the first/last paragraphs of the passage reveal that **G** and **H** are incorrect, since they mention reflection occurring only at the beginning and the end. **J** is easily eliminated because there is no dialogue.

3. Answer: C. R104 Big Picture

Since the overall purpose of the passage is to illustrate the narrator's family trait with examples, choice **C** is the only choice that fits.

4. Answer: G. R203 Inference/Assumption

Refer back to the place in the passage where the narrator begins his description of the basketball court project. He talks about making plans in lines 22-27, getting to work after that, and then getting discouraged when his grandfather delivers the wrong size hoops. This shows he is enthusiastic at first, until he realizes his grandfather's error. Although **J** is close, the choice implies the narrator loses his enthusiasm at the start.

5. Answer: A. R203 Inference/Assumption

Although the answer is not explicitly stated, there is plenty of textual evidence. In line 24, the grandfather is described as *always interested in plans*. After the hoops are delivered, the grandfather is described as *sensitive*, especially about *the flawed part* of their work (lines 44-46). The only answer choice that reflects this sudden change from optimistic to defensive is **A**.

6. Answer: H. R201 Detail; R101 Line Number

If you read carefully, you might be able to answer this question without referring back to the text. If you look back at the given lines, you will see they occur right after the narrator states he is waiting to see *where the screw-up is going to come* and is imagining what his colleagues will say about his screw-up. Only choice **H** mentions possible teasing in the future.

7. Answer: A. R201 Detail; R102 Paragraph Number

The question makes it clear you are looking for specific evidence, so go back into the text and reread lines 4-12. The only direct mention of his family is in lines 6-7, when they come running after the narrator falls many times. The *we* in line 9 refers to the family as well, when the family finds a solution to the problem of the rubber tips.

8. Answer: G. R203 Inference/Assumption; R101 Line Number

The question asks you to infer, but you should be able to find textual evidence in the given lines. Lines 36-46 describe the narrator's grandfather's hurt feelings and defensiveness. The line about being unable to fix the hoops is right before a line about how the grandfather can't help the narrator with any other part of his project, which suggests the grandfather is being petty, and probably could help fix the problem.

9. Answer: B. R203 Inference/Assumption

Once again, the question asks you to infer, but you should find specific evidence to support your inference. The narrator discovers his error in lines 83-87, but mentions he was relieved to find it, and feels connected to his grandfather. From this, we can infer that he feels comforted, which is in choice **B**. **D** is trying to trick you because it uses *relief*, but the second half of the choice is obviously wrong.

10. Answer: H. R103 Keyword

Skim the passage to find the mentioned words, which are in lines 22, 44, and 78. Explore line 78 further, and see that lines 78-82 explain the difference between the two phrases. The author states *diminished excellence is a condition of the world*, whereas *flawed competence comes out of character*. This suggests that diminished excellence is part of the environment and flawed competence comes out of the individual.

11. Answer: A. R204 Main Idea/Function: Paragraph; R102 Paragraph Number

Refer back to the first paragraph, which describes longitude and how it can be found at sea. The rest of the passage is about the challenges and history of finding latitude at sea, so the first paragraph is introducing the topic and orienting the reader.

12. Answer: F. R204 Main Idea/Function: Paragraph; R102 Paragraph Number

Refer back to the fifth paragraph, which mentions that the challenge of longitude lasted over four centuries and the large prize offered for the solution. Both of these details emphasize how big the longitude problem is.

13. Answer: C. R201 Detail; R203 Inference/Assumption

Look back in the passage to remind yourself that Harrison is the inventor of the clock that finally solved the longitude problem. Since he was able to solve the problem by making a clock that worked reliably on a ship, we can guess that nobody ever did that before.

14. Answer: J. R203 Inference/Assumption; R101 Line Number

By looking at the mentioned lines, you can see that the example is found immediately after the author mentions that there is no practical method of calculating longitude, so it can easily be inferred that the examples illustrate the consequences of this challenge.

15. Answer: A. R201 Detail

Reread the given lines to find the correct information. The last lines of the paragraph, 23-25, states that *one degree shrinks from sixty-eight miles at the Equator to virtually nothing at the poles*. The only answer that matches is **A**.

16. Answer: G. R201 Detail

Skim the passage to find the detail about the metals in Harrison's clock. The passage mentions that the clock had a combination of different metals that counteracted changes (lines 69-72), which matches **G**.

17. Answer: D. R203 Inference/Assumption

Although the passage doesn't mention specific competitors of Harrison's, the passage does mention in lines 76-79 that the commissioners of the prize wanted to award the prize to astronomers, who would fall within the scientific community.

18. Answer: H. R201 Detail

Skim the passage to find the specific detail the question requires. Lines 74-82 describes Harrison's challenge of *every success* of his *parried by members of the scientific elite*. However, Harrison's *approach triumphed in the end* (lines 80-81), and he got the reward.

19. Answer: D. R203 Inference/Assumption

Refer back to the given lines. This part mentions that Harrison's followers made *modifications* that *enabled it to be mass produced and enjoy wide use*, suggesting they wanted to make his design more practical.

20. Answer: G. R201 Detail

Although the question doesn't directly send you back to the last paragraph, you should remember that the last paragraph is the one that mentioned satellites. Reread the paragraph if necessary.

21. Answer: C. R104 Big Picture; R203 Inference/Assumption

The answer to this question is not explicitly stated in the passage, but can be inferred pretty easily without going back into the passage. In the last paragraph, which you have just read, the author quotes her mother, who calls herself a Designer and says that her work gives her happiness. The only answer that makes sense is **C**, self-worth.

22. Answer: G. R203 Inference/Assumption

Whenever the question asks you to infer, there is almost always a line or two in the passage that directly support a simple inference. In this case, you can skim the passage for a mention of how she described the dinner-dances, and find the line (25-26) that states the dinner-dance was *looked forward to in long anticipation and back upon with nostalgia*. This matches answer **G**.

23. Answer: A. R204 Main Idea/Function: Paragraph; R102 Paragraph Number

For a question like this, reread the given paragraph. The paragraph mentions the end of the dinner-dances and the end of the glamour of Albany, in direct contrast to the first half of the passage, which describes the downtown store windows as *magical*.

24. Answer: G. R104 Big Picture

Skim through the given lines, although you don't need to take the time to reread the entire section again. This is the part of the passage where the dinner-dances have stopped, the narrator's mother has the unpleasant experience with a customer in her home, and the narrator's mother stands up for herself as a Designer. This section is largely about the narrator's mother, Okaa-chan.

25. Answer: D. R203 Inference/Assumption; R101 Line Number

For a question like this, reread the given line, along with the lines before and after. The given line falls right after the description of the narrator's father tying his tie and explaining the importance of the dimple. The paragraph starts with the line *I always thought that Dinner-Dance Eve had some of the magic of Christmas*, which implies she found the experience magical. Only choices **B** and **D** fit with this description, but **B** can be eliminated because tying a tie is clearly not personal information.

26. Answer: G. R203 Inference/Assumption; R101 Line Number

The answer is not clearly stated in the text, but can be easily inferred. The previous line is a mean quotation from the mother's customer, and the following line talks about the father's shame and anger. From this information, we can infer that the given line has to do with her mother's being insulted, or demeaned.

27. Answer: D. R203 Inference/Assumption

Skim the passage to find the part that talks about the father's statement about the mother quitting her business. In lines 81-83, the father talks about the customer's contempt and the mother *kneeling...like a servant*. Although it is not directly stated, it can be inferred that the mother's sewing business is embarrassing to him, or threatens his sense of dignity (**D**).

28. Answer: G. R104 Big Picture; R102 Paragraph Number

At this point, you have recently looked back through the last paragraphs for other questions, so you don't necessarily need to take the time to reread them. Look through the answer choices, and you can eliminate the wrong answer choices. **F** is wrong because there is only the mention that finances are *not* important in the discussion of the mother's business. **H** can be eliminated because they don't mention the children at all in their discussion of the sewing business. Although it's a little trickier and might require going back in the text to confirm, **J** can be eliminated because only the father's anger is mentioned.

29. Answer: D. R202 Vocabulary in Context; R101 Line Number

For vocabulary in context questions, always look back in the text and read above and below the given line. The *architectural wonders* are made from *fresh produce and pungent sausage* on pushcarts, which is closest to choice **D**.

30. Answer: H. R201 Detail

This question can be tricky if you don't remember the right details. Look back in the text for the description of the dancing scene. Lines 43-44 describe the father as he *trod unmincingly on Okaa-chan's feet and guided her into the walls*, which describes clumsiness (**H**).

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

Reread the given lines. The text emphasizes the ideas of difference and uniqueness at almost every line of this quotation. The only answer choice that suggests uniqueness is **D**.

32. Answer: F. R104 Big Picture

Although this question refers to specific names mentioned in the passage, you can easily infer that these figures are mentioned to support the overall idea of the passage, which is that people with diseases/disabilities find unique ways of learning and overcoming them. Although **F** is worded weirdly, the other answer choices are either obviously wrong (**G**) or address only narrow details in the passage (**H, J**).

33. Answer: B. R203 Inference/Assumption

A quick glance at the lines mentioned shows the answer is clearly stated in the text. In lines 43-45, Luria's ideas are introduced in contrast to the earlier ideas as *a sense of it not as programmed and static, but rather as dynamic and active*. The answer choice that is closest to *static*, or most opposite to *dynamic and active*, is *unchanging* (**B**).

34. Answer: J. R202 Vocabulary in Context; R101 Line Number

For vocabulary in context questions, always look back in the text and read above and below the given line. *The plus of compensation* is contrasted with *the minus of a handicap*, so we can assume that the compensation is the opposite of a handicap, such as an adaptation (**J**).

35. Answer: A. R204 Main Idea/Function: Paragraph; R102 Paragraph Number

For questions that ask about the purpose of a paragraph without any other clue in the question, always look back in the passage. This is the paragraph that talks about how well the brain adapts and how the *norm* should be less rigidly defined. Choice **B** doesn't make sense and **C** is unrelated to the paragraph. **D** can be eliminated because he doesn't talk about *which* of his subjects helped him reach this conclusions, so **A** is the only remaining choice.

36. Answer: H. R104 Big Picture

This question can be answered pretty easily if you understand the main idea of the passage, which is that diseases/disabilities often lead to interesting adaptations, so that diseases/disabilities should not be thought of as negatives. The author talks about how he left his job at a hospital to further examine his patients' adaptations. Choice **H** matches the main idea of the passage the best.

37. Answer: C. R203 Inference/Assumption

Look back at the last paragraph, which begins *With this in mind*. This phrase should lead you to the previous line, which mentions that the *realities of patients...cannot be comprehended wholly...from the outside*. From this line, we can infer that the author is leaving his job so he can learn about his patients better.

38. Answer: G. R204 Main Idea/Function: Paragraph; R102 Paragraph Number

Reread the given paragraph. The author talks about how *defects, disorders, diseases* can bring out *powers, developments*. This means that situations that we may have previously thought of as problems can lead to interesting, unique, developments. The closest answer choice is **G**.

39. Answer: D. R202 Vocabulary in Context; R102 Paragraph Number

For vocabulary in context questions, always look back in the text and read above and below the given line. The line suggests that *ravages* are some that that might cause you to be *horrified*, but can also lead to *creative* things (and therefore not death, **C**). **D** is the only choice that matches.

40. Answer: H. R202 Vocabulary in Context; R102 Paragraph Number

For vocabulary in context questions, always look back in the text and read above and below the given line. The miracle is talking about *they*, which we can infer is talking about the previous line, the *hundreds of tiny areas crucial for every aspect of perception and behavior* in the brain. The only answer choice that describes the many different parts of the brain working together is **H**.

Science Test

1. Answer: C. S206 Figure

In Figure 2, all of the bars extend through two grades except two: chlorite in only low grade and kyanite in only medium grade.

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

In Figure 1, Facies G covers around the area over 175°C, a pressure above 10, and a depth below around 35. Thus, a pressure of 11 kb and temperature of 600°C is most likely of all the listed choices to create Facies G, because the other choices have too low pressure.

3. Answer: C. S313 XY Graph

In Figure 1, pressure is on the left y-axis and increases downwards while depth is on the right y-axis and increases downwards as well. Thus, both pressure and depth increase together.

4. Answer: J. S206 Figure

In Figure 2, all of the bars extend through one or two grades, except plagioclase, which extends through all grades. It is impossible to eliminate a grade by the presence of plagioclase.

5. Answer: A. S314 XY Graph: Data Point

The question is asking for the rock on Figure 1 at Earth's surface, which is a depth of 0 km. Only Facies A and B occur at the surface. Molten rock would refer to a higher temperature, further supporting Facies A.

6. Answer: J. S100 Text

According to the first sentence of each of the scientists, Scientist 1 believes the object was a comet and Scientist 2 believes the object was an asteroid. These are two different objects.

7. Answer: B. S100 Text

Scientist 2 states that an asteroid of this size would break apart at 8 km, but a comet would have exploded at much higher altitude.

8. Answer: G. S200 Science Knowledge

Scientist 1 states that ices and dust are vaporized in the explosion, which means they changed to gases.

9. Answer: D. S100 Text

Scientist 2 states that large fragments couldn't be recovered *due to the area's boggy soil*, which describes the soil conditions in the area.

10. Answer: H. S100 Text

Scientist 2 states that *the asteroid flattened*, then *decelerated rapidly*. If the asteroid had not flattened, it would have decelerated more gradually.

11. Answer: A. S105 Text: Infer

A is the only reasonable explanation for the damage caused by the explosion. B would explain a lack of damage. C and D do not fit with Scientist 2's description of the height of the explosion of two possible objects (8 km or higher).

12. Answer: G. S103 Text: Conflicting Views

The paragraph at the start of the passage states that the object was between 10 and 100 m in diameter. If comets were much larger than 100 m in diameter, it would be unlikely that Scientist 1 is correct that a comet was the object that caused the explosion.

13. Answer: A. S306 Table: Infer

In Table 3, the hand-planted seeds column is next to the ant-planted seeds column. Ant-planted seeds mark higher for seeds that germinated, plants alive after 1 year, and plants alive after 2 years.

14. Answer: G. S101 Text: Experimental Design; S200 Science Knowledge

A controlled variable is one that is kept the same between the different groups in the experiment. Each site had two seed dishes, so the number of seed dishes was controlled.

15. Answer: C. S301 Table

In Table 1, the percentage of seed mass composed of elaiosome (last column) was the same for both species (6.2).

16. Answer: G. S101 Text: Experimental Design

Study 2 describes Site 3 as having both plants absent. This would allow the scientists to study the behavior of ants in an area without the plant species.

17. Answer: C. S101 Text: Experimental Design

C is the only reasonable answer. Study 2 includes only the seed dishes. Seeds from both plants were present at both sites, but they may have been removed by animals other than ants.

18. Answer: J. S306 Table: Infer

According to Table 2, more seeds were removed from the species that was absent in the area, so it can be inferred that abundance of a plant species affects which seeds the ants choose.

19. Answer: A. S301 Table

In Tables 1 and 2, for each brand of tape, the average force required to tear the tape off was always higher for a wider tape. Thus, as the tape's width increases, the force required increases.

20. Answer: G. S305 Table: Extrapolate

In Table 2, Brand X required 1.6 N for 1.0 cm tape, 3.2 N for 2.0 cm tape, and 5.0 for 3.0 cm tape. Following this pattern, for each additional cm of tape, another 1.6-1.8 N are needed. 4 cm of tape would require around 6.8 N. 7.0 N is the closest answer.

21. Answer: A. S301 Table

Table 1 describes tape on paper and Table 2 describes tape on plastic. Brand X requires more force for paper than plastic. Brand Y is the same for both materials. Brand Z is roughly the same, since 1.0 cm is 1.9 N and 2.0 cm is 3.9 N for paper, and 1.5 cm is 2.8 N for plastic.

22. Answer: G. S302 Table: Data Point

In both Tables 1 and 2, Brand Y is only used at 2.0 and 2.5 cm.

23. Answer: A. S206 Figure

In Figure 1, the spring scale is measuring the force acting on the clamp, which is acting on the tape.

24. Answer: F. S305 Table: Extrapolate

The given sample was 2.5 cm wide and had 4.9 N for paper and 4.1 N for plastic. On Table 1, which describes paper, 2.5 cm wide and 4.9 N could fit brand X or Z. On Table 2, which describes plastic, 2.5 cm and 4.1 N fits X only.

25. Answer: B. S302 Table: Data Point; S200 Science Knowledge

Heat flows from higher temperature to lower temperatures. The only trial in Table 1 that had T2 hotter than T1 was Trial 6.

26. Answer: F. S302 Table: Data Point

The best insulator would have the lowest heat flow. In Table 1, trials 7-10, the lowest heat flow was with wood.

27. Answer: D. S306 Table: Infer

In Table 1, Trials 1 and 5 use the same material (glass wool). In Trial 1, the heat goes from 50°C to 20°C at a rate of 0.025. In Trial 5, the heat goes from 100°C to 70°C at a rate of 0.025. The rate is the same, despite different temperatures, and the difference in temperatures is the same (30°C).

28. Answer: H. S301 Table

In Table 2, Trials 6-11, brick has a higher conductivity (0.500) than glass wool (0.025). Brick has a higher conductivity (0.500) than wood (0.072). Steel has a higher conductivity (31) than concrete (0.540). Steel does NOT have a higher conductivity (31) than aluminum (140).

29. Answer: A. S306 Table: Infer

In Table 1, Trials 1 and 3, the differences are in configuration and heat flow. Configuration A has a higher heat flow than Configuration C. Configuration A has less distance between the walls than Configuration C.

30. Answer: H. S200 Science Knowledge; S301 Table

In Table 2, the highest quantity of NaCl is labeled *solution was boiling*. Once a solution is boiling, the liquid will not get any hotter. Any additional heat will cause it to evaporate.

31. Answer: A. S304 Table: Increase/Decrease

In Table 2, as NaCl increased (first column), the temperature (second column) increased as well.

32. Answer: G. S306 Table: Infer

In Table 2, 0.050 NaCl was 34 and 0.075 was 50. 0.060 would be between 34 and 50, so 42 would be the best answer.

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

In Experiment 1, the experiment used Mg ribbon, cut ribbon, and powder. Experiments 2 and 3 only use Mg powder. The forms of Mg differ by surface area.

34. Answer: F. S301 Table; S313 XY Graph

In Figure 1, Mg powder makes the most heat. In Table 1, 0.50 Fe makes the most heat with the least material. In Table 2, 0.125 NaCl makes the most heat.

35. Answer: D. S100 Text; S101 Experimental Design

D is the only reasonable answer that would reduce the coating on the surface of Mg. **A** and **C** would cause slower reactions, and **B** shows NaCl and Fe interacting together, which didn't occur in any of the experiments.

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

The acceleration factor shows how fast the reaction was. In Figure 2, Enzyme A (solid line) reaches a peak acceleration factor around a pH of 5.

37. Answer: B. S314 XY Graph: Data Point

In Figure 2, Enzyme A (solid line) and Enzyme B (dashed line) have the same acceleration factor at the point of intersection, which is around a pH of 6.7.

38. Answer: J. S316 XY Graph: Increase/Decrease

In Figure 3, acceleration factor increases with substrate concentration. In Figure 4, acceleration factor increases with enzyme concentration. Thus, acceleration factor depends on both substrate and enzyme concentration.

39. Answer: A. S318 XY Graph: Infer

In Figure 4, the line for A is higher than line B at all enzyme concentrations, so the scientist is incorrect.

40. Answer: G. S313 XY Graph; S200 Science Knowledge

In the figure, trypsin (solid line) works at a higher pH than pepsin (dashed line). Higher pH is less acidic, so trypsin works in a less acidic environment than pepsin. Thus, the small intestine must be less acidic than the stomach.