



# ACT<sup>®</sup> BOOT CAMP

**BETTER SCORES IN ONE DAY**

Created by the expert who earned perfect scores on the ACT<sup>®</sup> and SAT<sup>®</sup>.

- Designed to help students meet ACT college readiness standards
- Features the most frequently tested topics
- Reduce test-taking anxiety and increase accuracy

**Craig Gehring and Oliver Pope**

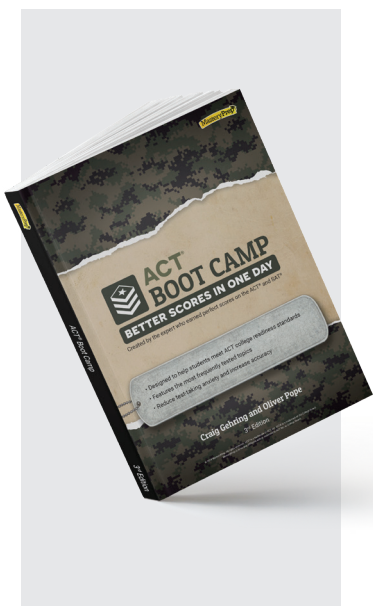
3<sup>rd</sup> Edition

**Your school's ACT scores are important, but so is your time.**  
**With an ACT Boot Camp, you can increase your students ACT scores with zero class interruption.**

## Why ACT Boot Camp?

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- Students learn exactly what they need in the “final hours” before the test
- Very easy to schedule: you provide the space, and we take care of everything else. No attendance limits
- Improves student confidence
- Helps students develop time management skills to promote completion of the test in its entirety
- Levels the playing field; an effective way for all of your students to experience high-quality prep
- Makes test prep fun and less overwhelming for students



## What's Included?

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- 6-hour workshop led by an expert, engaging instructor
- A workbook for each student with exercises to complete during the event and additional practice leading up to test day.

## Students will learn:

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- Pacing and time management
- Test-taking and guessing strategies
- Tips for the most important question types

## ACT Test-Taking Strategies:

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- A million reasons to improve ACT scores
- How many correct answers are needed for a desired score
- A 5-minute lesson on how to guess twice as effectively



### **ENGLISH:**

- Distinguish between the right answer and the best answer
- Which punctuation mark impacts 20% of the English score



### **MATH:**

- What to do when their mind draws a blank during the test
- How to turn a word problem into something more solvable



### **READING:**

- What question type determines over a third of the Reading score
- How to stop over-thinking



### **SCIENCE:**

- The scientific method in 5 minutes
- How to spot contradictions

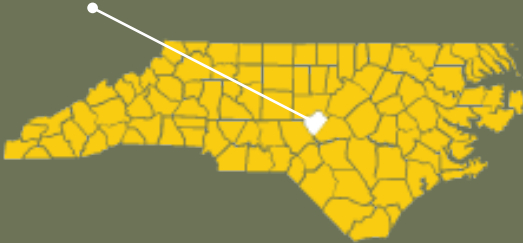
## Implementation Timeline

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MasteryPrep's ACT Boot Camp is test prep that fits your schedule—even at the last minute. We've worked hard to develop practical, last-minute ACT prep for the "final hours" before test day.

- Full-day workshop during school hours
- After-school or Saturday programming

### Lee County, North Carolina



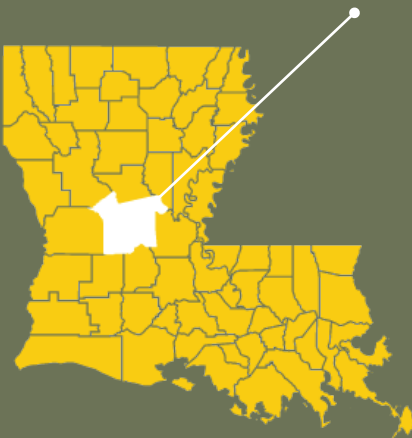
## **ACT Boot Camp Success:** Lee County Schools, North Carolina

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Lee County delivered ACT Boot Camps to all of its high school students in classroom-sized groupings in the 2015-16 school year. As a result, its two high schools saw large increases in college readiness benchmark attainment. The school district increased from 48.0% to 57.7% of students achieving proficiency and achieved a district-wide composite score increase of +0.7 points.

- Average composite score increased from 17.5 to 18.2
- Increased proficiency from 48% to 57.7%

### Pineville High School, Louisiana



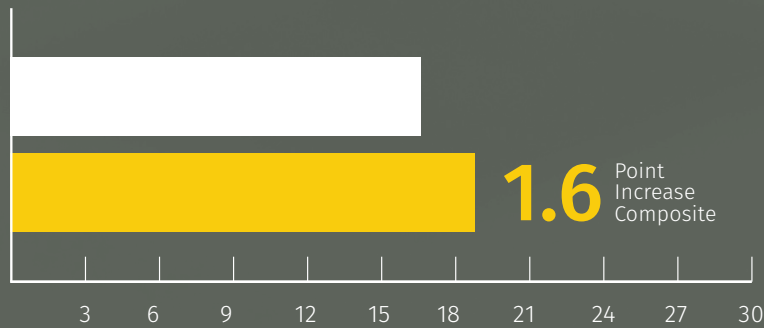
## **ACT Boot Camp Success:** Pineville High School, Louisiana

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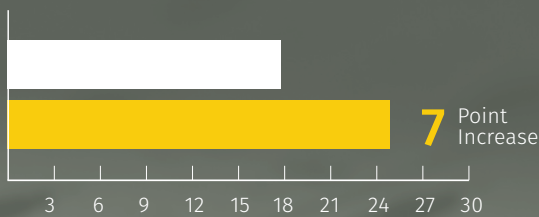
Pineville High School delivered ACT Boot Camps to its junior and senior classes for three consecutive years. Each year, the school made significant progress towards its ACT goals. In 2013, Pineville's ACT score was 20.4. This increased to 20.9 in 2014, to 21 in 2015, and finally to 21.3 in 2016. In 2016, the school was honored with a state ranking of A for the first time in its history.

- Average composite score increased from 20.4 to 21.3
- Increased proficiency from 70% to 88%
- Became an A-rated school

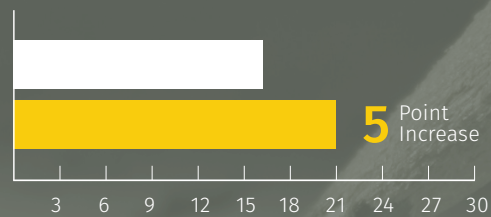
## Berea College Upward Bound Composite ACT Score Improvements



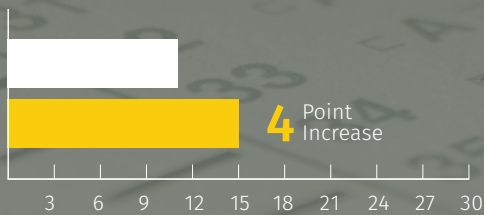
## Individual Student Score Improvements



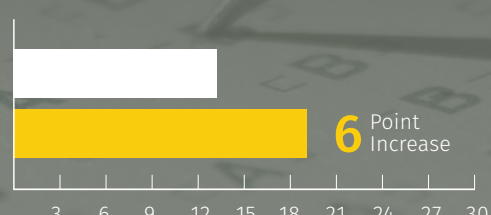
Kareh C.



Bradon H.



Amber A.



Tare W.

## ACT Boot Camp Success: Berea College Upward Bound Math and Science, Tennessee

*"During the summer, I taught at a 6 week camp for high school students. We gave each student a pre- and post-test. The results after using MasteryPrep were AMAZING! Out of 30 students, TWENTY of them improved their ACT scores! Some as much as 7 points! I am sold on the wonders of MasteryPrep."*

- Kimberly Hamilton, ACT prep teacher

Berea College Upward Bound Math and Science, Berea, TN

# ACT<sup>®</sup> Boot Camp

Better Scores in One Day

3<sup>rd</sup> Edition

## MasteryPrep

ACT<sup>®</sup> is the registered trademark of ACT Inc. MasteryPrep LLC has no affiliation with ACT Inc., and the ACT<sup>®</sup> Boot Camp program is not approved or endorsed by ACT Inc.



### » SCHEDULE

Fill in the times following your instructor's directions. This is the agenda we will follow throughout the day. We'll have a break between each section. Next to each section name in the schedule, you'll find the corresponding page number where it begins in this workbook.

Time	Section	Page Number
_____	ACT Overview	7
_____	English	13
_____	Math	67
_____	Break	
_____	Reading	123
_____	Science	155
_____	Writing	187
_____	Boot Camp Wrap-up	193

Section One  
★ ACT Overview ★





**» A MILLION REASONS FOR HIGHER ACT SCORES**

- On average, college graduates earn a million dollars more than high school graduates over the course of their lifetimes.
- Your ACT score helps you to gain college entrance and scholarships.
- It is at least as important to admission boards as your grade point average and class rank. With all of the work that you put into your high school courses, you owe it to yourself to make a serious effort to boost your ACT scores.
- The higher your score, the more likely it is that you'll get a degree.
- You can't rely on your teachers to do this for you. It's your job to build your future.

**Why do you want higher ACT scores?**

**What ACT score do you want? \_\_\_\_\_**

**Do you know how many extra points you need? If so, write that in this blank. \_\_\_\_\_**

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# Section One: ACT Overview

## » ORIENTATION

The ACT is a marathon of a test. Between the English, Math, Reading, Science, and optional Writing tests, you'll spend over 3 hours answering more than 200 questions designed to determine how ready you are for college.

Sequence	Subject	Questions	Passages	Time
1	English	75	5	45 minutes
2	Math	60	-	60 minutes
Break	-	-	-	10-15 minutes
3	Reading	40	4	35 minutes
4	Science	40	6 or 7	35 minutes
5	Writing	1	-	40 minutes

**English** tests your ability to edit writing.

**Math** measures your ability to solve complicated word problems.

**Reading** checks how well you interpret and comprehend reading passages.

**Science** doesn't determine whether you know science facts, but rather how well you read scientific information and infographics.

**Writing** demonstrates how well you can write a sophisticated argument on the spot.

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## » HOW THE ACT IS SCORED

- The ACT is scored in an odd way.
- You need to understand exactly how it's scored so that you can make and achieve realistic goals for improvement.
- **Don't prep only for your weakest subjects. A balanced approach to ACT prep is necessary.**

Sample Conversion Table

Scale Score	Raw Scores			
	Test 1 English	Test 2 Mathematics	Test 3 Reading	Test 4 Science
36	75	60	40	40
35	74	59	39	39
34	73	58	39	39
33	72	58	38	38
32	71	57	37	38
31	71	55	37	38
30	69	53	36	37
29	68	52	35	36
28	67	50	34	36
27	65	47	33	34
26	63	45	32	33
25	61	42	31	31
24	59	40	30	30
23	57	37	29	28
22	54	36	27	27
21	52	34	26	25
20	49	32	24	23
19	46	30	22	21
18	43	28	21	19
17	41	25	19	17
16	38	20	18	15
15	35	17	16	14
14	33	14	14	13
13	31	12	13	12
12	29	9	12	11
11	26	7	10	10
10	24	6	8	8
9	21	5	7	7
8	18	4	6	6
7	15	3	5	5
6	12	3	4	4
5	9	2	4	3
4	7	1	3	2
3	5	1	2	1
2	3	1	1	1
1	0	0	0	0

# Section Two English





» AN INTRODUCTION TO THE ACT ENGLISH TEST

- The ACT English test is made up of five passages and 75 questions that challenge your editing ability.
- Some questions check your knowledge of **grammar** while others test your **composition skills**.
- The ACT English test is one of the most demanding tests in terms of time.

Look at page 18. What is the question number of a composition question? \_\_\_\_\_

What is the question number of a grammar question? \_\_\_\_\_

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## Section Two: English

### » HOW DO I MANAGE MY TIME?

- With only 45 minutes to answer 75 questions, you must answer a question every 30 seconds.
- An easier way to keep track of it is this: **Give yourself 8 minutes per passage.**
- If you maintain this pace, you'll get through the entire test with 5 minutes to spare.
- Most students miss the last questions because they run out of time. Get through each passage in 8 minutes, and you'll never run out of time on the ACT English test.
- Part of managing your time is knowing when to skip a question. **If you don't know the answer, mark and move.** Chances are that the next question is easier.
- You'll get way more questions right if you give yourself the chance to complete the entire test.
- Another part of getting through the English test with sufficient time is to practice thinking and working at the correct pace. The only way to accomplish this is to **move at the correct pace while you are practicing.**

In this boot camp we'll do a number of practice tests designed to help you understand ACT content and move at the correct pace. When you're working through the tests, pretend that you are actually in an ACT test environment.

**Check your understanding:**

How many minutes should you allow for each passage? \_\_\_\_\_

**When you do the first mini-test, try to identify questions that you need to skip so that you can better manage your time and get to the end of the passage before time runs out.**

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## » THE ART OF GUESSING

- There is no penalty whatsoever for guessing on the ACT.
- Never *ever* leave an answer blank.
- **Mark and move.**
- Again, *never* leave a question blank. If you read the question and decide to skip it, fill in your best guess before moving to the next question.
- **Eliminate the answers that are most unlikely** and go with your gut.
- By guessing as you go, you'll have most of the answers completed when you reach the test's end.
- Your guesses will be much better right after you read the question than if you wait until the end of the test and blindly guess.

Mark the question in your test booklet so you can come back to it, make your best guess, and **then** move on.

**Be sure to apply this technique with the mini-tests in the boot camp. Only with practice will this feel natural. Use this technique to guess twice as well without any more effort.**

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» INTRODUCING THE ACT BOOT CAMP MINI-TESTS

- You will be taking a small segment of an ACT test.
- It's important to **imagine that you are in an actual ACT environment**.
- The time limit matches the pace that you should try to beat during the actual ACT.
- **Practice all of the skills that you've learned as you do these mini-tests.**
- In this mini-test, you're provided 8 minutes to answer 15 questions related to one English passage.
- Unless your instructor has provided you with an answer sheet, circle your answers directly in this book.
- Your instructor will call out times and recommendations of what question you should be on or have already completed. It's OK if you get a little ahead or behind the numbered question the instructor is calling out. Try to get all the way through under the time limit.
- The real test does not allow the use of cell phones, watches, or scratch paper, so you shouldn't use them on the mini-tests either.

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**ENGLISH TEST***45 Minutes—75 Questions*

**DIRECTIONS:** In the passages to follow, selected words or phrases will be underlined. The selection will have a corresponding number in the right-hand column. You will be given alternatives and are expected to choose one as the best replacement for the original selection.

Often, the correct answer will be one that best articulates the idea, maintains the tone and style of the passage, or is considered most appropriate for standard written English. If you believe the original to be correct, choose "NO CHANGE."

Other times, you will be questioned on the passage as a whole, which is indicated not by an underlined portion, but by one or more numbers in a box.

Choose the answer you believe to be correct, then color its corresponding bubble on your answer sheet. Before beginning, read the passage at least once, as some questions refer to several parts before or after the selected phrase. Repeat this for each question to ensure you have read enough ahead to choose the right alternative.

**PASSAGE I****Farther**

The shimmering beach extends endlessly into the horizon. Emerald waves creep along the white sands like eels<sup>1</sup> curving, and bending along the seashore.

Years ago, the city dictated that the dunes must be protected—not taken for granted<sup>2</sup>—so

they<sup>3</sup> could enjoy the natural beauty of the area for years to come.

I walk the same stretch of beach every morning, where the warmth of the sun gently awakens me. I have come to love this routine and cherish<sup>4</sup> it deeply. Today, I'm ready to walk farther than I ever have

- A. NO CHANGE  
B. eels, curving and bending  
C. eels curving and bending,  
D. eels, curving, and bending,
- F. NO CHANGE  
G. protected; not taken for granted  
H. protected not taken for granted  
J. protected, not taken for granted;
- A. NO CHANGE  
B. knowing they  
C. that they  
D. people
- Which of the following alternatives to the underlined portion would NOT be acceptable?  
F. routine, cherishing  
G. routine and always cherish  
H. routine, always cherishing  
J. routined cherish

**GO ON TO THE NEXT PAGE**

## Section Two: English

1



1

before, I know that I have all of the time in the world. [6]  
5

I walk at a decrepit pace; the soft sand squeaks  
7

peacefully beneath my feet. I hear the calls of seagulls above  
8  
me and the crashing of waves to my side. I feel the silky

breeze slip, quietly across the coast. It rustles the sea oats and  
9  
turns a lucky few grains of sand into brave travelers.

It is spring, and a placid warmth is spreading through the air  
10  
with the rising of the sun.

[ii] A pair of runners whip by me, assaulting the quiet

shore with steps that splash through the water, I love to run,  
12

5. A. NO CHANGE  
B. before, because,  
C. before, this is because  
D. before, and
6. If the writer were to delete the preceding sentence, the essay would primarily lose:  
F. the reason the narrator likes the beach.  
G. an understanding of what the writer intends to do on the beach.  
H. a contrast to the tone of the essay.  
J. nothing at all; this information is irrelevant to the essay.
7. Which choice would most logically and effectively emphasize the positive, peaceful attitude the narrator feels for his walks on the beach?  
A. NO CHANGE  
B. crippled  
C. somber  
D. tranquil
8. F. NO CHANGE  
G. You can hear  
H. One can hear  
J. While hearing
9. A. NO CHANGE  
B. slipping, quietly  
C. slip quietly  
D. slip quietly;
10. E. NO CHANGE  
G. Due to the fact that it is  
H. It turned into the season of  
J. Because it has turned into
11. Which choice would most effectively introduce the rest of this paragraph?  
A. NO CHANGE  
B. The sun is shining into my eyes.  
C. The beach is a fascinating place.  
D. Days can go by too quickly.
12. F. NO CHANGE  
G. water and  
H. water  
J. water.

GO ON TO THE NEXT PAGE



## » SEMICOLONS: WHEN NOT TO USE THEM

Semicolons can be used as a sort of “Super Comma!” You can use them when an ordinary comma just won’t do (for clarity’s sake) or when you need a comma that will stand out from the other commas in the sentence.

**EXAMPLE:** This summer I visited Paris, France; Rome, Italy; and London, England.

*The ACT almost never uses semicolons as super commas.*

As many as six or seven questions on the ACT may have answer choices that include semicolons, *but only one or two uses are actually correct.*

- **A semicolon can be used instead of a period to join two independent clauses.**

This shows a tighter relationship between the clauses than if they were made into separate sentences using a period.

That being said, it is only grammatically correct to use a semicolon in this way if you could also replace it with a period and have both clauses stand alone as complete sentences.

**CORRECT:** I walked out of the store; it cost too much.

**INCORRECT:** I walked out of the store; costing too much.

“I walked out of the store” and “it cost too much” can both stand alone as sentences. They’re independent clauses.

“Costing too much” can’t stand alone, so it’s incorrect to use the semicolon here.

In other words, **if you can’t replace the semicolon with a period, it’s being used incorrectly on the ACT.** Let’s look at question #2 as an example of this:

2. Years ago, the city dictated that the dunes must be protected—not taken for granted—so they could enjoy the natural beauty of the area for years to come.

F. NO CHANGE

G. protected; not taken for granted

H. protected not taken for granted

J. protected, not taken for granted;

In this question, the semicolon could not be replaced with a period and leave two complete sentences, so choice G is incorrect. Choice J is incorrect because you should never use a semicolon before a coordinating conjunction unless you have internal commas within the independent clauses.

Note: It’s also **incorrect to use a coordinating conjunction after a semicolon** in this way. Use this guide to weed out the incorrect semicolon usage strewn throughout the ACT.

**CORRECT:** Joe gave his brother a big hug; he was overjoyed to see him.

**INCORRECT:** Joe gave his brother a big hug; because he was overjoyed to see him.

### » COMMA BOOT CAMP

#### 1. Independent Clauses

**INCORRECT:** Lakesha bought 13 apples and Derrick purchased seven oranges.

**CORRECT:** Lakesha bought 13 apples, and Derrick purchased seven oranges.

**Why?** Use commas to separate independent clauses joined by the following conjunctions:

*and but for or nor so yet*

**INCORRECT:** I played basketball all weekend but I had to go back to work on Monday.

**CORRECT:** I played basketball all weekend, but I had to go back to work on Monday.

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#### 2. Introductory Words, Phrases, and Clauses

**INCORRECT:** After he lost the game he wasn't very talkative.

**CORRECT:** After he lost the game, he wasn't very talkative.

**Why?** Use commas after introductory clauses, phrases, and words.

In this case, "after he lost the game" is an introductory clause.

**INCORRECT:** Erica's voice was hoarse. However she still gave the song her best shot.

**CORRECT:** Erica's voice was hoarse. However, she still gave the song her best shot.



The main exception to this rule is if the introductory phrase is a prepositional phrase with four or fewer words.

**Just because it has four or fewer words does not mean that you can omit the comma.** It has to be a *prepositional phrase*.

One other note: be careful that you don't mistake an introductory phrase for a subject. You can never separate a subject from its verb with a single comma.

**INCORRECT:** Trying to plan your life without any real experience, can lead you down the wrong path.

**CORRECT:** Trying to plan your life without any real experience can lead you down the wrong path.

It sounds to the ear like the first portion of the sentence is a lead-in, but "trying to plan your life" functions as a subject, which is modified by the prepositional phrase "without any real experience."

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### 3. Setting off Asides

**INCORRECT:** They visited the town of Gumpton, which for a long time had gone without any visitors in order to pay their respects to their dear aunt.

**CORRECT:** They visited the town of Gumpton, which for a long time had gone without any visitors, in order to pay their respects to their dear aunt.

**Why?** Use two commas in the middle of a sentence in order to set off a phrase that is not essential to the meaning of the sentence.

The first comma goes when you start the aside, and the second comma goes at the end.

It helps to imagine that the narrator of the story stops what he's talking about for a second, cups his hand so that the characters don't hear, and tells you some interesting background information about one of them.

The action of the sentence pauses while we read some extra info. If you don't wrap it in two commas, you won't let your reader know where the pause in the action begins and ends.





## » ANSWER EXPLANATIONS FOR ENGLISH PRACTICE TEST

- The correct answer is B.** The comma in this sentence is needed to separate the independent clause from the compound participle phrase modifying it. The other choices use commas incorrectly either by creating a comma splice or a list structure where it is not appropriate.
- The correct answer is F.** The sentence correctly makes use of an em dash to show a parenthetical statement or interruption. Choices G and J incorrectly use semicolons, and choice H creates a run-on sentence.
- The correct answer is D.** Using the pronoun “they” creates the question of an ambiguous antecedent, making it seem that “they” may be replacing “the city.” Replace this pronoun with “people” to make the sentence clearer.
- The correct answer is J.** Choices F, G, and H are all acceptable answers. Choice J is not correct because the past participle version of routine (routined) does not fit and makes the sentence incoherent.
- The correct answer is D.** Choice A leaves a comma splice. Choice D correctly uses the conjunction “and” to connect the two independent clauses.
- The correct answer is G.** This sentence explains what the narrator is ready to do on the beach: “walk farther than I ever have before.” Therefore, this sentence helps the reader understand what the narrator intends to do on the beach.
- The correct answer is D.** Choices A, B, and C all have negative connotations. Choice D is the only one that has a positive, peaceful connotation. If the definition of “tranquil” is unclear, use the process of elimination to determine that “crippled,” “somber,” and “decrepit” imply a slow, crawling drag, which is not consistent with the tone of the passage. Thus, the fourth option, “tranquil,” must be the correct choice.
- The correct answer is F.** The passage is written in first person. Choice G is incorrect because it switches to second person. Choice H is incorrect because it switches to third person. Choice J creates an incomplete sentence. Choice F is the only option that maintains consistency.
- The correct answer is C.** In the phrase “slipping quietly,” the word “quietly” is an adverb describing “slipping.” These should not be separated by a comma. Likewise, the phrase should not be separated by a semicolon from the rest of the sentence as seen in choice D. The only option with correct punctuation is choice C.
- The correct answer is F.** Choice F is grammatically correct and more concise than the other choices. Although each of the other choices are also grammatically correct, they are less concise and do not offer any additional information to the passage. Additionally, the structure of this choice is more consistent with what came before in the paragraph.
- The correct answer is A.** The other answer choices do not make sense in the context of the dependent clause: “assaulting the quiet shore with steps that splash.” Leaving the sentence as it is effectively creates a contrast between the narrator’s leisurely walk and the pair of runners who are whipping by.

# Section Three Math







## » INTRODUCTION TO THE ACT MATH TEST

- The ACT Math test consists of **60 questions**, which you must answer in **60 minutes**.
- Most people think of complicated trigonometry when they think of ACT math, but the truth is that **your score is mainly determined by your ability to solve word problems and your skill and accuracy in pre-algebra, algebra, and geometry**.
- You could get a 33 on the ACT Math test without knowing any trig.
- In this section, we'll work on improving your speed and accuracy in math.
- We'll also cover the content that most students miss to help you pick up an extra point or two on the test.
- You will need to know the following formulas for the test:

**Area of a Square:**  $A = s^2$

**Area of a Rectangle:**  $A = lw$

**Area of a Triangle:**  $A = \frac{1}{2}bh$

**Area of a Circle:**  $A = \pi r^2$

**Area of a Parallelogram:**  $A = bh$

**Area of a Trapezoid:**  $A = \frac{b_1 + b_2}{2}h$

**Circumference of a Circle:**  
 $C = 2\pi r$

**Volume of a Cube:**  $V = s^3$

**Volume of a Rectangular Prism:**  
 $V = lwh$

**Volume of a Cylinder:**  $V = 2\pi r^2h$

**Pythagorean Theorem:**

$$c^2 = a^2 + b^2$$

**Equation of a Line:**  $y = mx + b$

**Equation of a Circle:**

$$(x - h)^2 + (y - k)^2 = r^2$$

**Sine:**  $\sin\theta = \frac{\text{opposite}}{\text{hypotenuse}}$

**Cosine:**  $\cos\theta = \frac{\text{adjacent}}{\text{hypotenuse}}$

**Tangent:**  $\tan\theta = \frac{\text{opposite}}{\text{adjacent}}$

**Cosecant:**  $\csc\theta = \frac{\text{hypotenuse}}{\text{opposite}}$

**Secant:**  $\sec\theta = \frac{\text{hypotenuse}}{\text{adjacent}}$

**Cotangent:**  $\cot\theta = \frac{\text{adjacent}}{\text{opposite}}$

- You will NOT need to know the following formulas for the test:

**Volume of a Sphere**

**Volume of a Cone**

**Volume of a Pyramid**

**Surface Area of a Sphere**

**Law of Cosines**

**Law of Sines**





» HOW TO GET 10 EXTRA MINUTES

How much would your score improve if you had an extra 10 minutes on the ACT Math section?

**By pacing yourself**, and by practicing in order to improve your speed, **you can grab an extra 10 minutes** or more for the tougher questions towards the end of the test.

- You want to blitz the first 20 questions, moving through them in only 10 minutes.
- Allow yourself 20 minutes for the middle 20 questions.
- Then you'll have a full 30 minutes for the last 20 questions.

There are some gimmies at the back of the test that you'll miss if you never get to them.

**By working through the practice tests in this boot camp at the correct pace**, you'll take a big step towards achieving better timing on the ACT.

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## Section Three: Math

# 2



# 2

### MATHEMATICS TEST

60 Minutes—60 Questions

**DIRECTIONS:** Begin by working out each problem. Once solved, choose the correct answer, then fill in its corresponding bubble on your answer sheet.

Do not waste time on difficult questions. Instead, leave them for last; by answering as many questions as possible first, you can use any remaining time to return to the others.

A calculator is allowed for any problems you choose, but some may be better solved without one.

Note: Unless stated otherwise, the following should be assumed:

1. Illustrative figures are NOT necessarily drawn to scale.
2. Geometric figures lie on the  $x,y$  coordinate plane.
3. The word "line" indicates a straight line.
4. The word "average" indicates a calculated mean.

1. Printer A can print 30 pages per minute. Printer B can print 40 pages per minute. Printer B begins printing 3 minutes after Printer A begins printing. Both printers stop printing 10 minutes after Printer A started. Together, how many pages did the two printers print?
  - A. 120
  - B. 580
  - C. 610
  - D. 700
  - E. 1,200
2. The expression  $(5x + 3y^2)(5x - 3y^2)$  is equivalent to:
  - F.  $10x^2 + 6y^4$
  - G.  $25x^2 + 9y^4$
  - H.  $10x^2 - 6y^4$
  - J.  $25x^2 - 9y^4$
  - K.  $25x^2 - 6y^4$
3. If  $7(x - 7) = -15$ , then  $x = ?$ 
  - A.  $-\frac{64}{7}$
  - B.  $-\frac{34}{7}$
  - C.  $-\frac{15}{7}$
  - D.  $\frac{34}{7}$
  - E.  $\frac{64}{7}$
4. The daily fee for admission to the Florida Fun 'n Sun Amusement Park is \$45 per adult and \$25 per child. Daily admission fees are paid for  $a$  adults and  $c$  children. Which of the following expressions gives the total amount, in dollars, collected for daily fees?
  - F.  $45a + 25c$
  - G.  $45c + 25a$
  - H.  $25(a + c)$
  - J.  $70(a + c)$
  - K.  $25(a + c) + 45a$
5. Natalie makes \$9.50 per hour for up to 40 hours a week working at a local bookstore. She is paid an overtime wage of 1.5 times her regular pay for every hour she works over 40 hours. If Natalie works 43 hours in a week, how much will she make that week?
  - A. \$380.00
  - B. \$394.25
  - C. \$408.50
  - D. \$422.00
  - E. \$422.75
6. Discounted tickets to the cinema cost \$6.00 each. James spent \$72.00 on discounted tickets, \$54.00 less than he would have spent if he had bought tickets without the discount. What is the price of a ticket without a discount?
  - F. \$6.00
  - G. \$6.50
  - H. \$10.50
  - J. \$12.00
  - K. \$16.50
7. Which of the following mathematical expressions is equivalent to the verbal expression "A number,  $y$ , cubed is 42 more than the product of 13 and  $y$ "?
  - A.  $3y = 42 + 13y$
  - B.  $3y = 42y + 13y$
  - C.  $y^3 = 42 - 13y$
  - D.  $y^3 = 42 + y^{13}$
  - E.  $y^3 = 42 + 13y$
8. A rectangle has a perimeter of 24 meters and an area of 35 square meters. What is the length, in meters, of the longer side?
  - F. 1
  - G. 3
  - H. 5
  - J. 7
  - K. 8

GO ON TO THE NEXT PAGE



9. If  $k = 7$ ,  $j = 4$ , and  $p = -5$ , what does  $(k + j)(k + p - j)$  equal?
- A. -22  
B. 0  
C. 22  
D. 44  
E. 88
10. Jason's class projects are graded on a scale of 250 points. Jason has received scores of 245, 215, 220, and 224 for his first four projects. Jason worked out his average score on his projects thus far. In order to maintain the same average grade on projects, what grade must Jason receive on his 5<sup>th</sup> and final class project?
- F. 200  
G. 215  
H. 224  
J. 226  
K. 245
11. For 2 consecutive integers, the result of adding the smaller integer and four times the larger integer is 84. What are the 2 integers?
- A. 15,16  
B. 16,17  
C. 17,18  
D. 18,19  
E. 19,20
12. If  $4^x = 52$ , then which of the following must be true?
- F.  $1 < x < 2$   
G.  $2 < x < 3$   
H.  $3 < x < 4$   
J.  $4 < x < 5$   
K.  $x > 5$
13. In  $\triangle ABC$ , the sum of the measures of  $\angle A$  and  $\angle B$  is  $66^\circ$ . What is the measure of  $\angle C$ ?
- A.  $57^\circ$   
B.  $66^\circ$   
C.  $90^\circ$   
D.  $114^\circ$   
E.  $124^\circ$
14. A function  $f(x)$  is defined as  $f(x) = -7x^2$ . What is  $f(-2)$ ?
- F. -121  
G. -28  
H. 28  
J. 98  
K. 121
15. At an ice cream parlor, patrons make their own sundaes from 5 flavors of ice cream, 2 sauces, 4 toppings, and 3 fruits. How many different sundaes can be made by a patron who chooses exactly 1 ice cream flavor, 1 sauce, 1 topping, and 1 fruit?
- A. 14  
B. 24  
C. 60  
D. 64  
E. 120
16. The base of a triangle is four times the base of a smaller triangle. The two triangles have the same height. The area of the smaller triangle is  $A$  square units. The area of the larger triangle is  $kA$  square units. Which of the following is the value of  $k$ ?
- F.  $\frac{1}{4}$   
G.  $\frac{1}{2}$   
H. 1  
J. 2  
K. 4
17. What is the least common multiple of 30, 40, and 70?
- A. 84  
B. 120  
C. 840  
D. 1,200  
E. 84,000
18. The bacteria population of a nutrient broth grows according to the equation  $y = 21(3)^t$ , where  $t$  represents time in days and  $y$  represents the population. According to this equation, which answer will represent the bacteria population of the nutrient broth after 5 days?
- F. 63  
G. 315  
H. 1,701  
J. 5,103  
K. 15,309

GO ON TO THE NEXT PAGE



### » DON'T SOLVE WORD PROBLEMS

Let's take a look at a commonly missed word problem and see how we can unlock its answer:

19. Mind Beats Audio is designing a box for its new line of professional headphones. The box is a rectangular prism that is 28 centimeters long, 19 centimeters wide, and has a volume of 6,384 cubic centimeters. What is the height, in centimeters, of the box?

- A. 10
- B. 12
- C. 19
- D. 48
- E. 63

**The key to this problem is identifying that we can take the words and convert them into an equation.**

Always look for words that fit an equation or math rule you know. In this case, the volume formula applies.

Volume = height • width • length. We'll say that  $x$  = the height, which is the number we want to know.

$$6384 = 28 \cdot 19 \cdot x$$

$$6384 = 532x$$

$$x = 12$$

It's very difficult to solve a word problem. Math formulas and rules aren't about words: they're all about numbers and symbols.

**Convert word problems into math problems, and then solve them.** Convert what you know into the numbers in the equation (the constants and co-efficients), and convert what you're trying to find out into symbols (variables).

In other words, express (say) the word problem as an equation.

*Trying to solve a word problem before you set it up is like trying to run before you catch the ball.*

Your first task with any problem is to set it up into something you can solve.

Only a one-two punch like this can knock out a word problem.

## » DRAW IT OUT

It can be difficult to visualize word problems on the ACT Math test.

**Many problems that involve a picture or shape don't actually show the picture in your test booklet.**

That's what you call a lazy test writer! You have to do their job for them.

**When the question discusses something that you can draw, immediately start drawing it out!**

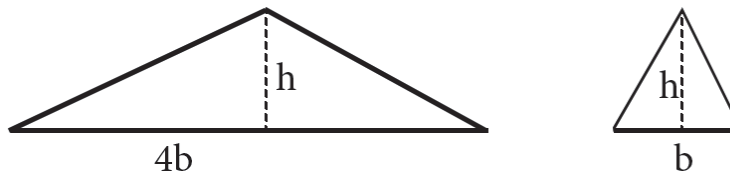
If the path to solving a question doesn't immediately pop out at you, drawing it out can make it more obvious.

Let's take a look at a problem that dramatically decreases in difficulty once you draw it out.

16. The base of a triangle is four times the base of a smaller triangle. The two triangles have the same height. The area of the smaller triangle is  $A$  square units. The area of the larger triangle is  $kA$  square units. Which of the following is the value of  $k$ ?

- F.  $\frac{1}{4}$
- G.  $\frac{1}{2}$
- H. 1
- J. 2
- K. 4

First let's draw the two triangles and label the base and height of each.



Since the area of a triangle is  $\frac{1}{2}bh$ , then we can plug in the values. Now that we have drawn it out, we don't have to keep referring to the text. We can use our illustration.

The area of the larger triangle is  $kA = \frac{1}{2}4bh$ . The area of the smaller triangle is  $A = \frac{1}{2}bh$ .

Since  $A = \frac{1}{2}bh$ , we can substitute this in on the right side of the equation. We're left with this:

$$kA = 4A$$

Divide both sides by  $A$ .

$$k = 4$$

This problem is difficult to visualize, but if you draw it out it becomes much simpler to deal with.

## Section Three: Math



Math



### » ANSWER EXPLANATIONS FOR MATH PRACTICE TEST

**1. The correct answer is B.**

Printer A runs for 10 minutes and Printer B runs for  $10 - 3 = 7$  minutes.

Printer A prints  $10 \cdot 30$  pages = 300 pages.

Printer B prints  $7 \cdot 40$  pages = 280 pages.

$$300 + 280 = 580 \text{ pages}$$

**2. The correct answer is J.**

Use the FOIL method.

$$\text{First: } 5x \cdot 5x = 25x^2$$

$$\text{Outer: } 5x \cdot -3y^2 = -15xy^2$$

$$\text{Inner: } 3y^2 \cdot 5x = 15xy^2$$

$$\text{Last: } 3y^2 \cdot -3y^2 = -9y^4$$

This gives  $25x^2 - 15xy^2 + 15xy^2 - 9y^4$

Combine like terms.  $15xy^2 - 15xy^2$  cancels out.

$$25x^2 - 9y^4$$

**3. The correct answer is D.**

First use the distributive property.

$$7(x - 7) = 7x - 49$$

$$7x - 49 = -15$$

Add 49 to both sides.

$$7x = -15 + 49$$

$$7x = 34$$

Divide both sides by 7.

$$x = \frac{34}{7}$$

**4. The correct answer is F.**

Every time the number of adults goes up by 1, the dollar amount goes up by 45. 45 should be multiplied by a.

Similarly, every time the number of children goes up by 1, the dollar amount increases by 25. 25 should be multiplied by c.

The sum of these two expressions gives the total daily admissions:  $45a + 25c$ .



**5. The correct answer is E.**

Natalie's regular pay rate is \$9.50 per hour. Her overtime pay is  $1\frac{1}{2} = \frac{3}{2} = 1.5$  times her normal pay.

That means her overtime pay rate is  $\$9.50 \cdot 1.5 = \$14.25$ .

She works 40 hours at her normal pay rate and 3 hours at her overtime pay rate.

$$\text{Total pay} = \$9.50 \cdot 40 + \$14.25 \cdot 3$$

$$\$9.50 \cdot 40 + \$14.25 \cdot 3 = \$422.75$$

**6. The correct answer is H.**

First, determine how many discounted tickets were purchased. If  $x$  is the number of tickets,

$$6x = 72, x = 12 \text{ tickets}$$

$$\text{James would have spent } \$72.00 + \$54.00 = \$126.00.$$

Divide this price by the number of tickets.

$$\frac{126}{12} = \$10.50$$

**7. The correct answer is E.**

Write out exactly what is said in the sentence.

"a number,  $y$ , cubed" gives  $y^3$ .

'is' gives equals.

"42 more than the product of 13 and  $y$ " gives  $42 + 13y$ .

$$\text{So, we have } y^3 = 42 + 13y.$$

**8. The correct answer is J.**

The perimeter formula is  $P = 2L + 2W$ .

The area formula is  $A = L \cdot W$ .

Plug in the known values into these two equations.

$$24 = 2L + 2W$$

$$35 = L \cdot W$$

We can solve this as a system of equations using the substitution method.

$$W = \frac{35}{L}$$

Substitute this value of  $W$  into the perimeter equation.

$$24 = 2L + 2 \cdot \frac{35}{L}$$

Multiply both sides by  $L$ .

# Section Four Reading





» INTRODUCTION TO THE ACT READING TEST

The ACT Reading test checks your ability to read.

**It's a reading comprehension test above all,** and no number of reading strategies can overcome poor reading skills.

If you have some time before your ACT test, I recommend that you *double down on your reading*.

Bookworms have a definite advantage on this section of the ACT.

- **If you aren't reading at a college level, you may find some segments of this test to be difficult.**
- **That being said, understanding the question types and following the pacing techniques contained in this boot camp can make a big difference in your score.**

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» **GOOGLE YOUR WAY TO A HIGHER SCORE**

- The most important question on the ACT Reading test is *where*?

**The answer to every single ACT Reading question is contained in the content of the passages.**

That means that you need to remember *where* things are.

You need to mentally index the location of information as you read so that you can “Google” where it is instantly when you need to find it.

Think of indexing as your **skim** and Googling as your **scan**.

Be your own search engine and watch your score increase.

*Where* is much more important than *who, what, when, why, or how*.

Skim through the passage before you read the questions, paying attention only to the **general idea of what is being said, who is saying it, and where everything is situated.**

Practice this during your mini-tests in this boot camp.

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## Section Four: Reading

3



3

### READING TEST

35 Minutes — 40 Questions

**DIRECTIONS:** There are four passages in this portion of the test. Following each passage you will be given a variety of questions. Choose the best answer to each question, then fill in its corresponding bubble on your answer sheet. Refer to the passages as needed.

#### Passage I

**PROSE FICTION:** This passage is adapted from the novel *The Brothers Karamazov* by Fyodor Dostoevsky, originally published as a serial by *The Russian Messenger* in November 1880.

Fyodor Pavlovitch Karamazov was a landowner well known in our district in his own day, and still remembered among us owing to his gloomy and tragic death, which happened thirteen years ago, and which I shall describe in its proper place. For the present I will only say that this “landowner”—for so we used to call him, although he hardly spent a day of his life on his own estate—was a strange type, a senseless type. But he was one of those senseless persons who are very well capable of looking after their worldly affairs and nothing else.

Fyodor Pavlovitch, for instance, began with next to nothing; his estate was of the smallest; he ran to dine at other men’s tables, and fastened on them as a toady, yet at his death it appeared that he had a hundred thousand roubles in hard cash. At the same time, he was all his life one of the most senseless, fantastical fellows in the whole district. It was not stupidity— the majority of these fantastical fellows are shrewd and intelligent enough— but just senselessness, and a peculiar national form of it.

Fyodor Pavlovitch’s first wife, Adelaida Ivanovna, belonged to a fairly rich and distinguished noble family. How it came to pass that an heiress, who was also a beauty, and moreover one of those vigorous intelligent girls, so common in this generation, but sometimes also to be found in the last, could have married such a worthless, puny weakling, I won’t attempt to explain.

Adelaida Ivanovna Miusov’s action was, no doubt, an echo of other people’s ideas, and was due to the irritation caused by lack of mental freedom. She wanted, perhaps, to show her feminine independence, to override class distinctions and the despotism of her family. And a pliable imagination persuaded her, we must suppose, that Fyodor Pavlovitch, in spite of his parasitic position, was one of the bold and ironical spirits of that progressive epoch, though he was, in fact, an ill-natured buffoon. What gave the marriage piquancy was that it was preceded by an elopement, and this greatly captivated Adelaida Ivanovna’s fancy. Fyodor Pavlovitch’s position at the time made him specially eager for any such enterprise. To attach himself to a good family

40 and obtain a dowry was an alluring prospect.

As for mutual love it did not exist apparently, either in the bride or in him, in spite of Adelaida Ivanovna’s beauty. This was, perhaps, a unique case of the kind in the life of Fyodor Pavlovitch, who was always of a voluptuous temper, and ready to run after any petticoat on the slightest encouragement. She seems to have been the only woman who made no particular appeal to his senses.

Immediately after the elopement Adelaida Ivanovna discerned in a flash that she had no feeling for her husband but contempt. The marriage accordingly showed itself in its true colors with extraordinary rapidity. Although the family accepted the event pretty quickly and apportioned the runaway bride her dowry, the husband and wife began to lead a most disorderly life, and there were everlasting scenes between them. The young wife showed incomparably more generosity and dignity than Fyodor Pavlovitch, who got hold of all her money up to twenty five thousand roubles as soon as she received it, so that those thousands were lost to her forever.

It is known for a fact that frequent fights took place between the husband and wife, but rumor had it that Fyodor Pavlovitch did not beat his wife but was beaten by her, for she was a hot-tempered, bold, dark-browed, impatient woman, possessed of remarkable physical strength. Finally, she left the house and ran away from Fyodor Pavlovitch with a destitute divinity student.

Immediately Fyodor Pavlovitch abandoned himself to orgies of drunkenness. In the intervals he used to drive all over the province, complaining tearfully to each and all of Adelaida Ivanovna’s having left him, going into details too disgraceful for a husband to mention in regard to his own married life. What seemed to gratify him and flatter his self-love most was to play the ridiculous part of the injured husband, and to parade his woes with embellishments.

“One would think that you’d got a promotion, Fyodor Pavlovitch, you seem so pleased in spite of your sorrow,” scoffers said to him. Many even added that he was glad of a new comic part in which to play the buffoon, and that it was simply to make it funnier that he pretended to be unaware of his ludicrous position.

**GO ON TO THE NEXT PAGE**

3



3

At last he succeeded in getting on the track of his runaway wife. The poor woman turned out to be in Petersburg, where she had gone with her divinity student, and where she had thrown herself into a life of complete emancipation. Fyodor Pavlovitch at once began bustling about, making preparations to go to Petersburg. He would perhaps have really gone; but having determined to do so he felt at once entitled to fortify himself for the journey by another bout of reckless drinking.

And just at that time his wife's family received the news of her death in Petersburg. She had died quite suddenly in a garret, according to one story, of typhus, or as another version had it, of starvation. Fyodor Pavlovitch was drunk when he heard of his wife's death, and the story is that he ran out into the street and began shouting with hands to Heaven: "Lord, now lettest Thou Thy servant depart in peace," but others say he wept without restraint like a little child, so much so that people were sorry for him, in spite of the repulsion he inspired.

It is quite possible that both versions were true, that he rejoiced at his release, and at the same time wept for her who released him. As a general rule, people, even the wicked, are much more naive and simple-hearted than we suppose. And we ourselves are, too.

- The point of view from which the passage is narrated is best described as that of:
  - a concerned friend.
  - a family member.
  - an amused observer.
  - Fyodor's second wife.
- The passage contains recurring references to all of the following qualities of Fyodor Pavlovitch EXCEPT his:
  - cruelty.
  - selfishness.
  - drunkenness.
  - buffoonery.
- The first two paragraphs (lines 1-19) establish all of the following about Fyodor Pavlovitch Karamazov EXCEPT that he was:
  - a landowner.
  - a senseless type.
  - rich at the time of his death.
  - married multiple times.
- It can reasonably be inferred from the passage that the narrator finds the story he is telling to be:
  - an especially tragic tale.
  - a rather humorous and droll account.
  - a cautionary tale well worth hearing.
  - an endearing bedtime parable.
- Based on the narrator's account, all of the following events occurred before Adelaida's leaving for Petersburg EXCEPT which of the following?
  - Fyodor "got hold of" twenty five thousand roubles from Adelaida.
  - Adelaida received a dowry from her family.
  - Fyodor dined at other men's tables.
  - Fyodor ran into the street and began shouting.
- According to the narrator, with whom did Adelaida Ivanovna run away to Petersburg?
  - A bohemian bourgeois
  - An aspiring artist
  - A destitute divinity student
  - An enchanting engineer
- When the narrator describes Fyodor as "always of a voluptuous temper, and ready to run after any petticoat on the slightest encouragement" (lines 44-46), he most likely means that:
  - Fyodor was quick to become violently angry.
  - Fyodor was easily influenced by others.
  - Fyodor had an eye for beautiful clothing.
  - Fyodor often chased after other women.
- Details in the passage most strongly suggest that the people meeting Fyodor Pavlovitch Karamazov found him:
  - congenial and bewildering.
  - abhorrent and preposterous.
  - delicate and amiable.
  - astringent and pensive.
- The narrator indicates that Adelaida discovered that she felt nothing for Fyodor other than:
  - contempt.
  - curiosity.
  - disbelief.
  - adoration.
- According to the passage, stories told that Adelaida Ivanovna perished either from starvation or:
  - typhus.
  - pneumonia.
  - influenza.
  - tuberculosis.

END OF TEST

STOP! DO NOT GO ON TO THE NEXT PAGE  
UNTIL TOLD TO DO SO.

## Section Four: Reading



Reading



### » FIND ALL OF THE WRONG ANSWERS

The ACT Reading questions and answer choices can be nearly as long as the passage they refer to.

This becomes a lot of text to keep straight in your head. It helps to eliminate answers that are wrong so that you have fewer answers to consider.

- When you read the question, if the answer does not immediately jump out at you, **get to work finding all of the wrong answers.**

Sometimes the correct answer does not seem exactly right, but *the wrong answers will obviously be wrong.*

You can save time by working hard to eliminate the bad answers first.

For example, let's take a look at question 11:

11. Which of the following assumptions would be most critical for a reader to accept in order to agree fully with the author's claims in the passage?

- A. The skills required to live in the wild can be very beneficial for war.
- B. The pen is a much more powerful weapon than the musket or the saber.
- C. Men with humbled beginnings can be capable of great things later in life.
- D. Not everyone in the colonies was interested in independence from the British.

In this question, we can eliminate choices B and D because, while they might possibly be true, they're not supported by the passage. Neither assumption contributes to the reader agreeing with the author's claims.

Choice A is definitely supported by the passage, but it is the wrong **scope**, since the question is about the entire passage and choice A only fits one small part of the passage.

**Eliminate answers that either contradict the passage or don't correctly fit with what is being asked.** You will then be left with fewer choices to decide between.





## » READ BETWEEN THE LINES

- The type of question that asks you to *read between the lines* is intended to penalize the test-taker who skips the passage and dives straight into the questions.

Let's examine one of the practice questions in order to see how this plays out on a real ACT test:

13. It can most reasonably be inferred from the passage that regarding the fathers of the American Revolution, the author's tone is:

- A. nationalistic.
- B. academic.
- C. depressed.
- D. optimistic.

Nowhere in this passage does it say, "Hi, I'm the narrator, and I'm writing with an academic tone."

However, we *can* read between the lines. We can figure out the *implied* concept by examining what has been *explicitly* said. We are looking for the meaning or theme *behind* what is said.

In order to answer this question type, you will need to have **skimmed** through the entire passage and gained a general grasp of the **main ideas of the passage** and **each paragraph**.

In question 13, we can eliminate several choices. An optimistic tone would be one that is hopeful and excited about the future. A depressed tone indicates that the narrator thinks there's not much hope for the future. There is nothing in the passage which indicates that the author is communicating in either of these tones.

A nationalistic tone would include the author expressing pride in his nation. Again, nothing in the passage supports this choice, so B is the best answer.

Remember that when you are reading between the lines, there have to be lines that you are reading through! A, C, and D are wrong because there is nothing in the passage that would lead you to believe that those answers are correct.

If you hadn't read the passage all the way through, you might be tempted to choose something other than B because you won't know enough about the content to be able to eliminate answers with certainty.

The key to answering these questions that have no exact evidence in the passage is to **eliminate the answers that are definitely incorrect**. Usually there will only be one left.

When reading between the lines, **make sure there is only one step of reasoning between what the passage says and what you conclude**.

## Section Four: Reading



Reading



### » ANSWER EXPLANATIONS FOR READING PRACTICE TEST

- 1. The correct answer is C.** The narrator primarily offers casual, humorous, or sarcastic remarks throughout the passage. There is no indication of genuine concern, and no details regarding the relationship the narrator had with Fyodor are provided.
- 2. The correct answer is F.** Fyodor is shown to be a foolish, self-centered character throughout the passage. Additionally, there are many references made to his drunkenness. However, he is never depicted as behaving with particular cruelty.
- 3. The correct answer is D.** Paragraphs one and two make no mention of Fyodor's marriages. It is not until the beginning of paragraph three that there is reference made to Fyodor's "first wife," which may imply that he had more than one marriage.
- 4. The correct answer is G.** Throughout the passage, the narrator utilizes language such as "ridiculous," "comic," and "ironical," indicating that he likely finds his story to be humorous and droll. There is no indication made of the story being cautionary or endearing. Additionally, although the narrator does use the word "tragic," it is apparent that the narrator is not deeply saddened by the "tragedy" he describes. "Droll" means that something is curious or unusual in a way that provokes dry amusement.
- 5. The correct answer is D.** It was not until after Adelaida left for Petersburg that Fyodor ran into the street shouting. That did not occur until Fyodor heard news of Adelaide's passing (lines 92-114).
- 6. The correct answer is H.** This answer can be found in lines 64-66: "Finally, she left the house and ran away from Fyodor Pavlovitch with a destitute divinity student."
- 7. The correct answer is D.** The word "voluptuous" means "attractive, sensual, pleasurable." A petticoat is a woman's garment. The statement is a creative way of implying that Fyodor chased after women.
- 8. The correct answer is G.** The word "abhorrent" means "dislikable," while the word "preposterous" means "foolish." From the other choices, "congenial" and "amiable" mean "friendly." The words "astringent" and "pensive" mean "harsh" and "thoughtful," respectively. The word "delicate" means "soft." While "bewildering" could be accurate, implying that Fyodor was a confusing character, it is unlikely that anyone would also find Fyodor congenial. The details of the passage most strongly support Fyodor being considered dislikable and foolish.
- 9. The correct answer is A.** This can be found directly from lines 48-50: "Immediately after the elopement Adelaida Ivanovna discerned in a flash that she had no feeling for her husband but contempt."
- 10. The correct answer is F.** This answer can be found in lines 89-92: "And just at that time his wife's family received the news of her death in Petersburg. She had died quite suddenly in a garret, according to one story, of typhus, or as another version had it, of starvation." According to the passage, Adelaida either perished from starvation or typhus.



11. **The correct answer is C.** Answers B and D, while possibly true, are not relevant to the passage. Answer A is a tempting choice, but it does not pertain to the entire passage. The narrator focuses on the beginnings of these historical figures, not on their skills during the Revolutionary War. Answer C is the correct choice, as it is one of the main premises for which the passage relies.
12. **The correct answer is J.** The statement in line 10, "His fortune was small" and the statement in line 12-13, "a pride which knew no shame in poverty," are integral to discerning that the passage is referring to Samuel Adam's inability to manage his money. The other choices do not fit the meaning of this segment of the passage.
13. **The correct answer is B.** The author withholds any opinion regarding the fathers of the American Revolution, making Answers C and D incorrect. Answer A can't be eliminated outright, but there is no evidence of a "nationalistic" (feeling of superiority of one's own country) tone given. Therefore, B is the best answer. "Academic" means "of, or relating to education and scholarship."
14. **The correct answer is F.** Answer H can be eliminated since there are no details about the specific process of scalping given in the passage. Answers G and J are somewhat correct, in that they describe what the author wrote, but they don't get to the heart of the segment's purpose. In other words, they don't determine why the author wrote those specific lines. Answer F is the best choice, since the author is showing how Putnam's experienced prepared him for the Revolutionary War that followed.
15. **The correct answer is B.** The tenth paragraph illustrates Washington's prowess as a soldier and leader as a young man, when "at twenty-two he fought his first battle, with forty men against five hundred and thirty, and won a victory, on its own small scale, as complete as that of Quebec" (lines 72-74). Horace Walpole is not mentioned until the following paragraph, which discusses a memoir of another man altogether, along with a quote from Washington.
16. **The correct answer is J.** While none of the answers pertain to each of the men mentioned in the passage, choices F, G, and H apply to at least some of them. However, there is never any mention of legal trouble in the colonies for any of the men spoken about in the passage.
17. **The correct answer is A.** This can be found in lines 86-89: "Such were the men who had been reluctantly drawn by their own sense of duty, and by the urgent appeals of friends and neighbors, into the front rank of a conflict which was none of their planning."
18. **The correct answer is H.** This can be found directly from lines 21-23: "...and worked at it after such a fashion that by thirty he was the leading lawyer of his colony..." This reveals that Jefferson dedicated himself to the practice of law.
19. **The correct answer is D.** Poetry, geometry, and philosophy are all mentioned as subjects of study for Nathanael Greene from lines 51-59. However, engineering is never mentioned.
20. **The correct answer is G.** This answer can be found in lines 77-79: "made a noise as far off as Europe, and gained for the young officer in London circles a tribute of hearty praise..." This clearly states that Washington was praised in London for his victory.
21. **The correct answer is C.** The words "tedious," "frustrating," and "confusing" all hold a negative connotation that is not reflected in the passage. Instead, the author speaks fondly of Emerson, his life, and his works. Therefore, answer C, "admirable," is the best choice. "Admirable" means "deserving respect or approval."

# Section Five Science







### » SIX OR SEVEN MINI-TESTS

Don't think of the ACT Science test as a single 40-question test.

Think of it as six or seven mini-tests taken in rapid succession.

**You must move through each mini-test in 5 minutes.**

That includes the time you need to read through the passage and to answer the questions that go with it.

- **If you refuse to spend more than 5 minutes on any one Science passage, you'll get through the entire test without running out of time.**

It's more important that you get through the entire test than that you spend a ton of time on each of the earlier questions.

Work to move as rapidly as you can through the mini-tests in this boot camp and take time to consider each question.

**If a question is too time-consuming, mark and move.** Each passage has questions that you can answer. You just have to give yourself enough time to consider them.

There are three types of passages on the science test:

- **Data Representation:** These passages focus mostly on reading graphs, tables, and other infographics. The questions on these passages almost never require you to read the passage. So, to finish in time, just look at the tables and graphs and then go straight to the questions. Never look back at the passage.
- **Research Summary:** These passages focus mostly on analyzing a set of experiments, which also include graphs, tables, and other infographics. The questions here only occasionally use the passage, so you should also skip the reading. However, sometimes you will need to reference back to the experiment. Don't be afraid to read if you think you need to.
- **Conflicting Viewpoints:** These will only show up once on the test. They focus on a group of theories and how they are similar or different. Even though these passages may have a graph or table, the reading portion is the most important part. So, you will have to read these to understand them. You can treat them the way you treat Reading passages: Skim and Scan.

4









4

**SCIENCE TEST**

35 Minutes — 40 Questions

**DIRECTIONS:** There are seven passages in this portion of the test. Following each passage you will be given a variety of questions. Choose the best answer to each question, then color its corresponding bubble on your answer sheet. Refer to the passages as needed. **Calculators are NOT allowed on this test.**

**Passage I**

Two measurements are taken of the water in a hot spring: the sulfur content and the temperature. Both of these measurements can be affected by water flow.

Sulfur content in hot springs is thought to have medicinal and therapeutic effects for those relaxing in the springs. Figure 1 shows the sulfur levels in parts per million (ppm) on 5 collection days at two different hot springs, Spring 1 and Spring 2.

Table 1 shows temperature in degrees Fahrenheit of the water in Spring 1 and Spring 2 on each of the 5 collection days. Table 2 shows the average water temperature in degrees Fahrenheit of Spring 1 and Spring 2 during this time. Figure 2 shows the water flow of each spring on the 5 collection days.

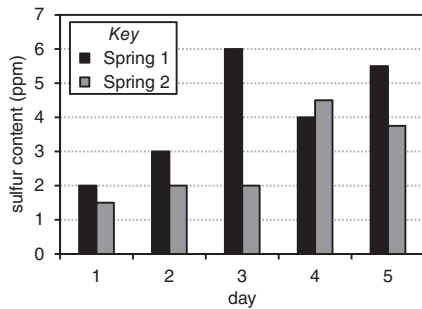


Figure 1

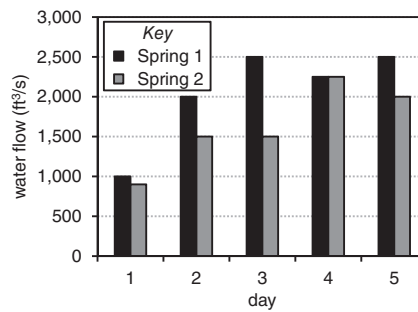


Figure 2

Table 1		
Day	Temperature	
	Spring 1	Spring 2
1	98.2	98.1
2	99.1	98.7
3	101.4	98.8
4	99.7	99.9
5	100.1	99.6

Table 2	
Spring	Average Temperature (°F)
Spring 1	99.7
Spring 2	99.0

GO ON TO THE NEXT PAGE

## Section Five: Science

4

4

- If a sulfur content of roughly 5 ppm is considered by professionals to be the most therapeutic for visitors, which of the following collection days at which spring would have been best to visit?
  - Day 3 at Spring 1
  - Day 5 at Spring 1
  - Day 1 at Spring 2
  - Day 2 at Spring 2
- Consider the average sulfur content and water flow at Springs 1 and 2 over the 5 collection days. Which spring had the higher average sulfur content and which spring had the higher water flow?

Sulfur Content / Water Flow

  - Spring 1 / Spring 1
  - Spring 1 / Spring 2
  - Spring 2 / Spring 1
  - Spring 2 / Spring 2
- According to the data, which of the following would be the most accurate description of the effect of water flow on sulfur content and temperature?
  - As water flow increases, sulfur content increases and temperature increases.
  - As water flow increases, sulfur content increases and temperature decreases.
  - As water flow increases, sulfur content decreases and temperature decreases.
  - As water flow increases, sulfur content decreases and temperature increases.
- Which of the following is likely to be the closest to the year-round average of the temperatures of Spring 1 and Spring 2 (in degrees Fahrenheit), assuming that the average temperatures listed in Table 2 hold true year-round?
  - 99.0°F
  - 99.1°F
  - 99.4°F
  - 99.7°F
- Suppose that on a particular day, the sulfur content of Spring 1 dropped to 1 ppm. Which of the following statements is most likely to be true?
  - The water flow rate that day was 1200 ft<sup>3</sup>/sec.
  - The water flow rate that day was 500 ft<sup>3</sup>/sec.
  - The temperature that day was 99.8°F.
  - The temperature that day was 101.3°F.

**END OF TEST**

**STOP! DO NOT GO ON TO THE NEXT PAGE  
UNTIL TOLD TO DO SO.**



**» CROSS OUT CONTRADICTIONS**

Look at how much text is covered in a science passage.

Now consider how much text appears in the questions.

**There is nearly as much to read in the questions as in the passage!**

Some questions may have as many as 20 lines of text.

Eliminate some of the text to make your life easier.

- **A good way to eliminate answers is to spot contradictions.**
- A **contradiction** is a statement that can't be true because of some fact already established.

Questions that have answers which follow a format similar to "Yes, because..." or "No, because..." typically contradict *one another*.

At least a couple of these answer choices will directly contradict *the passage*.

Eliminate these contradictory answer choices and you'll be left with a simpler decision.

For example:

3. According to the data, which of the following would be the most accurate description of the effect of water flow on sulfur content and temperature?
- A. As water flow increases, sulfur content increases and temperature increases.
  - B. As water flow increases, sulfur content increases and temperature decreases.
  - C. As water flow increases, sulfur content decreases and temperature decreases.
  - D. As water flow increases, sulfur content decreases and temperature increases.

We can clearly see in Figure 2 that water flow is higher on Day 5 than Day 1. We can also see that sulfur content is higher on Day 5 than Day 1. For that reason, choices C and D contradict the passage and so can be eliminated. Sulfur content did not decrease as water flow increased.

**Because one part of the answer contradicts the passage, none of it is true.**

Instead of trying to consider all of the passage and answer choices at once, break them down into their component parts and work on it from there.

## Section Five: Science



Science



### » SHOW ME THE DATA

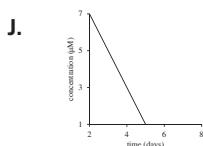
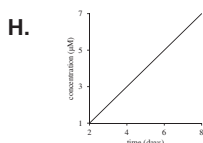
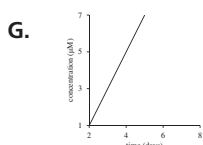
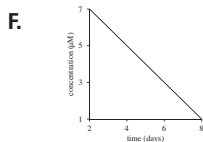
Here are a few tips to consider when your answer choices are all graphs:

You don't have to spend the time making your own detailed graph in order to get these questions right.

- **First look at the differences between the choices.** Perhaps two are increasing while two are decreasing.
- **Then look at the line characteristics.** Are they all straight? Does one or more curve? Do any have a steep drop-off after a point?
- **Eliminate the choices that CAN'T describe the answer to the question** because they are moving in the wrong direction, etc.
- Usually there will only be one choice left: *the right one!*

Let's look at an example question to see how this works.

6. Based on Table 1, which of the following graphs best shows how the volume of OH<sup>-</sup> produced by Metal Alloy 3 changed over time?



Since the OH<sup>-</sup> production increases from Day 2 to Day 8, we can eliminate choices F and J (they show a decreasing slope). Now we are left with two choices instead of four. The question then becomes whether we should choose a graph with a steep upward slope, or one with a more gradual slope. Since the OH<sup>-</sup> production only reaches 7 by Day 8, H is a more accurate graph and is the best answer choice.



## » THE NO-GRAPH PASSAGE

There will always be one passage which either has no graphic, or it has a graphic that does not help much in answering the questions. Save it for last.

**These passages compare two studies or two scientific opinions.**

Unlike the other science passages, the key to solving these questions is in the **passage** and not the infographics.

From the onset, try to understand the **similarities** and **differences** between the two opinions or studies described.

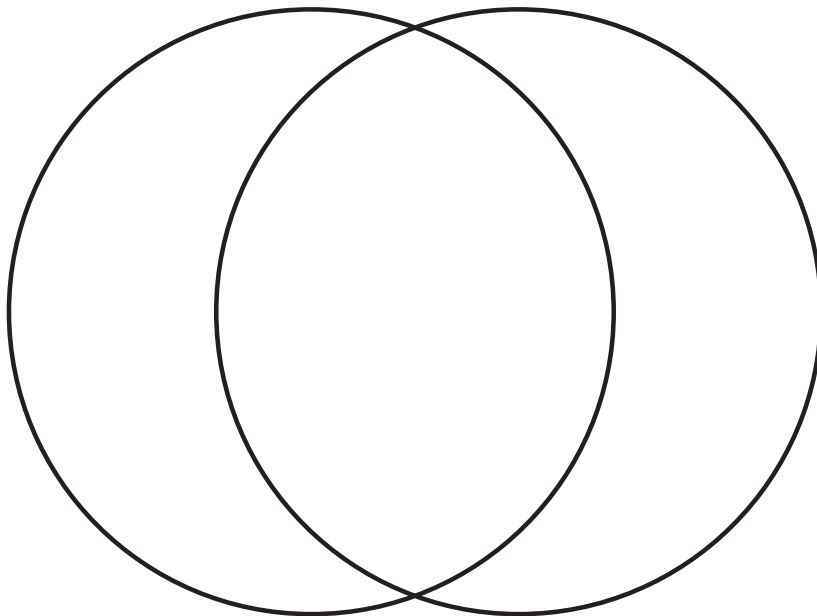
- **Most of the questions will concern comparison and contrast.**
- **Pay particular attention to how the scientists contradict one another.**

It can help to imagine that the two scientists are on a split screen arguing in a news show. Try reading a few lines of each scientist's information at a time, instead of all of Scientist A, then all of Scientist B. This will help clarify the difference between the two scientists' opinions.

Typically, the descriptions of each scientist's opinion follow the same sequence, so if you bounce back and forth you can easily compare the scientists' takes on the various subtopics in the passage.

Here is an exercise designed to help you dissect this question type:

Write down three similarities and three differences between the two scientists' opinions in Passage V.





### » ANSWER EXPLANATIONS FOR SCIENCE PRACTICE TEST

- 1. The correct answer is B.** View the data from Figure 1. The best answer is the Day and Spring that has sulfur content closest to 5 ppm. Of the answers listed, the one that appears to be closest to 5 ppm is Spring 1 on Day 5.
- 2. The correct answer is F.** According to Figures 1 and 2, of the two springs, Spring 1 has both the greater average sulfur content and the greater average water flow.
- 3. The correct answer is A.** Look at the data from Table 1 and Figures 1 and 2. On days with high water flow, temperature and sulfur content appear to increase. On days with low water flow, temperature and sulfur content appear to decrease. This means that when water flow increases, temperature and sulfur content increase, too.
- 4. The correct answer is H.** The question asks to find the year-round average temperature of the two springs. Because Spring 1 has an average temperature of 99.7 degrees and Spring 2 has an average temperature of 99.0 degrees, the average of the two should be roughly halfway between these two values. The closest answer is 99.4 degrees Fahrenheit.
- 5. The correct answer is B.** A sulfur content of 1 ppm should correspond to a relatively low water flow rate and temperature. We can estimate that the water flow and temperature levels should be lower than those corresponding to Spring 2's measurements on the first day (which had sulfur content levels of 1.5 ppm). Of the answers listed, the only relatively low value is a flow rate of 500 ft<sup>3</sup>/sec. 1,200 ft<sup>3</sup>/sec corresponds more closely to a sulfur content of 2 ppm. The temperatures 99.8°F and 101.3°F corresponded to sulfur contents of 4 and 6 ppm in this experiment, respectively. Therefore, a water flow rate of 500 ft<sup>3</sup>/sec is the best choice.
- 6. The correct answer is H.** On Day Zero, 0 mL of OH<sup>-</sup> will have been produced. By Day 8, however, 7 mL of OH<sup>-</sup> will have been produced. Therefore, choice H is the best answer. The other graphs either have negative slopes or grow too quickly.
- 7. The correct answer is B.** By Day 2, Metal Alloy 2 has produced 2 mL of OH<sup>-</sup> and by Day 4 it has produced 4 mL of OH<sup>-</sup>, an increase of 2 mL. By Day 6, there is an increase of 4 mL and by Day 8, an additional increase of 4 mL. It is most likely that, by Day 10, there will have been an additional increase between 4 and 8 mL of OH<sup>-</sup>, placing the total OH<sup>-</sup> produced between 12 and 22 mL.
- 8. The correct answer is H.** The difference between the mL OH<sup>-</sup> produced on Day 6 and the mL OH<sup>-</sup> produced on Day 4 is 86–42 = 44 mL. Therefore, 44 mL of OH<sup>-</sup> were produced between Day 4 and Day 6.
- 9. The correct answer is D.** Rusting produces hydroxide ions as a byproduct. So, lower hydroxide production implies that less rusting has occurred. Metal Alloy 1 with a cupferron coating produced the smallest amount of OH<sup>-</sup>.



10. **The correct answer is H.** On Day 4, Metal Alloy 1 had produced 42 mL of  $\text{OH}^-$ . According to Figure 1, Metal Alloy 1, when coated with cupferron, instead takes approximately 9 days to produce this amount of  $\text{OH}^-$ .
11. **The correct answer is D.** In all of the trials, the weight is placed closer to Meter A than Meter B. Since there is 1 m of length between meters A and B, the center of the weight would need to be placed exactly 0.5 m from the edge in order for the weight to be evenly distributed between the two meters.
12. **The correct answer is G.** According to the passage, Meters A and B are identical. In Study 1, we see that a 3.0 N weight causes the dial to rotate the same amount as the weight of one of the meters. This implies that Meters A and B both weigh 3.0 N.
13. **The correct answer is A.** As the weight is moved farther away from Meter B's edge and closer to Meter A's edge, the force of the weight becomes more distributed to Meter A than to Meter B. This causes the force exerted on Meter A to increase as the weight's distance from Meter B increases.
14. **The correct answer is H.** The meters were set to zero after the bridge was placed on top of them, which was done in order to discount the weight of the bridge from Trials 4-6. The weight of the bridge was discounted to produce meaningful results about the distribution of the force of the 6.0 N weight.
15. **The correct answer is D.** Meter B, facing upward would have the force of the 3.0 N weight and the force of Meter A exerted upon it, meaning that Meter B should read 6.0 N. Meter A, upside down, has no force exerted upon it by the weight nor by Meter A. However, it is exerting its own weight on its own scale, meaning that it would be reading 3.0 N.
16. **The correct answer is F.** Meter B reads 1.5 N during Trial 6 in Figure 4.
17. **The correct answer is D.** According to Table 1, the octane rating is equivalent to the percent of isooctane in the mixture. Because isooctane makes up 7/10 of the mixture, the octane rating of this mixture is 70.
18. **The correct answer is F.** Look at the data in Table 2. Each time rpm increases, EOR decreases. There is no increase in rpm that causes the EOR to increase.
19. **The correct answer is C.** From Figure 1, we see that varying amounts of TEL between 0 and 1 mL increases octane rating from 100 to 125, but additional TEL does not increase octane rating beyond 125. The mixture in question has an octane rating of 80. We can reasonably hypothesize that TEL will cause an 80 octane rating mixture to increase in octane rating, but it is unlikely that it will increase beyond an octane rating of 125.
20. **The correct answer is J.** The octane ratings for Fuels A and B for an engine rpm of 2,250 will most likely fall between the octane ratings of Fuels A and B at 2,000 and 2,500 rpm. Fuel A has an octane rating of 96.9 at 2,000 rpm and an octane rating of 95.2 at 2,500 rpm. Fuel B has an octane rating of 97.8 at 2,000 rpm and an octane rating of 96.7 at 2,500 rpm.

# Section Six Writing





## » TIPS FOR THE ACT WRITING TEST

The optional ACT Writing test asks you to write a sophisticated argument within a 40-minute time limit.

Unless you've specifically rehearsed this test, you may have never written in this format before.

It's important to be familiar with the rubric that your essay readers will use to score you.

By using your planning time to the fullest, you can make sure that you adopt a strong *position*, consider *context*, *perspectives*, and *complications* in your argument, and write a *focused, organized, well-ordered* essay.

We don't have enough time in the boot camp to prepare you for the ACT Writing test, but if you are planning on taking the Writing test, a good place to start is the *Preparing for the ACT* booklet. In this booklet, ACT lays out exactly what it's looking for and provides a demonstration essay for each score level.

Your writing test will be scored by two trained readers. Each reader will score your essay on a scale of 1–6 in four separate domains: 1) Ideas and Analysis, 2) Development and Support, 3) Organization, and 4) Language Use and Conventions. Each domain has a total score of 2–12, and together these are calculated into your writing score, ranging from 1–36.

Your writing score does **not** affect your composite ACT score or the scores on the multiple-choice tests. However, it does affect your English Language Arts score, which is the average of your English, reading, and writing scores, also scaled from 1–36.

In the next few pages, we'll provide you with three practice writing prompts. These are for use at home, not during the boot camp. Only practice with these after you've studied the writing portion of *Preparing for the ACT*.

**Section Seven**



**Boot Camp**



**Wrap-up**



### » BEFORE YOUR TEST DATE

- Get enough sleep the entire week before the test.
- Eat well, especially on the days leading up to the test.
- Bring a snack with you on test day. Protein bars work great. Avoid sugar and junk food. A bottle of water is a good suggestion.
- If you can't do without caffeine, allow about one month before test time to minimize your intake.
- It is important to feel as well as possible both mentally and physically on the day of the exam.
- Reduce distractions! Stay away from social media for 24 hours before the test starts.

Notes

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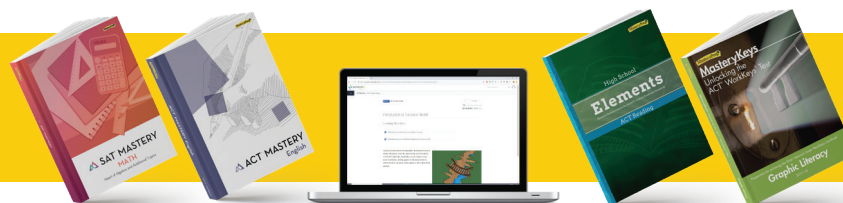
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