DECONSTRUCTION: DECEMBER 2020 U.S. ACT

Test 1: English Test

[RECALL: AS WITH THE SAT, THE ACT REWARDS AGILE THINKING; PUNISHES RIGID THINKING.]

SUCCESS ON THE ACT ENGLISH TEST REQUIRES THE TEST-TAKER TO MEMORIZE ALL THE VARIOUS GRAMMAR RULES TESTED ON THE ACT ENGLISH TEST. FOR A SUMMARY OF THESE RULES, PLEASE REFER TO SAM'S COMPRESSED SAT/ACT GRAMMAR DOCUMENT, LOCATED IN THE FREE RESOURCES SECTION OF COLLEGE CONNECTION'S WEBSITE. FOR MORE COMPREHENSIVE ASSISTANCE WITH THE ACT ENGLISH TEST, PLEASE VISIT SAM'S EXHAUSTIVE ACT ENGLISH DOCUMENT, LOCATED IN THE PAID RESOURCES SECTION OF COLLEGE CONNECTION'S WEBSITE.

FOR MORE EXHAUSTIVE ASSISTANCE TAKING ONE TO SIX ADDITIONAL ACTUAL, PRIOR, RECENT ACT EXAMS, ALONG WITH THOROUGH DECONSTRUCTIONS OF EACH EXAM, PLEASE VISIT THE PAID RESOURCES SECTION OF COLLEGE CONNECTION'S WEBSITE, LOCATED ON THE HOME PAGE.

THE ACT ENGLISH TEST IS BROKEN DOWN INTO FIVE PASSAGES, FIFTEEN QUESTIONS PER PASSAGE. PLEASE NOTE: AS THE ACT ENGLISH TEST PROCEEDS, THE DIFFICULTY LEVEL INCREASES, ESPECIALLY ON THE LAST TWO ENGLISH TEST PASSAGES.

Question 1: [YOU NEED TO PUT NAME OF SPEAKER IMMEDIATELY AFTER A QUOTATION.]. —D

Question 2: Link plural noun "people" with plural version of verb. [LACK OF SUBJECT/VERB COORDINATION: BEST STRATEGY: GRAB THE NOUN AND LINK THE NOUN TO THE VERB IN THE SENTENCE.]. —F

Question 3: [WHENEVER YOU SEE 'DELETE' AS ANSWER CHOICE, RE-READ SENTENCE TAKING OUT THE UNDERLINED WORD.]. —D

Question 4: [HERE, RECALL 'TAKE OUT' RULE' MEANING ANY PART OF SENTENCE, EXCEPT INDEPENDENT CLAUSE(S) WHICH ARE SURROUNDED BY COMMAS CAN BE TAKEN OUT OF THE SENTENCE, LEAVING A PERFECTLY GOOD SENTENCE. HERE, THE OPENING CLAUSE IS A DESCRIPTIVE DEPENDENT CLAUSE WHICH NEEDS TO COORDINATE PERFECTLY WITH THE NAME OF THE JOURNALIST THAT FOLLOWS THE COMMA; OTHERWISE, THERE WOULD BE A FAULTY COORDINATION GRAMMAR ERROR.]. —G

Question 5: [YOU MUST WAIT UNTIL YOU FINISH THE ENTIRE PASSAGE BEFORE ANSWERING QUESTION 5.] After reading entire passage, you will know answer is —B

Question 6: [JUST LIKE ON THE SAT, ON THE ACT, THE TEST-TAKER HAS TO DO WHATEVER IT TAKES TO GLEAN CORRECT ANSWER.].   HERE, ONCE TEST-TAKER READS ENTIRE PARAGRAPH, TEST-TAKER WILL SEE ANSWER IS —G

Question 7: IDIOM {PREPOSITION} ERROR [SOMETIMES —LIKE HERE—REMOVE PART OF SENTENCE SURROUNDED BY COMMAS HELPS TEST-TAKER GLEAN CORRECT ANSWER. HERE, TAKE OUT "MAYNARD BELIEVED" RE-READ].   —A

Question 8: [MEMORIZE: IT'S MEANS IT IS. INDEED, ALL CONTRACTIONS HAVE APOSTROPHES. IRONICALLY, NORMALLY, AN APOSTROPHE IS INDICATIVE OF POSSESSION, BUT POSSESSIVE PRONOUNS NEVER USE AN APOSTROPHE: YOURS, OURS, HIS, HER, ITS.]. —H

Question 9: [TYPICALLY, TEST-TAKER MUST SEPARATE ANY LIST WITH COMMAS, ALWAYS PLACING A COMMA BEFORE THE WORD "AND" IN THE LIST. BUT HERE WE ARE ALSO USING THE ADJECTIVE/ADVERB RULE: WHEN YOU HAVE A LIST OF ADJECTIVES/ ADVERBS THE RULE IS: WHERE YOU CAN SWITCH THE ADJECTIVES/ADVERBS AROUND, RE-READ SENTENCE AND IT MAKES PERFECT SENSE, AS HERE, YOU NEED COMMAS SEPARATING THE ADJECTIVES/ ADVERBS; CONVERSELY, WHEN YOU CANNOT SWITCH AROUND THE ADJECTIVES/ADVERBS—NO COMMAS. FOR EXAMPLE, "JUSTIN RECEIVED AN EXPENSIVE, ANTIQUE CHRISTMAS PRESENT LAST YEAR." SINCE WE CAN SWITCH AROUND "EXPENSIVE" AND

"ANTIQUE" WE NEED A COMMA, BUT, BECAUSE WE CANNOT SWITCH AROUND THE ADJECTIVE "CHRISTMAS" MODIFYING (DESCRIBING) THE NOUN PRESENT, NO COMMA BETWEEN "ANTIQUE" AND "CHRISTMAS".]. —A

Question 10: Here, we have a redundancy error because "specifically" and "expressly" have same meaning. [WHENEVER YOU SEE DELETE AS ANSWER CHOICE, GO THERE FIRST. ON THE ACT ENGLISH TEST, DELETE ANSWER CHOICE IS USUALLY, BUT, NOT ALWAYS, THE CORRECT ANSWER.]. —J

Question 11: Lack of Subject Noun/Predicate (Verb) Coordination—Always, grab the noun, here "trainees" and link it to the verb "report" —D

Question 12: Proper Prepositional Phrases Punctuation Linkage Rules: The more closely linked the prepositional phrase is within the context of the sentence, DO NOT SEPARATE PREPOSITIONAL PHRASE WITH A COMMA; the less closely linked the prepositional phrase is within the context of the sentence, USE A COMMA TO SEPARATE THE PREPOSITIONAL PHRASE FROM THE REST OF THE SENTENCE —F

[RECALL THAT PUNCTUATION MARKS ARE USED TO SEPARATE OUT PARTS OF A SENTENCE; THEREFORE, ALWAYS USE THE 'REMOVAL RULE': HERE, WHEN YOU REMOVE "such as the New York … Post." THE SENTENCE IS ILLOGICAL.].

Question 13: Wordiness Error: When you can retain the original meaning using less words, using more words constitutes a wordiness error —A

[TEST LIKES TO PUT TWO/THREE "NO CHANGE" ANSWER CHOICES IN A ROW.].

Question 14: After you carefully read the question, it is clear that the key word in the correct answer is "vital" —G

[BE CAREFUL: YOU MUST READ EACH QUESTION CAREFULLY. CHANGE JUST ONE WORD IN THE QUESTION CHANGES THE ANSWER.].

Question 15: For these types of questions, first decide "Yes" or "No" then look at the rationale —C

Question 16: "Regardless" indicates a contrast unwarranted in this sentence —J

Question 17: Surround descriptive dependent clauses, as here, with commas —B

Question 18: Connect question regarding how tradition of bespoke tailoring has diminished with term "preserve" —H

Question 19: When you use the 'Removal Rule,' "needed … make" —A

Question 20: Redundancy Error: "beginning" and "start" have the same meaning —J

Question 21: Here "students learn to" is inferred at start of each item in the list. Read in this light, test-taker clearly needs to use semicolons to separate this list of independent (can exist as independent sentence(s)) clauses. Also, another clue, here, to glean correct answer is that the rest of the list also contains semicolons separating those other parts of the sentence that are not underlined —B

[PUNCTUATION MARKS: USE A SEMICOLON TO SEPARATE TWO OR MORE INDEPENDENT, RELATED CLAUSES. INDEPENDENT BECAUSE THE CLAUSES CAN EXIST AS THEIR OWN SENTENCES. HOWEVER, WHERE THE COLON IS CALLED FOR, NO MATTER IF YOU HAVE TWO INDEPENDENT RELATED CLAUSES, WE USE THE COLON IN PLACE OF THE SEMICOLON. A COLON IS USED TO EXPAND ON THE CONCEPT BEFORE THE COLON. WHERE YOU HAVE TWO INDEPENDENT RELATED CLAUSES SEPARATED BY A CONJUNCTION {AND, OR, BUT, ETC.} WE PLACE A COMMA BEFORE THE CONJUNCTION. FINALLY, WHERE YOU HAVE TWO INDEPENDENT RELATED CLAUSES, TURN THE SECOND CLAUSE INTO A DEPENDENT CLAUSE BY ADDING AN -ING VERB AT START OF SECOND CLAUSE THEN PLACE A COMMA NOT A SEMICOLON BEFORE THE SECOND CLAUSE.].

Question 22: Connect "over a hundred hours of concentrated work" with wording of correct answer choice —G

Question 23: Prepositional dependent clause place a comma between dependent (non-independent sentence) and independent (independent sentence) clauses —C

Question 24: Connect Subject Noun "feature" with Subject Predicate "is" —F

Question 25: Here, with descriptive dependent clause, surround with commas —B
[BE CAREFUL WITH PROPER NAMES: YOU CAN NEVER SURROUND A SINGLE PROPER NAME WITH COMMAS; HOWEVER, YOU CAN SURROUND TWO OR MORE PROPER NAMES WITH COMMAS.].

Question 26: Start with answer choice bearing least amount of words —F

[IT IS GRAMMATICALLY CORRECT TO SAY THE SAME CONCEPT IN LEAST NUMBER OF WORDS. OTHER ANSWER CHOICES ARE INCORRECT DUE TO WORDINESS GRAMMAR ERROR.].

Question 27: Here, link "within these constraints" with "every feature … chosen by the customer." —A

[WHENEVER YOU HAVE A QUESTION REGARDING THE PROPER PLACEMENT OF A SENTENCE WITHIN A PARAGRAPH, TRY TO LINK START OF SENTENCE TO SENTENCE BEFORE IT {EVEN IN PRECEDING PARAGRAPH} AND/OR END OF SENTENCE TO

SENTENCE AFTER IT {EVEN IN SUBSEQUENT PARAGRAPH}.].

Question 28: Dependent clause followed by independent clause, separate with a comma. Since there is no contrast, cannot insert "however" —G

Question 29: "reiterates" from question jives nicely with hand stitching —B

Question 30: Again, start with shortest answer choice to avoid wordiness grammar error; however, shortest answer must retain original meaning —F

Question 31: Recall that colon expands upon concept in sentence right before the colon —C

Question 32:   Again, start with shortest answer choice first to avoid Wordiness Error —F

[WORDINESS GRAMMAR ERROR: WHERE WRITER CAN RETAIN ORIGINAL MEANING OF THE SENTENCE USING LESS WORDS, USING MORE WORDS CONSTITUTES A WORDINESS GRAMMAR ERROR.].

Question 33: Whenever you encounter a question concerning the writer wanting to add a sentence, do this: Read the sentences before and after the proposed added sentence. If the transition is smooth, add the sentence; if the transition is not smooth, do not add the proposed sentence. —D

Question 34: Idiom Error [Proper Preposition Usage] Here, "At" is inferred for all three descriptive dependent clauses that follow, which is why Son Doong must follow the comma so as to avoid Faulty Coordination Error —F

[Where sentence commences with one or more descriptive dependent clause(s), writer must place what has been described in the descriptive dependent clause immediately after the comma so as to avoid Faulty Coordination Error.].

Question 35: —A

[BE ON THE LOOK-OUT FOR LACK OF PARALLELISM GRAMMAR ERRORS, WHICH USUALLY OCCUR WITH A LIST OF THREE OR MORE ITEMS, BUT CAN ALSO OCCUR WITH A LIST OF TWO ITEMS. ESSENTIALLY,

PARALLELISM REFERS TO THE NEED TO WRITE IN A CONSISTENT MANNER.].

Question 36: Lack of Subject Noun/Predicate Coordination. Here, the noun follows the verb, and since the noun "what" is singular, we need a singular predicate. —H

Question 37: Whenever we have information that expands upon what is written before it, we must use a colon. Here, we need a colon because what is written after the colon: "dark chambers ornamented with gigantic calcite formations" expands upon what was written before the colon: "envision when they think of caves" —B

Question 38: Read the questions carefully. Here, important word is "specific" leading us to —J

Question 39: Use a semicolon to separate two, or more, independent (can exist as a separate sentence), related clauses —C

Question 40: Lack of Subject Noun/Predicate Coordination — link "jungle" with "mirrors" —H

Question 41: If we keep "While the …" would be left with a sentence fragment (incomplete sentence) —D

Question 42: [REMEMBER: THE TEST-TAKER'S JOB IS ALWAYS TO DO WHATEVER IT TAKES TO FIND CORRECT ANSWER TO THE QUESTION ASKED.]. Here, we can simply read underlined portion of the sentence to know answer is: —H

Question 43: [HERE LEARN HOW TO DECONSTRUCT THE SENTENCES INTO THEIR RESPECTIVE PARTS: "AT THE TOP…" DEPENDENT PREPOSITIONAL PHRASE "COLOSSAL "SKYLIGHTS" START OF INDEPENDENT CLAUSE "MEASURING …" DEPENDENT CLAUSE {RECALL -ING VERBS AT START OF ANY CLAUSE ALWAYS ARE DEPENDENT CLAUSES.} "FORMED … COLLAPSED." END OF INDEPENDENT CLAUSE. EVERY SENTENCE MUST HAVE AT LEAST ONE INDEPENDENT CLAUSE, BY KEEPING THE WORD "THAT" WE HAVE TRANSFORMED THE INDEPENDENT CLAUSE INTO A DEPENDENT CLAUSE BECAUSE TRUE DEFINITION OF AN INDEPENDENT CLAUSE IS A COMPLETED THOUGHT.]. —D

Question 44: Link plural subject noun "obstacles" with plural subject predicate "make" —F

Question 45: [YOU MUST ALWAYS READ THE ENTIRE PASSAGE, NOT JUST THE UNDERLINED PARTS OF THE PASSAGE, BECAUSE, THROUGHOUT ACT ENGLISH TEST THERE WILL BE ONE TO FIVE QUESTIONS THAT ASK WHICH SENTENCE IS BEST CONCLUSION TO THE PASSAGE AS A WHOLE.]. Here, we must link the word "Aboveground …" with sentence before it, and/or "bamboo … difficult." with sentence after it. For this proposed additional sentence, we can link both ways: Start of added sentence explains why it takes more than a day to hike to the cave from the nearest village, and "formidable obstacles" continues theme of difficulties one encounters in exploring this cave —D

Question 46: This sentence is missing an independent clause; therefore, the sentence is an incorrect Sentence Fragment. Two unrelated independent clauses constitute an incorrect Run-On Sentence: —H

Question 47: Again, match start of sentence to end of sentence before it and/or end of sentence to sentence after it. [PLEASE NOTE IF PLACEMENT OF PROPOSED SENTENCE IS AT BEGINNING/END OF PARAGRAPH, USE END/BEGINNING SENTENCE IN PARAGRAPH BEFORE/AFTER PLACEMENT OF SENTENCE.]. [ALWAYS

BE ON THE LOOK-OUT FOR NON-TRADITIONAL PRONOUNS LIKE 'SUCH' WHICH ALWAYS POINT BACKWARDS IN THE TEXT. ALL PRONOUNS MUST HAVE A NOUN ANTECEDENT—A PROPER NOUN THE PRONOUN SUBSTITUTES FOR IN THE SENTENCE— HERE 'SUCH' SUBSTITUTES FOR THE MORE FICTIONAL THAN FACTUAL MAPS OF OLD.]. —B

Question 48: [READ ENTIRE PARAGRAPH BEFORE ANSWERING THIS QUESTION.]. However, here the second sentence helps you to see correct answer is —J

Question 49: [DASHES ARE USED TO HIGHLIGHT CERTAIN INFORMATION WHICH IS TANGENTIALLY RELATED TO THE SUBSTANCE OF THE SENTENCE.]. Here, because you already have an ending dash, you need a starting dash —B

Question 50: Need to show a contrast —G

Question 51: [PREPOSITIONAL PHRASES: THE CLOSER THE PREPOSITIONAL PHRASE IS TO SUBSTANCE OF THE SENTENCE WE DO NOT USE A COMMA. PUNCTUATION MARKS ARE USED TO DIVIDE A SENTENCE INTO DISTINCT PORTIONS.]. —C

Question 52: [IDIOM ERRORS {WRONG PREPOSITION} BEST APPROACH IS TO CONDENSE THE WORDING AND RE-READ PREPOSITION.]. Here, "approach to" —H

Question 53: [DICTION ERRORS {WRONG WORD}.]. Here, re-read replacing with each answer choice —A

Question 54: Here, you need "on their maps" to take into account "cities, mountains," from the list. [UNDERSTAND, WITH A LIST, USUALLY THE LIST WILL INCORPORATE THE WORDING AT THE START OF THE LIST, BUT, OCCASIONALLY, LIKE HERE, THE LIST WILL INCORPORATE WORDING FROM THE END OF THE LIST, WHICH IS WHY GRAMMAR CAN BE DIFFICULT: THERE ARE RULES, AND THERE ARE EXCEPTIONS TO THOSE RULES.]. —J

Question 55: Here, need past tense of lay, which is laid —C

Question 56: [TONE IS ALWAYS IMPORTANT: TYPICALLY, FOUR OF THE FIVE ENGLISH TEST PASSAGES USE A FORMAL TONE; WHEREAS, ONE OF THE PASSAGES USES AN INFORMAL, CONVERSATIONAL TONE, BUT,

EVEN WITH AN INFORMAL TONE PASSAGE, SLANG IS NEVER ALLOWED ON ACT ENGLISH.].

Here, Answer Choices F) and H) are informal, bordering on slang, which is described as the use of "very informal" language. While Answer Choice G) is formal in tone, as is the entire passage, the reason why this answer is incorrect is WORDINESS—RECALL, IF YOU CAN RETAIN THE SAME MEANING USING LESS WORDS, THAT IS THE CORRECT ANSWER —J

Question 57: Here, when you wish to preface a list of items using a colon, typically, the text would read: including —D

Question 58: Connect "notable achievement" from the question with "a first" from the answer —J

Question 59: First, notice "not acceptable" in the question. [EVERY TIME YOU SEE THIS TYPE OF QUESTION, ALWAYS LOOK FOR A PUNCTUATION ERROR—IN THIS REGARD, WHENEVER YOU SEE A PRONOUN IN THE MIDDLE OF A SENTENCE, THAT IS A COMMA SPLICE, BECAUSE A PRONOUN IN THE MIDDLE OF A SENTENCE STARTS AN INDEPENDENT CLAUSE, AND, THEREFORE, YOU NEED A SEMICOLON,

NOT A COMMA, TO SEPARATE TWO INDEPENDENT, RELATED CLAUSES.]. —C

Question 60: For these types of questions, first decide if the answer is Yes or No, then evaluate the rationale for the answer. Here, after reading the passage, we know the focus of this passage was not to explore the degree of influence al-Idrisi had on other mapmakers —H

Question 61: Here, need to coordinate plural subject nouns "patches, bands, or waves" with plural subject predicate "appear" —B

Question 62: We need a noun—or, like here, a pronoun—in order to have an independent clause —H

Question 63: Here, again, although relatively rare, the subject nouns "suffusions" "streaks" follow the subject predicate "range" —A

Question 64: Diction Error "elusive" means obscured "allusive" means suggested, as opposed to explicitly mentioned and "than" is used to compare two or more concepts and "then" relates to time —J

Question 65: Here, focus on question asking which answer choice specifically indicates how minute (tiny) the particles are
—C

Question 66: [WHEN YOU ARE PUNCTUATING THE SENTENCE, IGNORE TEXT INSIDE DASH(ES) OR PARENTHESES BECAUSE TEXT OUTSIDE DASH(ES)/PARENTHESES—AS HERE, MUST FORM AN INDEPENDENT CLAUSE.]
—F

Question 67: Learn that it's means "it is" whereas its indicates the possessive of it. In fact, while possessives use apostrophes, all apostrophes in all pronouns represent contractions; whereas possessive pronouns do not have any apostrophe: yours, ours, theirs —B

Question 68: Here, we have an independent clause followed by a dependent clause separated by a comma. The way it works: a dependent clause can appear in the middle of an independent clause. Every time you see any type of punctuation mark in a sentence, understand the punctuation mark represents separating clauses/parts of

a sentence, sometimes the clause is split up, other times, it is an entire clause. We use each when we are referring to the color of each individual wavelength —F

Question 69: Coordinate plural subject noun "wavelengths" with subject predicate (verb) "are" —A

Question 70: Again, notice we are looking for NOT acceptable answer. When you see a traditional or non-traditional pronoun "this, that, such, those, these, etc." in the middle of a sentence you need a semicolon not a comma because that pronoun in the middle of the sentence typically creates two related independent clauses —J

Question 71: With questions like these, match underlined portion of essay with rationale contained in the answer choices —B

Question 72: Again, here, we need to select a formal term in keeping with overall tone of the passage —J

Question 73: Here, we need a contrast word —D

Question 74: Here, pay close attention to all the words of the question "reiterating both the reason for iridescence in clouds and its visual effects" —G

Question 75: Again, connect start of inserted sentence with end of sentence before it ("making iridescent clouds comparatively rare." and/or end of inserted sentence with start of sentence ("For iridescence to occur [goes on to list three items] after it —A

Test 2: Math Test

SUCCESS ON THE ACT MATH TEST REQUIRES THE TEST-TAKER TO NOT ONLY MEMORIZE VARIOUS ACT MATH FORMULAS, BUT, ALSO, TO BECOME ACQUAINTED WITH THE VARIOUS ACT MATH PRINCIPLES COVERED ON THE ACT MATH TEST. FOR A SUMMARY OF THESE MATH FORMULAS AND PRINCIPLES, PLEASE REFER TO SAM'S COMPRESSED SAT/ACT MATH DOCUMENT, LOCATED IN THE FREE RESOURCES SECTION OF COLLEGE CONNECTION'S WEBSITE. FOR MORE COMPREHENSIVE ASSISTANCE ON THE ACT MATH TEST, PLEASE REFER TO SAM'S EXHAUSTIVE ACT MATH TEST DOCUMENT LOCATED IN THE PAID RESOURCES SECTION OF COLLEGE CONNECTION'S WEBSITE.

RECALL: UNLIKE SAT MATH, ACT MATH COVERS A BROAD RANGE OF MATH TOPICS, BUT IN A SUPERFICIAL MANNER; THEREFORE, THE CONSCIENTIOUS ACT MATH TEST-TAKER MUST MEMORIZE A HOST OF MATH FORMULAS. PERHAPS, THE CONSCIENTIOUS ACT MATH TEST TEST-TAKER, AS WELL AS, THOSE TEST-TAKERS NEEDING ADDITIONAL HELP WITH ACT MATH, SHOULD CONSIDER REVIEWING SAM'S SEPARATE, AND, THOROUGH, ACT MATH TEST DOCUMENT CONTAINED

IN THE PAID RESOURCES SECTION OF THIS WEBSITE UNDER SAM'S COMPLETE ACT MATH TEST DOCUMENT. THIS LARGER, MORE COMPLETE ACT MATH DOCUMENT COMMENCES WITH A THOROUGH LIST OF ALL THE ACT MATH FORMULAS THE CONSCIENTIOUS ACT MATH TEST TEST-TAKER NEEDS TO MEMORIZE IN ORDER TO DO WELL ON THE ACT MATH TEST.

{PLEASE NOTE * DENOTES DEGREES THROUGHOUT THIS ACT TEST DECONSTRUCTION.}.

Question 1: This question tests two Math concepts: Distribution and Addition/Subtraction of variables. Step One: Distribute -7 inside first set of parentheses and 3 inside second set of parentheses, producing -35a + 7b and -24b + 3a—Next, add the variables understanding in Math different rules apply to addition/subtraction versus multiplication/division: In order to add/subtract variables you need same variable: (-35a) + 3a = -32a [ALWAYS PLACE NEGATIVE VALUES INSIDE PARENTHESES.]. 7b + (-24b) = -17b —E

Question 2: [FOR LONGER ACT MATH QUESTIONS, UNDERLINE KEY ELEMENTS OF QUESTION.]. Here, underline "$35 for cake plus $15 per person" and "at most a total of $300 for his party" ['At most' is less than

or equal to; whereas 'At least' is more than or equal to.].
—K

Question 3: [IN MATH QUESTIONS, 'IS' MEANS EQUALS 'OF' MEANS MULTIPLY AND 'WHAT' MEANS x.]. Rewrite question $312.8 = (34/100)(x)$ [YOU CAN EITHER CONVERT PERCENTAGE INTO A DECIMAL OR PLACE PERCENTAGE OVER 100.]. Divide by x on both sides of the equation, and Cross-Multiply: $(312.8/x) = (34/100)$
$34x = 31280$ [Divide by 34 on both sides of equation.].
$x = (31289/34)$ —D

Question 4: Step One: Trick question [AS WITH SAT MATH, GET ALL THE 'GET-TABLE' QUESTIONS. IN OTHER WORDS, DO NOT RUSH AND NO SHORT-CUT MENTAL MATH, ESPECIALLY ON MULTI-STEP MATH QUESTIONS.]. Focus on "midpoint of line RS" (18) + (4)
—J

Question 5: Probability: (What you are Looking for/All Possible). Here, 9 juniors, but not 20 junior/senior students, only 19 —A

Question 6: Create Number Trees: Break down 60, 70, 90 into 2,10,7,9 [AVOID REPEATING VALUES WHEN CREATING YOUR NUMBER TREES.]. —J

Question 7: Step One: Add (8) + (5) + (10) = 23 games altogether, more than 50% is 12 games, the team already won 8 games, needs to win 4 more games —B

Question 8: Solving Algebraic Equation: Step One: Distribute 2 inside parentheses: $2x - 24 + x = 24$
$3x - 24 = 24$ [Add 24 to both sides of equation.].
$3x = 48$ [Divide both sides by 3.]. —J

Question 9: [Typically, correct answer to these types of questions, is a random survey; however, the problem with this survey is that it is nonrandomized.]. —E

Question 10: [For graph reflection questions, always compare like with like; meaning, Angle A with Angle A', etc.]. —K

Question 11: Here, we are looking for perimeter as opposed to area of a geometric figure. Perimeter of rectangle is (2l) + (2w) {Area is (l)(w)} (2)(30) + (2)(25) = —A

Question 12: [ALWAYS DRAW OUT UNPROVIDED GEOMETRIC FIGURES.]. Once you draw out the figure, you see that the width is 22.7 inches and the length is 12.7 inches: (22.7)(12.7) = 288.29 —H

Question 13: [EXPONENT RULES: FIRST OFF, YOU NEED TO MANIPULATE EXPONENT QUESTION TO GET SAME BASE: (3 (power 13)) (27) change (27) to (3 (power of 3)) equals (3 (power of 16)). AFTERWARDS, WHEN YOU MULTIPLY EXPONENTS WITH SAME BASE, ADD EXPONENTS, KEEP SAME BASE. DIVIDE EXPONENTS, SUBTRACT EXPONENTS, KEEP SAME BASE, WHEN YOU HAVE (3 (power of 3) (cubed)) YOU MULTIPLY (3)(3) EQUALS (3 (power of 9)). WHEN YOU HAVE ((cube root) (3 (power of 9)) YOU DIVIDE (9/3) EQUALS ((3 (power of 3)). FRACTION EXPONENTS: THE NUMERATOR IS THE POWER; THE DENOMINATOR IS THE ROOT. ((3 (power of 3/2)) is ((square root) (3 (power of 3)). FINALLY, NEGATIVE EXPONENTS ARE COMPLETELY DISTINCT FROM NEGATIVE NUMBERS; HOWEVER, NEGATIVE CAN ALSO MEAN OPPOSITE; THEREFORE NEGATIVE EXPONENT MEANS RECIPROCAL:
((3/2 (power of negative 2/3)) Step One: Reciprocal to eliminate negative {ALWAYS WHEN YOU SEE NEGATIVE EXPONENT FIRST DO THE RECIPROCAL OF THE BASE TO REMOVE THE NEGATIVE PORTION OF THE

EXPONENT.} —3/2 BECOMES 2/3. NOW, WE ARE LEFT WITH ((2/3 (power of 2/3)) WHICH EQUALS ((cube root of 2 squared)) / ((cube root of 3 squared)) WHICH EQUALS ((cube root 4)) / ((cube root 9)). FINALLY, ANY VALUE TO THE EXPONENT OF ZERO EQUALS 1.]. Here, we have same base of a; therefore, (8) — (4) = 4 —C

Question 14: [SHADED EQUALS WHOLE MINUS UNSHADED AND UNSHADED EQUALS WHOLE MINUS SHADED.]. Here, (6)(4) is whole and (1/2)(4)(1/2)(6)(pi) equals area of ellipse —H

Question 15: Step One: Add square root 3 to both sides and subtract 6 from both sides of the equation equals: 2x — 6 = sq root 3. Next, square both sides of the equation: (2x — 6) sq'd = 3 [WHEN YOU WANT TO SIMPLIFY SQUARE ROOT SQUARE BOTH SIDES OF EQUATION BECAUSE SQUARE ROOT OR CUBE ROOT, ETC. SQUARED, CUBED, ETC. EQUALS ITSELF. WHEN YOU WANT TO SIMPLIFY ANY NUMBER SQUARED, CUBED, ETC., TAKE SQUARE ROOT, CUBE ROOT, ETC.]. Here, Using F.O.I.L. (First, Outer, Inner, Last) Method, Multiply those Values contained within the two sets of parentheses, producing: (2x — 6)(2x — 6) = 4x sq'd —12x —12x + 36 = 4x sq'd — 24x + 36 = 3 [Subtract 3 from both sides of the equation.]. [RECALL: ALWAYS SET A QUADRATIC FUNCTION EQUAL TO

ZERO.]. 4x sq'd — 24x + 33 = 0 [Using the discriminant: (b sq'd — 4ac) remembering (ax sq'd +/- bx +/- c) WE HAVE: (-24) sq'd (-4)(4)(33) = 576 — 528 = 48 When discriminant is positive, there are two distinct real solutions. When discriminant is zero, there is one solution. When discriminant is negative, there is no real solution.].

Using the Quadratic Equation:

(-b/2a) +/- ((sq root b sq'd — 4ac / 2a))

Plugging in a = 4 b = -24 c = 33 back into the Quadratic Equation, we get:

(-(-24)) / (2)(4)) +/- ((sq root (-24) sq'd (-4)(4)(33)) / (2)(4) =

(24/8) +/- ((sq root 48) / 8) = 3 +/- ((sq root (16)(3) / (2)(4)) =

3 + (4 sq root 3 / 8) = 3 + sq root 3 / 2   —C

[TO SIMPLIFY SQUARE ROOTS: FIND LARGEST PERFECT SQUARE {1, 4, 9, 16, etc.} THAT DIVIDES INTO THE NUMBER. BEST TO COMPUTE STEP BY STEP: FOR EXAMPLE, sq root 108 = sq root (36)(3) = 6 sq root 3. CAN ALSO GO BACKWARDS: 5 sq root 5 is the square root of what number: 5 sq'd is 25 and (25)(5) = 125.].

Question 16: Play around with the Answer Choice values:
Try 10 and 8 —J

Question 17: Again draw out figure and you will see creates a 3-4-5 right triangle. [Memorize 3-4-5 and 5-12-13 and every multiple thereof are right triangles, as well as 30-60-90 and 45-45-90 Special Right Triangles, recalling across from 30* is x, 60* is x sq root 3, across from 90* is 2x and across from 45* is s (side) and across from 90* is s sq root 2.]. —D

Question 18: Matrix Problem must be analyzed in terms of rows and columns: Here, we have:
(10) — (-9) = 19 (-8) — (-8) = 0 (-13) — (-17) = 4 and (11) — (14) = -3 —K

Question 19: [Must Memorize: Equation of a Line:
y = mx + b where m and b are constants and m is the slope and b is the y-intercept. Whenever you are provided with the equation of a line, you must manipulate equation into y = mx + b format: 2x + 5y = 9 [Also, know that once you have the slope and/or y-intercept and/or two sets of coordinate points on the line, or any combination thereof, you can decipher the equation of the line; thereafter, once you have said equation, all coordinate points contained on the line must fit into the

equation of that line.]. Here, subtract 2x from both sides of the equation and divide both sides by 5, producing: y = -2x/5 + 9 Therefore, the slope is -2/5 — D

Question 20:

[ADDITION/SUBTRACTION OF FRACTIONS: STEP ONE: YOU MUST FIND A COMMON DENOMINATOR— EASIEST WAY, MULTIPLY DENOMINATORS TOGETHER —THEN TO FIND NUMERATORS OF NEW COMBINED FRACTION, MULTIPLY THE NUMERATOR OF FIRST FRACTION WITH THE DENOMINATOR OF SECOND FRACTION AND MULTIPLY DENOMINATOR OF FIRST FRACTION WITH NUMERATOR OF SECOND FRACTION. FOR EXAMPLE: 3/4 + 2/3 : (4)(3) = 12 DENOMINATOR OF NEW COMBINED FRACTION. THEN (3)(3) = 9 AND (4)(2) = 8 NEW NUMERATORS OF COMBINED FRACTION THEREFORE RESULT IS 17/12.]. [CAUTIONARY NOTE: WHEN YOU ADD/SUBTRACT MIXED INTEGER/FRACTION YOU CAN DO SO SEPARATELY, BUT WHEN YOU MULTIPLY/DIVIDE MIXED INTEGER/FRACTION YOU CANNOT. FOR EXAMPLE: (3 (2/3))(2 (4/5)): (3)(2) = 6 AND (2/3)(4/5) [REMEMBER: WHEN YOU MULTIPLY FRACTIONS, SIMPLY MULTIPLY NUMERATOR TO NUMERATOR AND DENOMINATOR TO DENOMINATOR, PRODUCING: 8/15. THEREFORE, FOLLOWING THIS METHOD, OUR ANSWER IS: (6 (8/15)). IN REALITY, WE NEED TO CONVERT BOTH MIXED INTEGER/FRACTIONS

INTO FRACTIONS THEN MULTIPLY OR DIVIDE: (3 (2/3)) MULTIPLY INTEGER WITH DENOMINATOR OF FRACTION THEN ADD NUMERATOR OF FRACTION: (3)(3) + (2) = 9 + 2 = 11/3 NOW DO THE SAME WITH OTHER FRACTION: (2 (4/5)) = (2)(5) + (4) = 10 + 4 = 14/5 NOW, MULTIPLY: (11/3)(14/5) = 154/15

TO CONVERT 154/15 BACK INTO A MIXED INTEGER/ FRACTION NUMBER DIVIDE 154/15 = 10 Remainder 4 WHICH TRANSLATES INTO (10 (4/15)), A MUCH DIFFERENT ANSWER THAN (6 (8/15)).

[OF COURSE, FOR THOSE OF YOU WHO PREFER DECIMALS, YOU WILL NOT ENCOUNTER THE SAME PROBLEMS. CONVERT FRACTIONS INTO DECIMALS ADD/SUBTRACT OR MULTIPLY/DIVIDE. TO CONVERT (3 (7/8)) INTO A DECIMAL, MULTIPLY (3)(8) = 24 ADD 7 = 31/8. NOW, TO CONVERT 31/8 INTO A DECIMAL, DIVIDE 8 INTO 31 = 3.875 IS DECIMAL CONVERSION OF FRACTION 31/8.

DIVISION OF FRACTIONS: ((8/3) / (9/2)) IN ORDER TO DIVIDE THIS FRACTION, YOU MUST MULTIPLY BY THE RECIPROCAL OF THE DENOMINATOR: (8/3)(2/9) = 16/27.].

Here, since this is addition, (9 (1/4)) + (8) + (6 (3/4)) + (7 (1/2)) = Add integers equals 30, add fractions, converting 1/2 into 2/4 equals (1 (1/2)). NOW MULTIPLY (31.5)(7.2) —F

Question 21: —E

[SYSTEM OF EQUATION QUESTIONS, SEEKING TO ELIMINATE ONE OF THE TWO VARIABLES THROUGH MANIPULATION: FOR EXAMPLE:

What is the x value of following systems of equations:

3x — 4y = 6
2x —12y = 8

Since we need to find x, we must eliminate the y variable through manipulation, remembering to place parentheses around the entire system of equations:

-3 (3x — 4y = 6) = -9x + 12y = -18

NOW:

-9x + 12y = -18
 2x —12y =   8

-7x = -10 x = -10/-7 = 10/7 To find y, simply plug in 10/7 for x into either original equation, solving for y.

Through Substitution: Since we are looking for the x variable, we need to view the y variable through the eyes of the x variable as follows: Take either top or bottom system of equation: Using top system, adding 4y to both sides of the equation, subtracting 6 from both sides of the equation, and dividing both sides of the equation by 4, we get: y = (3x/4) — 6/4 Reduce -(6/4) to -(3/2) dividing numerator/denominator by 2.

Now replace the y in the bottom equation with (3x/4) — 3/2 and solve: 2x — 12 ((3x/4)) — 3/2) = 8
2x — 36x/4 + 36/2 = 8

[Convert 2x into 8x/4, 36/2 into 72/4 adding 72/4 to both sides of the equation, and convert 8 into 32/4.].

8x/4 — 36x/4 = 32/4 — 72/4 = -28x/4 = -40/4

[NOW DIVIDE BOTH SIDES OF EQUATION BY -28/4, REMEMBERING TO MULTIPLY BOTH SIDES OF EQUATION BY THE RECIPROCAL OF -28/4 = -4/28.].

x = (-40/4)(-4/28) [REMEMBER MATH TRICK WHERE NUMERATOR/DENOMINATOR OF ONE FRACTION DIVIDES INTO DENOMINATOR/NUMERATOR OF OTHER FRACTION, MAKE APPROPRIATE ADJUSTMENTS.].

x = 40/28   x = 10/7

FOR MORE DIFFICULT SYSTEM OF EQUATION QUESTIONS, MANIPULATE TOP AND BOTTOM SYSTEM:

Question asks for value of y; therefore, must eliminate x variable:

2x — 3y = 5
5x — 2y = 9

-5(2x — 3y = 5)
 2(5x — 2y = 9)

-10x + 15y = -25
 10x — 4y = 18

11y = -7   y = -(7/11)   Plug in (-7/11) back into either of two original systems of equations and solve for x.

WHENEVER THE QUESTION ASKS FOR $x +/- y$ OR $5x +/- 5y$ COMBINE:

$3x - 2y = 7$
$2x - 3y = 8$

What does $x - y$ equal?

$5x - 5y = 15$ [DIVIDE BY 5] : $x - y = 3$

System of Equations Word Problems:

LFNY was selling tickets to its Spring Talent Contest. Altogether, they sold 120 tickets, comprised of $5 student tickets and $10 adult tickets, earning $950 in ticket sales for the show.

Step One: $s + a = 120$ [TOGETHER, THERE WERE 120 TICKETS SOLD.].

Step Two: $5s + 10a = 950$

Now, transform this information into a system of equations and solve for how many adult tickets were sold, using either Manipulation or Substitution Methodology:

s + a = 120
5s + 10a = 950

-5 (s + a = 120)
 5s + 10a = 950

-5s — 5a = -600
 5s + 10a = 950

5a = 350 [Divide both sides of equation by 5.].
a = 350/5
a = 70

FINALLY, UNDERSTAND, IN REALITY, SYSTEMS OF
EQUATIONS REPRESENT EQUATIONS OF LINES, AND
SOLUTIONS REPRESENT POINT(S) OF INTERSECTION
BETWEEN THE TWO LINES. HERE ARE THE RULES
WHERE QUESTION STATES THERE IS NO SOLUTION,
YOU ARE LOOKING FOR PARALLEL LINES WHICH
HAVE SAME SLOPE, DIFFERENT y-INTERCEPTS. FOR
EXAMPLE:

If there is no solution to the following systems of
equations, what is the value of a:

ax — 3y = 4
2x + 3y = 5

WHENEVER YOU ARE DEALING WITH A LINE, YOU MUST ALWAYS MANIPULATE EQUATION BACK INTO EQUATION OF A LINE: $y = mx + b$

$-3y = -ax + 4$
$3y = -2x + 5$

[Now, divide top equation by -3, and bottom equation by 3.].

$y = (ax/3) + (-4/3)$
$y = (-2x/3) + (5/3)$

[Here, we have different b (y-intercept) values. Need same m—Slope values.].

Ignore the x: We do not need it:

$(a/3) = (-2/3)$

[WITH A NEGATIVE FRACTION YOU CAN CHOOSE TO MAKE THE NUMERATOR OR THE DENOMINATOR NEGATIVE.].

CROSS-MULTIPLY: $3a = -6$ [Divide by 3] $a = -2$

WHEN QUESTION SAYS THERE IS ONE SOLUTION—ONE POINT OF INTERSECTION—DO THE FOLLOWING:

The following systems of equations have one solution:

$3x - 4y = 5$
$-2x + 3y = 4$

Step One: Always manipulate back into Equation of Line Formats:

$-4y = -3x + 5$
$3y = 2x + 4$

[Divide top equation by -4, bottom equation by 3.].

$y = (-3x/-4) + (5/-4) - y = (3x/4) - (5/4)$
$y = (2x/3) + (4/3)$

Since we know both lines intersect at one (x,y) point, DO THIS: $(3x/4) - (5/4) = (2x/3) + (4/3)$ [Add (5/4) to both sides of the equation, and subtract (2x/3) from both sides of the equation.] [(5/4) + (4/3) Common Denominator is 12 —Convert (5/4) into (15/12) by Cross Multiplying (5/4)(x/12) then x = 15 and Convert (4/3) into (16/12) by Cross Multiplying (4/3)(x/12) then x = 16. Now add 15 + 16 equals (31/12). Now, Subtract (2x/3) from (3x/4) by again finding common denominator of 12 and Convert

(2/3) into (8/12) by Cross Multiplying (2/3)(x/12) then x = 8 and Convert (3/4) into (9/12) by Cross Multiplying (3/4)(x/12) then x = 9. Now, (9x/12) — (8x/12) = (1x/12). Since (1x/12) = (31/12), Now multiply both sides of the equation by (12/1), which equals x = (31/12)(12/1) therefore x = 31. Finally, plug 31 in for x in either equation, and solve for y: ((3)(31) / 4)) — 4 = (93/4) — 4 [Convert 4 or (4/1) into fourths by multiplying numerator and denominator by 4 equals (16/4) and (93/4) — (16/4) = (77/4). Therefore, the one solution to the above question is: (31, (77/4)).

Question 22:

Probability: (What you are looking for) / (All Possible):

What you are looking for: Set C only has 4,8 which is also contained in Sets A and B; therefore, probability is 2/9 —G

[BE CAREFUL AND v. OR, IF QUESTION SAID "ELEMENT OF SET C OR ELEMENT OF SET B , ANSWER WOULD BE 4/9.].

Question 23: SET UP EQUATION IN CROSS-MULTIPLY FORMAT, MAKING SURE TO PLACE LIKE ACROSS

FROM LIKE: ((3/4) / 2)) = ((3 (3/8) / x)) [STEP ONE: CONVERT MIXED INTEGER/FRACTION INTO EITHER FRACTION OR DECIMAL.]. (3)(8) + (3) = (27/8).]. Next, ((3/4) / 2)) = ((27/8) / x)) CROSS-MULTIPLY: (3/4)(x) = (((27/8)/(2)) = ((3/4)(x) = (27/8)(2) [DIVIDE BOTH SIDES OF THE EQUATION BY 3/4 REMEMBERING TO MULTIPLY BY RECIPROCAL OF 3/4.].
x = ((54/8)(4/3)) = [RECALL OUR SHORT-CUT FOR MULTIPLYING LARGE FRACTIONS: LOOK FOR FACTORS WITHIN OPPOSITE NUMERATORS AND DENOMINATORS: (54/3) = 18 and (8/4) = 2.]. 18/2 —C

Question 24: Carefully read question—under rubric: "Get All the Get-Table Questions"— Add (21) + (17) + (19) —F

Question 25: DRAW OUT THE FIGURE ON GEOMETRIC COORDINATE PLANE, THEN YOU WILL CLEARLY SEE: ADDING 4 TO 6 IS 10 —A

Question 26: An outlier is a number far below lowest or far above largest value in the list: Mode is most frequent number in list—73. Median is calculated by determining even or odd number of numbers. The list, as is, has ten values; therefore we divide ten by 2, equals five, re-order values, if necessary, into ascending order, and average the fifth and sixth values to find the median. Here, 72 + 72

= 144/2 = 72 as the median. Adding a value would give eleven values: 11/2 = 5.5 round up, find sixth value —72 —J

[FINALLY, ADDING AN OUTLIER VALUE WILL ALWAYS AFFECT THE MEAN (AVERAGE); HOWEVER, ADDING THE MEAN VALUE ITSELF WILL NOT. ADDING AN OUTLIER VALUE WILL ALWAYS AFFECT THE STANDARD DEVIATION BY MAKING SAID STANDARD DEVIATION HIGHER. RECALL STANDARD DEVIATION PRINCIPLES: THE MORE GROUPED TOGETHER IN THE MIDDLE THE VALUES ARE, THE LOWER THE STANDARD DEVIATION IS; THE MORE SPREAD APART THE VALUES ARE, THE HIGHER THE STANDARD DEVIATION IS.].

Question 27: [CONGRUENT v. SIMILAR TRIANGLES: CONGRUENT TRIANGLES HAVE SAME ANGLE MEASURES AND SIMILAR SIDE LENGTHS; WHEREAS, SIMILAR TRIANGLES HAVE SAME ANGLE MEASURES AND PROPORTIONAL SIDE LENGTHS.].

Here, knowing that isosceles triangles have two sides lengths/angle measures that are equal:
180* — 50* = 130*/2 —C

[EQUILATERAL TRIANGLES HAVE EQUAL ANGLE MEASURES—60*; ACUTE ANGLE IS LESS THAN 90*, AND OBTUSE ANGLE IS GREATER THAN 90*.].

Question 28:

MEMORIZE DISTANCE FORMULA:

[PLEASE NOTE: IN ALL MATH FORMULAS, INSIDE PARENTHESES IS MINUS; OUTSIDE PARENTHESES IS PLUS.].

((sq root) (x(1) — x(2)) sq'd + (y(1) — y(2)) sq'd)
((16/3) — (-14/9)) sq'd + ((-3) — (-3)) sq'd))
[CONVERT 16/3 INTO NINTHS BY MULTIPLYING NUMERATOR AND DENOMINATOR BY 3.].
((48/9 + 14/9) sq'd + (0) sq'd)) = (62/9) sq'd = (sq root) (62/9) sq'd = [THE SQUARE ROOT OF ANY VALUE SQUARED EQUALS SAID VALUE.]. 62/9   —J

Question 29: PLUG IN x EQUALS 100 BACK INTO EQUATION P(x) = 3.50 + 0.90 (power of x) = 350.00 + 0.0090   —A

Question 30: Sine = Opposite/Hypotenuse
Sin C = 5/7 and opposite side AB is 14 inches, to find length of hypotenuse side AC, CROSS-MULTIPLY:

(5/7) = (14/x) (5)(x) = (7)(14) 5x = 98 [DIVIDE BOTH SIDES BY 5.]: (98/5) —J

Question 31: —C

[EASY QUICK SOLUTION: P.I.A. {PLUG IN ANSWER CHOICES} HERE, 27 (4/3) (power of 1–1 = 0) [ANY VALUE TO THE POWER OF ZERO EQUALS 1.]. Here, plugging in 1 for n into Answer Choice C yields answer of 27, plugging in 4 yields (27)(4/3)(power of 3) = 64.

[GEOMETRIC SEQUENCE FORMULA: a(n) = a(1) (r) (power of n — 1) where r represents the common ratio of the sequence, a(1) the first term in the sequence, a(n) the nth term in the sequence, and n the term position of the sequence.].

Question 32: DRAW OUT EACH TRANSFORMATION OF THE FIGURE IN THE GRAPH. —G

Question 33: [SHORT-CUT REMAINDER QUESTIONS: OPPOSITE: ADD 3 TO (6)(1) = 9, THEN (6)(2) = 12 + 3 = 15, THEN (9)(1) + 6 = 15 —A

Question 34: [YOU MUST FIND COMMON DENOMINATOR USING NUMBER TREE: FOR 8 USE FACTORS (4) AND (2) FOR 14 USE FACTORS (7) AND (2), RECALLING WE DO NOT DUPLICATE FACTORS: (4)(7)(2) = 56. NOW TRANSFORM 2/8 AND 6/14 INTO FRACTIONS WITH DENOMINATOR OF 56 BY DIVIDING (56/8) = 7 AND MULTIPLY (7)(2) = 14 — (14/56) THEN DIVIDE (56/14) = 4 THEN MULTIPLY (4)(6) = 24 — (24/56). FINALLY, SUBTRACT: 24 — 14 = 10/2 = 5 AND ADD 5 TO 14 —K

Question 35: Step One: 11 — 1 = 10 [TO CALCULATE NUMBER OF VALUES CONTAINED IN A LIST, INCLUSIVE LIST: LAST VALUE — FIRST VALUE, PLUS ONE; EXCLUSIVE LIST: LAST VALUE — FIRST VALUE.]. (10)(-2) = (-20) (62*F — 20*F = 42*F) —C

Question 36: [IMAGINARY NUMBER i: BECAUSE i = sq root (-1), i sq'd = (1) AND TREAT i AS ANOTHER VARIABLE SUCH THE 5i — 7i = -2i.].

F.O.I.L.: $(7 + 6i)(7 + 6i) = (7)(7) + (7)(6i) + (7)(6i) + (6i)(6i) =$ 49 + 42i + 42i + 36i sq'd [BE CAREFUL TO KNOW DIFFERENCE BETWEEN (36i) sq'd versus 36i sq'd BECAUSE (36i) sq'd = 1296(i sq'd); WHEREAS 36i sq'd = 36 (i sq'd).]. Now, replace (i sq'd) with (-1) = -36. Put together: 49 — 36 = 13 + 84i —H

[FINALLY, SIMPLIFY ((3i — 5) / (6 + 4i)) TO SIMPLIFY FRACTION WITH i, MULTIPLY BY THE CONJUGATE {WHEN DENOMINATOR IS MINUS CHANGE TO PLUS AND VICE VERSA.}. THEREFORE:

((3i — 5) / (6 + 4i)) = ((3i — 5) / (6 + 4i)) ((6 — 4i) / (6 — 4i))

NOW F.O.I.L. AND, IF POSSIBLE, SIMPLIFY FRACTION ANSWER: ((3i — 5) (6 — 4i)) / ((6 + 4i) (6 — 4i)) = F.O.I.L.: ((3i)(6) (3i)(-4i) (-5)(6) (-5)(-4i)) / (6)(6) (6)(-4i) (4i)(6) (4i)(-4i) = ((18i —12i sq'd — 30 + 20i)) / ((36) (-24i) (24i) (-16i sq'd)) [COMBINE LIKE TERMS, REMEMBERING TO CONVERT i SQUARED INTO (-1) AND TO TREAT i IN SIMILAR FASHION AS ANY OTHER VARIABLE.].
((-12(-1) (18i + 20i) — 30)) / ((-16)(-1) (36))
((38i) — 18)) / (52) = ((38i) / (52)) — ((18) / (52))

[REMEMBER: IN ANY FRACTION, EVERY VALUE IN THE NUMERATOR CAN BE SEPARATED OUT AND PLACED ON TOP OF THE COMMON DENOMINATOR.]

((38i) / (52)) = [REMEMBER: SIMPLIFICATION RULES: COMBINE INTEGERS WITH INTEGERS / VARIABLES WITH VARIABLES.]. ((19i) / (26)) — ((9) / (26)) = (19i — 9) / (26)).

Question 37: [REMEMBER TO DRAW OUT GEOMETRIC FIGURES, AND REMEMBER DISTANCE PYRAMID SUCH THAT (D) = (R)(T) WHERE D IS DISTANCE, R IS RATE IN MILES/HOUR, AND T IS TIME IN HOURS. THEREFORE, R = D/T AND T = D/R]. Here, using the Pythagorean Theorem, we have a right triangle with legs of
(40x) sq'd + (60x) sq'd = (200 sq'd)
1600 x sq'd + 3600 x sq'd = 40,000
5,200 x sq'd = 40,000   40,000/5,200 = 7.69230769
sq root 7.69230769 ~ 2.8 —B

Question 38: [PERCENT RULES: START WITH 100. FASTER, ONE STEP METHOD: WHEN YOU DECREASE A VALUE BY ANY PERCENT, SUBTRACT THAT VALUE FROM 100, THEN MULTIPLY BY VALUE/100 OR EQUIVALENT DECIMAL VALUE OF THAT PERCENT VALUE; WHEN YOU INCREASE A VALUE BY ANY PERCENT, ADD THE VALUE TO 100, THEN MULTIPLY BY VALUE/100 OR EQUIVALENT DECIMAL VALUE OF THAT PERCENT VALUE.

FORMULA TO DETERMINE PERCENT INCREASE/
DECREASE IS (CHANGE IN VALUE / ORIGINAL VALUE)
TIMES 100 PLACE % ONTO YOUR ANSWER.

FOR SOME PERCENT QUESTIONS, BEST TO
TRANSFORM QUESTION INTO A SENTENCE
REMEMBERING, IN MATH, "IS" MEANS "EQUALS" AND
"OF" MEANS "MULTIPLY" AND "WHAT" IS ALWAYS "x"
VALUE. FOR EXAMPLE, MARIST PURCHASED A
SPORTS JACKET FOR $120, WHICH WAS 40% OFF THE
ORIGINAL PRICE OF THE JACKET. WHAT WAS THE
ORIGINAL PRICE OF THE JACKET?
120 IS 60% OF x (ORIGINAL PRICE OF JACKET)
120 = 60/100 (OR .60) (x) [DIVIDE x FROM BOTH SIDES
OF THE EQUATION.]. NOW, WE HAVE: (120/x) = (60/100)
CROSS-MULTIPLY, AND SOLVE FOR x:
60x = 12000 [DIVIDE BOTH SIDES BY 60—x = $200.].

Here, (320,000,000)(.7) = —K

Question 39: 320,000,000 written in Scientific Notation is
(3.2) (10 (power of 8)) 3.2 MUST MOVE 3.2 TO THE LEFT
8 PLACES TO ARRIVE AT 320,000,000 —E

[HOWEVER, WHAT IF WE WANTED 3.2 WRITTEN IN
SCIENTIFIC NOTATION TO EQUAL: 0.00000032: HERE,
WE NEED TO MOVE 3.2 TO THE RIGHT: (3.2) (10 (power
of -7)).].

Question 40: Step One: [MUST COMPARE LIKE MEASUREMENTS WITH LIKE MEASUREMENTS.]. (3168 / 60) [CONVERT MINUTES INTO SECONDS.]. 52.8 feet / second [NOW, CONVERT FEET INTO METERS.]. (52.8 /3.3) = 16 FINALLY (16)(15) —G

Question 41: [FOR THESE TYPES OF QUESTIONS, AVOID MOST COMMON VALUES—POSITIVE INTEGERS —INSTEAD, TEST NEGATIVE INTEGERS AND POSITIVE/ NEGATIVE FRACTIONS, AND ZERO.]. —D

[ABSOLUTE VALUE PRINCIPLES: STEP ONE: ALWAYS DO YOUR COMPUTATIONS INSIDE ABSOLUTE VALUE. IF YOUR ANSWER IS POSITIVE, KEEP IT; IF YOUR ANSWER IS NEGATIVE, CONVERT NEGATIVE VALUE INTO POSITIVE VALUE. NO MATTER WHAT NUMBER YOU PLACE INSIDE ABSOLUTE VALUE, ANSWER MUST BE POSITIVE: FOR EXAMPLE, WHAT IS THE DIFFERENCE BETWEEN THE TWO SOLUTIONS OF THE FOLLOWING EQUATION: $|x - 5| = 3$ STEP ONE: SET UP THIS EQUATION TO BEING EQUAL TO BOTH POSITIVE AND NEGATIVE SOLUTIONS:

$(x - 5) = 3$ AND $(x - 5) = -3$
x = 8 [ADD 5 TO BOTH SIDES OF EQUATION.].
x = 2 [ADD 5 TO BOTH SIDES OF EQUATION.].
TO ANSWER SAMPLE QUESTION ASKED: $8 - 2 = 6$.].

Question 42: Here, we are given the Midpoint, looking for the endpoint, simply manipulate the Midpoint Formula $((x(1) + x(2)) / 2)), ((y)(1) + y(2)) / 2))$ as follows:

$((3 + x)) / 2)), ((5 + y)) / 2)) = (6,8)$

NOW, SEPARATE OUT x,y COORDINATES, AND SOLVE: $((3 + x) / 2)) = (6/1)$ CROSS-MULTIPLY, SOLVING FOR x COORDINATE OF ENDPOINT and $((5 + y)) / 2)) = (8/1)$ CROSS-MULTIPLY, SOLVING FOR y COORDINATE OF ENDPOINT: $(1)(3 + x) = (6)2)$ AND $(1)(5 + y) = (8)(2) = 3 + x = 12$ [SUBTRACT 3 FROM BOTH SIDES OF EQUATION.]. $x = 9$. $5 + y = 16$ [SUBTRACT 5 FROM BOTH SIDES OF EQUATION.]. $y = 11$ —G

Question 43: [RUDIMENTARY TRIGONOMETRY PRINCIPLES: SINE (SOH) EQUALS (OPPOSITE TRIANGLE SIDE LENGTH/HYPOTENUSE TRIANGLE SIDE LENGTH), COSINE (CAH) EQUALS (ADJACENT TRIANGLE SIDE LENGTH/HYPOTENUSE TRIANGLE SIDE LENGTH), AND TANGENT (TOA) EQUALS (OPPOSITE TRIANGLE SIDE LENGTH/ADJACENT TRIANGLE SIDE LENGTH). KNOWING THAT pi EQUALS 180* (IN RADIANS), AND KNOWING THAT QUADRANT I (x,y) GOES FROM (0*) to (90*); THEREFORE, QUADRANT I IS BORDERED BY 0 pi to (pi/2); QUADRANT II (-x,y) GOES FROM (90*) TO (180*); THEREFORE, QUADRANT II IS BORDERED BY (pi/2) to (pi); QUADRANT III GOES

FROM (180*) TO (270*); THEREFORE, QUADRANT III IS BORDERED BY (pi) TO (3pi/2); AND, FINALLY, QUADRANT IV GOES FROM (270*) TO (360*); THEREFORE, QUADRANT IV IS BORDERED BY (3pi/2) TO (2pi).].

Here, knowing that the theta angle is between (90*) and (180*), draw a right triangle bisecting the x and y axis of Quadrant II, completing the right triangle by drawing a straight line down to the x axis. Now, because Sine Theta equals (8/17), place the 8 as the length of the y coordinate and the 17 as the length of the hypotenuse. Since the question asks for the Cosine of Theta, use the

Pythagorean Theorem: a sq'd + b sq'd = c sq'd to determine that (8 sq'd) + (b sq'd) = (17 sq'd)
(64) + (b sq'd) = 289 and 289 — 64 = 225; therefore b = 15. But, because we are in Quadrant II, b equals -15 —D

Question 44: [FORMULA FOR MEAN IS AVERAGE = (SUM OF THE NUMBERS) / (NUMBER OF NUMBERS) A = S/N THEREFORE, 75 = S/10 CROSS-MULTIPLY: SUM OF THE NUMBERS IS 750. NOW, TO CORRECT THE ERROR, ADD 5 EQUALS 755, AND DIVIDE BY 10 TO FIND MEAN: 755.5 FINALLY SUBTRACT 755.5 — 755.0 = 0.5 —G

[SAMPLE QUESTION, FIVE BOYS HAD AN AVERAGE WEIGHT OF 162 LBS., WHEN A SIXTH BOY ENTERED THE GROUP, THE AVERAGE WEIGHT DROPPED TO 159.5 LBS. HOW MUCH DID SIXTH BOY WEIGH: USING MEAN FORMULA: A = S/N 162 = S/5 CROSS-MULTIPLY, S = 810. NOW, PLUG IN 159.5 = S/6 CROSS-MULTIPLY, S = 957. FINALLY, SUBTRACT 957 — 810 = 147.].

Question 45: TURN THIS PERCENTAGE QUESTION INTO A SENTENCE AND SOLVE: 84 IS 70/100 OF x
84 = 70/100 (x) [DIVIDE BY x ON BOTH SIDES OF THE EQUATION.]. (84/x) = (70/100) CROSS-MULTIPLY: 70x = 8400 [DIVIDE BOTH SIDES OF EQUATION BY 70.]. x = 120 —E

Question 46: [PROBABILITY: WHAT YOU ARE LOOKING FOR/ALL POSSIBLE COMBINED WITH COUNTING PRINCIPLES—IN COUNTING YOU MUST DETERMINE IF THERE ARE DEPENDENT OR INDEPENDENT CONDITIONS BECAUSE WITH DEPENDENT CONDITIONS, YOU ADD; WITH INDEPENDENT CONDITIONS, YOU MULTIPLY. HERE, THE CONDITIONS ARE DEPENDENT BECAUSE "NO OWNER IS CHOSEN TWICE" MEANING MY CHOICE OF ONE OWNER AFFECTS NUMBER OF OWNERS LEFT; HOWEVER, IF QUESTION STATED "SELECTED OWNER IS RETURNED

SUCH THAT OWNER COULD BE SELECTED AGAIN"
THEN I WOULD NEED TO MULTIPLY SEPARATE PARTS
OF THE EQUATION THIS IS WHY I MULTIPLY
NUMERATOR AND DENOMINATOR BY ONE LESS
REPRESENTING SELECTED OWNER WHO COULD NOT
BE SELECTED AGAIN —F

[SAMPLE QUESTION: MARK IS SELECTING HIS OUTFIT
TO WEAR TO SCHOOL. MARK HAS FOUR DIFFERENT
PAIRS OF SNEAKERS, SIX DIFFERENT PAIRS OF
PANTS, AND EIGHT DIFFERENT POLO SHIRTS. HOW
MANY DIFFERENT COMBINATIONS OF OUTFITS
COULD MARK SELECT FROM? (4)(6)(8) = 192 {HERE,
THE CONDITIONS ARE INDEPENDENT OF EACH
OTHER. WHY? BECAUSE, SELECTING HIS RED POLO
SHIRT DOES NOT REQUIRE MARK TO SELECT HIS
BLACK PAIR OF PANTS. SECOND SAMPLE QUESTION:
SIX STUDENTS ARE FORMING A LINE. HOW MANY
DIFFERENT POSSIBLE COMBINATIONS? HERE, PLACE
6 IN FIRST SPOT, NOW, WE DO NOT KNOW WHICH
STUDENT WAS SELECTED, BUT, BECAUSE ONE
STUDENT WAS SELECTED, THERE ARE FIVE
STUDENTS WHO REMAIN TO CHOOSE FROM;
THEREFORE WE PUT: (6)(5)(4)(3)(2)(1). ALSO, AS WITH
MARK'S OUTFIT THESES ARE INDEPENDENT
CONDITIONS, WHICH IS WHY WE MULTIPLY.].

Question 47: Looking for the mean: $A = S/N$ $S = 155$ and $N = 3$ —C

Question 48: Translate information into a circle graph with 360* : $(80/360) = (16/x)$ [RECALL: WHEN YOU SET UP TO CROSS-MULTIPLY, ALWAYS PLACE LIKE VALUES ACROSS FROM LIKE VALUES.]. —K

Question 49: Area of a triangle $(1/2)(b)(h)$ Here, using the y coordinate points from $(5,4)$ and $(5,10)$ we know base is 6 and the x coordinates from $(-3,6)$ to $(5, 6)$ we know the height is 8: $(1/2)(6)(8)$ —A

Question 50: [FUNCTIONS ARE ALL ABOUT SUBSTITUTION. ALWAYS WORK FROM THE INSIDE OUT: HERE, CONSULTING THE TABLE ABOVE, $g(1) = 2$ NOW, $f(2) = -6$ —F

[RECALL, IN THE WORLD OF COORDINATE GEOMETRY, $(-7,8)$ WOULD BE RE-WRITTEN AS $f(-7) = 8$ BECAUSE VALUE IN PARENTHESES IS ALWAYS THE x COORDINATE AND WHAT IT EQUALS IS ALWAYS THE y COORDINATE.].

Question 51: [RATIOS—TO COMBINE TWO SEPARATE RATIOS, YOU MUST GET SECOND NUMBER OF FIRST RATIO TO ALIGN WITH FIRST NUMBER OF SECOND RATIO.]. RATIOS: 3:2 AND 3:4 MULTIPLY FIRST RATIO BY 3 AND SECOND RATIO BY 2 EQUALS 9:6 AND 6:8 —E

Question 52: Here, we need to employ Circumference formula: C = (2)(pi)(r). Since inner concentric circle's Circumference (perimeter) is 10, go to middle concentric circle, which is twice Circumference of inner concentric circle = (2)(10) = 20; finally, outer concentric circle is three times Circumference of inner concentric circle = (3)(10) = 30; therefore, total Circumference of three concentric circles is: 10 + 20 + 30 = 60 —G

Question 53: Natural log: Replace ln for e on both sides of equation —E

Question 54: Each square is 18 inches width and length, adding 18 inches to each subsequent square: (18)(5) = (90)(4) / (12) convert to feet —K

Question 55: [YOU CAN NEVER CHANGE VALUES ON MATH QUESTION, BUT YOU CAN ALTER VALUES.]

Here, we need a common denominator to add/subtract all types of fractions, no matter how complex:

(2/1) ((2x + 4) / (2x + 4)) + ((3x) / (x + 2)) (2/2) —
((6) / (2x + 4)) :

((4x + 8) / (2x + 4)) + ((6x) / (2x + 4)) — ((6) / (2x + 4)) —A

Question 56: Area of a triangle: (1/2)(b)(h) = (1/2) (AC) (BC)
= (1/2) (10) (sin 30 degrees) [sin = opposite/hypotenuse]
[BC = x] = (x / 11) = (1/2) (11) (10) (x /11) = (1/2) (10) (x)
—J

Question 57: P(r) = 372   r = ((372) / P))   P(r + 0.01) = 434
P((372) / P) + 0.01)) = 372 + 0.01P = 0.01P = 62
P = (62/0.01) —E

Question 58: Whenever question asks about two distinct real solutions, one distinct real solution, or no distinct real solution, use the Discriminant Formula: b sq'd — 4ac
Remembering that, in a quadratic equation:
ax sq'd +/- bx +/- c   Here: b sq'd — (4)(1)(1)
b sq'd — 4 < 0 therefore b is between -2 and 2   —K

Question 59: From the eclipse, we know the radius of the Minor (shorter) axis is 4 and the radius of the Major (longer) axis is 7; therefore:

((x sq'd) / (a sq'd)) + ((y sq'd) / (b sq'd)) for an eclipse centered at the origin with its major (longer) axis on the X-axis and ((x sq'd) / (b sq'd) + ((y sq'd) / ((a sq'd) / (x sq'd)) for an eclipse centered at the origin with its major axis on the Y-axis —C

Question 60: [ROOTS, SOLUTIONS, AND ZEROES IN THE CONTEXT OF A QUADRATIC EQUATION ALL MEAN THE SAME: THE VALUE OF x THAT MAKES THE QUADRATIC EQUATION EQUAL TO ZERO.].

Therefore, a (-3 sq'd) + (13)(-3) — 6 = 9a — 45 = 0
a = 5   (x + 3) (5x — 2) therefore 5x — 2 = 0   5x = 2
x = 2/5 therefore —F

[TO CHECK: F.O.I.L. {MULTIPLY FIRST, OUTER, INNER, LAST} = (5x)(x) and (x)(-2) and (3)(5x) and (3)(-2) equals 5x sq'd — 2x + 15x — 6 equals 5x sq'd + 13x — 6.].

Test 3: ACT Reading Test

SUCCESS ON THE ACT READING TEST REQUIRES THE TEST-TAKER TO BECOME ACQUAINTED WITH VARIOUS ACT READING TEST GUIDELINES. FOR A SUMMARY OF THESE GUIDELINES, PLEASE REFER TO SAM'S COMPRESSED SAT/ACT READING DOCUMENT, LOCATED IN THE FREE RESOURCES SECTION OF COLLEGE CONNECTION'S WEBSITE. FOR MORE COMPREHENSIVE ASSISTANCE ON THE ACT READING TEST, PLEASE REFER TO SAM'S EXHAUSTIVE ACT READING DOCUMENT, LOCATED IN THE PAID RESOURCES SECTION OF COLLEGE CONNECTION'S WEBSITE.

UNFORTUNATELY, THE ACT SCORE CONVERSION CHART CAN BE QUITE UNFORGIVING WITH REGARDS TO THE ACT READING TEST. ONE WAY THE CONSCIENTIOUS ACT READING TEST TEST-TAKER, AS WELL AS, THE TEST-TAKER WHO NEEDS ADDITIONAL HELP ON THE ACT READING TES, CAN ENSURE A PERFECT, NEAR PERFECT, OR RESPECTABLE SCORE ON THE ACT READING TEST IS TO CONSIDER REVIEWING SAM'S SEPARATE, MORE IN-DEPTH ACT READING TEST DOCUMENT LOCATED IN THE PAID

RESOURCES PORTION OF MY WEBSITE UNDER SAM'S COMPLETE ACT READING TEST DOCUMENT.

FORTUNATELY, FOR THE MOST PART, THE FOUR READING PASSAGES CONTAINED ON THE ACT EXAM ARE FAIRLY STRAIGHTFORWARD. OF COURSE, ONCE IN AWHILE, YOU MAY ENCOUNTER A SLIGHTLY MORE OBSCURE READING PASSAGE. I SAY FORTUNATELY BECAUSE TIME IS VERY MUCH OF THE ESSENCE ON THE ACT READING TEST WHERE YOU ONLY HAVE 35 MINUTES TO ANSWER 40 QUESTIONS COMPRISED OF (IN CHRONOLOGICAL ORDER) A LITERATURE, SOCIAL SCIENCE, HUMANITIES, AND NATURAL SCIENCE READING PASSAGE, WITH EACH READING PASSAGE FOLLOWED BY TEN QUESTIONS EACH. FINALLY, ONE OF THESE READING PASSAGES WILL BE A DUAL PASSAGE, IN WHICH CASE, READ PASSAGE A, ANSWER QUESTIONS ON A THEN PASSAGE B AND QUESTIONS, THEN, FINALLY, ANSWER QUESTIONS ON BOTH PASSAGES.

HERE IS HOW YOU CAN EFFECTIVELY BUDGET YOUR CONSTRICTED READING TEST TIME: IF YOU HAVE A GOOD MEMORY, OF YOUR 8 MINUTES 45 SECONDS PER PASSAGE, PLUS ANSWERING THE TEN QUESTIONS THAT FOLLOW EACH PASSAGE, SPEND AROUND THREE MINUTES FORTY-FIVE SECONDS READING THE PASSAGE, LEAVING FIVE MINUTES TO ANSWER THE QUESTIONS; HOWEVER, IF YOU DO NOT

HAVE THE BEST MEMORY, TRY AND LIMIT YOUR READING TIME TO TWO MINUTES FORTY-FIVE SECONDS, LEAVING SIX MINUTES TO ANSWER THE QUESTIONS.

IF I COULD ONLY PROVIDE ONE PIECE OF ADVICE CONCERNING HOW TO OPTIMIZE YOUR ACT READING TEST SCORE: MAKE SURE ALL OF YOUR ANSWERS A) ANSWER THE PRECISE QUESTION. ASKED; AND B) MAKE SURE ALL YOUR ANSWERS HAVE TEXTUAL SUPPORT. YOU ARE NOT THE AUTHOR; YOUR JOB IS TO COMPREHEND (FULLY UNDERSTAND) THE PASSAGE AND ANSWER QUESTIONS BASED UPON THE PASSAGE IN THE SAME MANNER AS THE AUTHOR WOULD ANSWER THE QUESTIONS; THEREFORE TO THE BRIGHTEST STUDENTS OUT THERE: YOUR JOB IS NOT TO ANALYZE OR TO INTERPRET THE PASSAGE; THEREFORE DO NOT DO THAT, EVER. MEANING DO NOT "OVERTHINK" THE QUESTION OR THE ANSWER CHOICES. IN OTHER WORDS, I DO NOT CARE HOW FIGURATIVE THE PASSAGE MAY BE ALL ANSWER CHOICES ARE LITERAL. ALSO, YOU ARE NEVER LOOKING FOR THE "BEST" ANSWER, ONE ANSWER CHOICE IS CORRECT, THE OTHER THREE ANSWER CHOICES ARE INCORRECT, PERIOD. THEREFORE, I DO NOT CARE HOW GREAT THE ANSWER CHOICE SOUNDS, IF THAT ANSWER CHOICE DOES NOT HAVE TEXTUAL SUPPORT; THAT ANSWER IS ALWAYS THE WRONG ANSWER. SO, NEVER COMPARE ANSWER

CHOICE TO ANSWER CHOICE HOPING TO DISCERN THE CORRECT ANSWER, I.E., THE BEST SOUNDING ANSWER CHOICE BECAUSE THAT IS A COMMON TRICK EMPLOYED BY THE TEST-MAKER TO ENTRAP UNSUSPECTING TEST-TAKERS. THEREFORE, IF THE MOST YOU CAN SAY IS AN ANSWER CHOICE MIGHT BE TRUE, THAT ANSWER CHOICE IS WRONG. AND, EVEN THOUGH YOU KNOW AN ANSWER CHOICE IS CORRECT FROM YOUR OUTSIDE KNOWLEDGE, THAT ANSWER CHOICE IS ALSO WRONG. THE TEST-MAKER SOMETIMES DELIBERATELY PROVIDES THE PERFECT BEST ANSWER FROM THE FOUR CHOICES; INDEED, IF THAT ANSWER HAD HAD TEXTUAL SUPPORT IT WOULD BE THE CORRECT ANSWER, BUT WITHOUT TEXTUAL SUPPORT FROM THE PASSAGE, I DO NOT CARE HOW GREAT THE ANSWER IS AND NEITHER SHOULD YOU.

FOLLOW THE ONLY GUIDANCE THAT COUNTS: EVERY CORRECT ANSWER HAS TWO PRONGS: IT MUST ANSWER THE PRECISE QUESTION ASKED AND IT MUST HAVE TEXTUAL SUPPORT WITHIN THE PASSAGE.

A FEW FINAL WORDS: YOUR JOB HERE IS TO GET THE RIGHT ANSWER. SOMETIMES THE ACT GIVES YOU TOO MANY LINES, SOMETIMES TOO FEW: LINES SOMETIMES LIE!!! YOU NEED TO FIND THE CORRECT LINES THAT SUPPORT YOUR ANSWER CHOICE

PERIOD. FINALLY, I ALSO DO NOT CARE IF QUESTIONS SAYS: IMPLIES, INFERS, SUGGESTS: YOU STILL NEEDS TEXTUAL SUPPORT FROM WHICH TO IMPLY, INFER OR SUGGEST YOUR ANSWER. GRANTED THE CONNECTION IS MORE ATTENUATED, BUT THAT DOES NOT OBVIATE YOUR NEED TO LOCATE TEXTUAL SUPPORT FOR EVERY ONE OF YOUR ANSWERS.

FINALLY, UNLIKE THE SAT, ON THE ACT THE QUESTIONS ARE NOT IN ANY ROUGH CHRONOLOGICAL ORDER.

Passage I: Literature Reading Passage

Question 1: Lines 1-6 & Lines 46-48 —A

Question 2: Lines 71-89 —G

Question 3: Lines 14-20 —D

Question 4: Lines 62-77 Great illustration of principle that sometimes "Lines Lie."—F

Question 5: Try and use least number of word(s), phrase(s), sentence(s) to support your answers. Train your focus back into the passage with goal of finding text from passage to answer question asked. "[T]heir smiles sly—mischievous. "C'mon, we're going to do something!" —enthusiastic —C

Question 6: "lights glow like melted butter" "glowing streets—they dwindle to a star" —H

Question 7: [ALWAYS REPLACE PRONOUNS WITH PROPER NOUN THE PRONOUN SUBSTITUTES FOR: LIKE LINES, SOMETIMES, TEST-MAKER ALSO USES PRONOUNS TO MISDIRECT THE UNSUSPECTING TEST-TAKER.]. "And what did I promise you kids?" … "It's the Dead Sea!" —D

Question 8: Lines 81-89 —G

Question 9: [ALWAYS FOLLOW THE WORDS OF THE QUESTION, MAKING SURE TO FIND THE TRICK CONTAINED INSIDE SEEMINGLY STRAIGHTFORWARD EASY QUESTIONS THAT ARE ANYTHING BUT.].

Here, focus is on mom's perspective: "she" Lines 81-83 —A

Question 10: Lines 21-22 —J

Passage II: Social Sciences Reading Passage

Question 11: Whenever the passage is organized around major landmark dates of the subject of the passage, more than likely 'history' is included in answer concerning main idea of the passage. —B

Question 12: Lines 51-52 & Lines 58-69 —F

Question 13: Lines 9-16 —B

Question 14: Lines 58-63 —J

Question 15: Narrow your focus to find answer to specific question asked, which has textual support paraphrased in one of the answer choices Lines 75-77 —C

Question 16: Lines 3-6 —F

Question 17: For Vocabulary-in-Context Questions use "remove and replace" methodology.   Remove word from sentence, replacing with answer choices. Also, remember, since the question in Vocabulary-in-Context it is test-taker's job here to find the context clues. Final method: remove word, replace with your own words then look for synonyms for your words —B

Question 18: Lines 22-26 —J

Question 19: Lines 56-58 —A

Question 20: "54 million bushels of Red Delicious in 2011, compared to just 33 million bushels of its closest competitor…" —J

Passage III: Humanities Reading Passage

Question 21: Lines 55-57 —D

Question 22: Paragraph Three (Lines 25-47) —F

Question 23: Lines 17-24 —C

Question 24: Lines 65-71 —J

Question 25: Lines 78-80 —D

Question 26: "Expertly … eye-catching … extracted dreamlike images …" Lines 4-6 —G

Question 27: Vocabulary-in-Context —A

Question 28: Lines 10-18 —J

Question 29: Lines 57-64 —C

Question 30: Lines 71-74 —G

Passage IV: Natural Science

Question 31: Lines 8-11 —B

Question 32: Lines 21-26 —G

Question 33: Lines 26-28 "…evolved their spindle cells independently." —C

Question 34: Lines 30-32 —H

Question 35: Here, recall Reading Test Strategy of too few or too many lines. Recall further that the test-taker's role is always to locate the correct answer to the specific question asked within the words of the passage. Where the test-maker deliberately provides too few lines of text from the passage, it is incumbent upon the conscientious test-taker to read above or below the cited line(s) of text until the test-taker finds the answer to the question asked. Conversely, where the test-maker deliberately provides too many lines of text, it is incumbent upon the conscientious test-taker to narrow the search, locating the word(s) or line(s) from the passage that answers the

precise question asked. Here, the test-maker has done the latter, "lesser intellects" (Lines 49-50) "pirate flag" (Line 51) "an attack was imminent" (Line 52) —A

Question 36: [EVERYTHING ON BOTH SAT/ACT READING TEST IS ALWAYS ABOUT CONTEXT, CONTEXT, CONTEXT.]. Locate your contextual answer here in Line 82 "scientific objectivity" will provide the "simplest interpretation of evidence" Line 88 Using Lines79-80 —G

Question 37: Lines 80-81 —C

Question 38: Lines 11-20 & Lines 63-68 —A

Question 39: Lines 16-20 & Lines 58-62 —D

Question 40: Lines 30-46 —H

Test 4: ACT Science Test

SUCCESS ON THE ACT SCIENCE TEST REQUIRES THE TEST-TAKER TO BECOME ACQUAINTED WITH VARIOUS ACT SCIENCE TEST GUIDELINES. FOR A SUMMARY OF THESE GUIDELINES, PLEASE REFER TO SAM'S COMPRESSED ACT SCIENCE TEST DOCUMENT, LOCATED IN THE FREE RESOURCES SECTION OF COLLEGE CONNECTION'S WEBSITE. FOR MORE COMPREHENSIVE ASSISTANCE ON THE ACT SCIENCE TEST, PLEASE REFER TO SAM'S EXHAUSTIVE ACT SCIENCE TEST DOCUMENT LOCATED IN THE PAID RESOURCES SECTION OF COLLEGE CONNECTION'S WEBSITE.

UNFORTUNATELY, THE ACT SCORE CONVERSION CHART CAN BE QUITE UNFORGIVING WITH REGARDS TO THE ACT SCIENCE TEST. THE TEST-TAKER NEEDS TO KNOW THAT TWO TO THREE OF THE SIX SCIENCE TEST PASSAGES CAN BE QUITE DIFFICULT, AND, THAT, EVEN ON EASIER SCIENCE TEST PASSAGES, THE LAST QUESTION FROM EACH SCIENCE PASSAGE WILL ALWAYS BE MORE DIFFICULT. FINALLY, THE SCIENCE PASSAGES COVER A NUMBER OF DIFFERENT SCIENTIFIC TOPICS—BIOLOGY, CHEMISTRY, PHYSICS, ETC.—HOWEVER, IN ORDER TO DO WELL ON THE ACT

SCIENCE TEST, THE TEST-TAKER NEEDS TO REMEMBER TO "THINK LIKE A SCIENTIST" IN OTHER WORDS, TO THINK IN A RATIONAL MANNER BECAUSE ALL THE ANSWERS ON THE ACT SCIENCE TEST CAN BE FOUND WITHIN THE CHARTS, GRAPHS, FIGURES OF THE PASSAGES. BECAUSE TIME IS OF THE ESSENCE ON THE ACT SCIENCE TEST, SMART TEST-TAKERS WILL NOT READ THE INTRO TO THE SCIENCE PASSAGES, GOING DIRECTLY TO THE QUESTIONS. SHOULD THERE BE A TECHNICAL TERM THE TEST-TAKER IS UNFAMILIAR WITH IN THE QUESTION OR ANSWER CHOICES, THE TEST-TAKER SHOULD. THEN SCAN-READ THROUGH THE INTRO LOOKING FOR A DEFINITION OF THAT TERM. AS ON ALL PARTS OF THE ACT TEST, THE TEST-TAKER SHOULD NEVER WIN THE BATTLE, BUT LOSE THE WAR, MEANING, WHEN THE TEST-TAKER ENCOUNTERS A DIFFICULT QUESTION, SKIP IT, RETURNING TO THE QUESTION AFTER FINISHING THE REST OF THE QUESTIONS ON EACH PASSAGE. FOUR OF THE SIX SCIENCE PASSAGES. HAVE SEVEN QUESTIONS EACH AND THE REMAINING TWO PASSAGES HAVE SIX QUESTIONS EACH. THERE WILL ALWAYS BE ONE PASSAGE, MORE SIMILAR TO A READING PASSAGE, WHICH WILL INVOLVE STUDENTS, SCIENTISTS, ETC. TAKING VARYING POSITIONS REGARDING A VEXING SCIENCE ISSUE.

Passage I

Question 1: [OPEN ENDED QUESTIONS L
IKE QUESTION 1, ALWAYS GO FOR 'LOW-HANGING
FRUIT' AMONGST ANSWER CHOICES, MEANING THE
ANSWER CHOICE WHICH IS MOST SPECIFIC AND
QUICKLY VERIFIABLE.]—B

Question 2: Great example of a question where answer is
NOT found in the two Tables; therefore, scan-read intro
"same time each morning" —G

Question 3: [ON ALL SPECIFIC QUESTIONS, LIKE
QUESTION 3, YOU DO NOT INITIALLY CHECK
THROUGH ANSWER CHOICES; INSTEAD, GO RIGHT
INTO TABLES 1 AND 2, FINDING HERE COMMONALITY
ABOUT PIN OAK ACORNS.] —C

Question 4: Match question facts with Table 2 —J

Question 5: [BEST TECHNIQUE: UNDERLINE KEY WORDS IN THE QUESTIONS: "eating infested acorns" v. "caching infested acorns" "the distance traveled before" —A

Question 6: "more perishable acorn" "squirrel more likely to eat v. cache" —J

Question 7: 24% of 1875 —B

Passage II

Question 8: Table 1: "Group 2A elements, as atomic mass increases, specific heat"—G

Question 9: "298K … specific heat indium closest to"—A

Question 10: Grab definition of thermal conductivity from intro "strontium or thallium … 298K" —H

Question 11: "Neither … thermal conductivity of magnesium" —C

Question 12: "Figure 1… temperature … thermal conductivity of A1 closest Mg" —J

Question 13: [EVERY ONCE IN AWHILE—ONE OR TWO QUESTIONS—TEST-TAKER NEEDS OUTSIDE KNOWLEDGE. HERE, DENSITY EQUALS MASS/VOLUME. TEST-TAKER DOES NOT NEED OUTSIDE SCIENTIFIC KNOWLEDGE TO ANSWER ALL QUESTIONS ON ACT SCIENCE TEST CORRECTLY; HOWEVER, WITHOUT KNOWING DENSITY FORMULA, WOULD TEST-TAKER LONGER TO FIND ANSWER.] —A

Passage III

Question 14: [ALWAYS PAY CAREFUL ATTENTION TO WHICH TABLE, FIGURE, EXPERIMENT, ETC. THE QUESTION SENDS YOU TO: EXPERIMENT 2. WITH THESE TYPES OF QUESTIONS, ALWAYS ANSWER, LIKE HERE, THE TWO BOUNDARIES.]
—H

Question 15: QUESTION SENDS YOU TO EXPERIMENT 1: "latitude increased … MOD" —B

Question 16: Find trend in Experiment 3: "relationship … latitude/minimum speed"
—J

Question 17: [THIS IS PERFECT EXAMPLE WHERE TEST-TAKER MUST THINK LIKE A SCIENTIST.] —A

[ANOTHER IMPORTANT CONCEPT ON ACT SCIENCE IS THE CONCEPT OF INDEPENDENT AND DEPENDENT VARIABLES IN EXPERIMENTS: WHERE SCIENTISTS CONTROL VARIABLES IS INDEPENDENT; WHERE SCIENTISTS DO NOT CONTROL VARIABLES IS DEPENDENT.]

Question 18: "millimeters … MOD decrease … launch speed increased 15 m/s to 20 m/s" —J

Question 19: Some questions a bit trickier than other questions — "due east" in intro of Experiment 1 with Latitude (*N) therefore same MOD South or West —C

Question 20: Key word: "procedures of Experiment 3"—F

Passage IV

Question 21: Simply go to RDA 1.0 and RDA 2.0 is a flat line —B

Question 22: [ON EVERY GRAPH YOU MUST FIRST BE CLEAR WHAT x AXIS AND WHAT y AXIS REPRESENTS BEFORE ANSWERING QUESTION(S).] —F

Question 23: Here, must check provided Key; specifically, "activation" —D

Question 24: [ON ACT SCIENCE, ALWAYS DECIPHER ANY ASTERISK(S) ON THE GRAPH(S).] Here, 1.0 is normal value —H

Question 25: Go to graph (0 times is at 0, but 0.25 times is around 1.0) —A

Question 26: Go to Key from Figure 1, look at inhibition —J

Passage V

Question 27: [GREAT EXAMPLE OF MORE DIFFICULT EXPERIMENT PASSAGE. IN LIGHT OF THE FACT THE MORE DIFFICULT EXPERIMENT PASSAGE(S) CAN BE ANYWHERE ON SCIENCE TEST, COUPLED WITH FACT TEST-TAKER HAS VERY LIMITED TIME, SKIP PASSAGE V GO TO PASSAGE VI. IN FACT, ON ACTUAL ACT I WOULD HAVE SKIPPED PASSAGES IV AND V GONE TO PASSAGE VI THEN BACK TO PASSAGE IV THEN TO PASSAGE V.] In order to find this answer, test-taker needs t from Trial 2 Table 1, Study 1 combined with a from Study 2 Trial 2 [ON THE HARDER PASSAGES, TEST-TAKER MUST DO A LOT MORE WORK USING VARIOUS GRAPHS, CHARTS, TABLES, ETC. FROM THE EXPERIMENT PASSAGE, WITH VERY LITTLE GUIDANCE —LIKE HERE.] —B

Question 28: Go to Study 1, read Procedure 4 and compare with Study 2, Table 2 —G

Question 29: Go to Study 1, Table 1, comparing Trials 9 and 10 —C

Question 30: Again, makes sense—key words "100 centimeters (NOT meters)" —J

Question 31: Compare Study 1, Table 1 with Study 2, Table 2 —A

Question 32: Recall independent variable scientists control; dependent variable scientists do not control "value was intentionally set" —H

Question 33: This information is gleaned from the experiment's set-up —D

Passage VI

[THIS IS MORE READING PASSAGE THAN SCIENCE TEST PASSAGE. SOME TEST-TAKERS GO TO QUESTIONS FIRST, COLLEGE CONNECTION ADVISES TEST-TAKERS TO READ ENTIRE PASSAGE FIRST, THEN GO TO THE QUESTIONS. ALSO, WITH DENSITY FORMULA FROM EARLIER PASSAGE QUESTION, A BIT OF OUTSIDE CHEMISTRY KNOWLEDGE WOULD HELP BUT NOT NECESSARY, JUST TAKE LONGER TO ANSWER QUESTION WITHOUT THAT OUTSIDE SCIENTIFIC KNOWLEDGE.]

Question 34: [AGAIN, THINK LIKE A SCIENTIST, PROVIDING RATIONAL, LOGICAL ANSWER.] —J

Question 35: Essential part of Student 3's theory relies upon the formed sheet coming into contact with the surface of the water —C

Question 36: All students had stated/implied bubbles contained gas molecules, just differed about composition of gas molecules, not to mention gas rises —J

Question 37: First three students discuss formation of chemical bonds, just that Student 3 differs significantly from Students 1 and 2 who are more similar in their respective theories —A

Question 38: From Student 2: "bubbles contain a mixture of oxygen and hydrogen —F

Question 39: Student 4's explanation does not engage in speculation; it stays close to the provided facts of the experiment —D

Question 40: [BALANCED CHEMICAL EQUATION SIMPLY MEANS BOTH SIDES OF CHEMICAL EQUATION ARE IN PARITY WITH EACH OTHER.] —F