

ACT Guide, Edition 1.0

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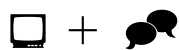
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ACT Guide, Edition 1.0

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Section 1

Preface

Welcome, students, parents, and teachers! This book is intended to help students prepare for the ACT, a test created and administered by ACT, Inc.

Many colleges and universities in the United States require the ACT as part of the application process. It's our goal to help you do your best on the ACT by offering you tips, tricks, and plenty of practice. This book will help you turn this challenging admissions requirement into an opportunity to demonstrate your skills and preparation to colleges.

We'll provide you with a comprehensive breakdown of the ACT and proven test-taking strategies for the different sections and question types. There are chapters about each of the ACT's test sections, as well as multiple practice exams. You'll find:

- Key test-taking strategies
- A breakdown and detailed review of the content of each section
- 3 full-length practice tests and more than 500 practice problems and drills
- Answer keys at the back of this book
- Full answer explanations and scoring online

The first key to succeeding on the ACT is knowing the exam, so the rest of this chapter provides details about its structure, format, and timing along with key strategies to use in all sections. Chapters 2–6 delve into the question types and content you will encounter in each section. We recommend working through these chapters, taking the practice exams in Chapter 7, and then reviewing any challenging material.

Visit our website for additional resources, including review of foundational concepts, extra practice, answer explanations, and interactive scoring and personal reports. You'll also find information about upcoming tests, tutoring services, prep classes, and other tips to help you succeed. Happy studies!



For additional resources, please visit [ivyglobal.com/study](https://www.ivyglobal.com/study).

What is the ACT?

Part 1

Introduction

The ACT is a standardized examination designed to measure students' abilities in four areas: English, Math, Reading, and Science. There is also an optional Writing component. Many American colleges and universities require ACT scores for admission and consider these scores an important factor in assessing applications.

Why do colleges care about the ACT? Since grading standards vary from one high school to another, it can be hard for colleges to know whether two applicants with the same grades are performing at the same level. Therefore, having everyone take the same standardized test gives colleges another metric for comparing students' abilities.

Of course, ACT scores aren't the only things that colleges consider when assessing applicants. Your high school grades, course selection, extracurricular activities, recommendation letters, and application essays are all factors that colleges will use to decide whether you are a good fit for their school. However, in today's highly competitive admissions process, a solid ACT score may provide you with the extra edge needed to be successful.

What's New?

ACT, Inc. continues to implement changes to the ACT content. Changes for 2015 included the addition of paired passages to the Reading Test, the consolidation of the Science Test to 6 passages from 7 passages (with the same number of questions), and a large-scale redesign of the Writing Test. This book reflects all of these changes.

Changes for fall of 2016 include expanding and redesigning ACT, Inc.'s reporting tools, and replacing test subscores with reporting categories. We will discuss these changes in detail in the following section.

The ACT in Detail

Part 2

Understanding the format and scoring of the new ACT will help you pick appropriate strategies and know what to expect on test day.

The Format

The ACT is 2 hours and 55 minutes long (plus 40 minutes for the optional essay). It is composed of the following sections:

- English Test (45 minutes, 75 questions)
- Math Test (60 minutes, 60 questions)
- Reading Test (35 minutes, 40 questions)
- Science Test (35 minutes, 40 questions)
- Optional Writing Test/Essay section (40 minutes)

The ACT also includes two breaks, one approximately 10 minutes long between the Math and Reading Tests, and one approximately 5 minutes long between the Science Test and the optional Writing Test.

The Scoring System

The ACT uses scaled test scores. **Scaled scores** are calculated by taking your raw test scores and adjusting them to a score from 1 to 36 according to a chart that the ACT develops. These charts are exam-specific, and so may vary slightly from one exam to the next. There are four scaled scores, one for each test: the English Test, the Math Test, the Reading Test, and the Science Test. Together, the average of these four scaled scores generates the ACT **composite score**, which is also scored from 1 to 36.

If you take the Writing Test, you will receive an additional scaled score from 1 to 36. This optional component is scored separately and does not affect your scores in other areas, or your overall ACT composite score.

The ACT also provides you with **subscores**, which are subject- or area-specific results. These do not affect your scaled test scores, but rather provide institutions with more detailed information about your exam results. Subscores for three of the four main tests (the Science Test does not have subscores) are each calculated from 1 to 18. The English test is subdivided into Usage/Mechanics and Rhetorical Skills. The Math Test is subdivided into Pre-Algebra/Elementary Algebra, Algebra/Coordinate Geometry, and

Plane Geometry/Trigonometry. The Reading Test is subdivided into Social Studies/Sciences and Arts/Literature.

The optional Writing Test is scored on a scale from 1 to 36. The Writing Test also reports four subscores: Ideas and Analysis, Development and Support, Organization, and Language Use and Conventions. Each area score is reported on a scale from 2 to 12.

The ACT includes two additional scores. The first is the Science, Technology, Engineering, and Mathematics or STEM score. The second is for English Language Arts or ELA, and is only included if the optional Writing Test is taken. These scores are each calculated from 1 to 36. The following table summarizes the scoring for the ACT:

ACT Scoring	
Raw Test Scores	<ul style="list-style-type: none"> • English Test (75) • Math Test (60) • Reading Test (40) • Science Test (40) • Optional Writing Test (36), changing to (48) after September 2016
Scaled Scores (1 to 36)	<ul style="list-style-type: none"> • English Test • Math Test • Reading Test • Science Test • Optional Writing Test (not included in the ACT exam final subscore)
Composite ACT Score (1 to 36)	<ul style="list-style-type: none"> • The average of the English, Math, Reading, and Science scaled scores
Subscores (1 to 18—before September 2016)	<ul style="list-style-type: none"> • English: Usage/Mechanics and Rhetorical Skills • Math: Pre-Algebra/Elementary Algebra, Algebra/Coordinate Geometry, and Plane Geometry/Trigonometry • Reading: Social Studies/Sciences and Arts/Literature • Writing: Ideas and Analysis, Development and Support, Organization, and Language Use and Conventions (2 to 12)

The Scoring System After September 2016

ACT, Inc. has announced that it will be altering scoring of the ACT exam after September of 2016. The scaled scores of the test will not change, but the current subscore system will be replaced by reporting categories. The reporting categories will be defined as shown in the table below:

ACT Reporting Categories	
English	<ul style="list-style-type: none">• Production of Writing• Knowledge of Language• Conventions of Standard English
Mathematics	<ul style="list-style-type: none">• Preparing for Higher Math• Number and Quantity• Algebra• Functions• Geometry• Statistics and Probability• Integrating Essential Skills• Modeling
Reading	<ul style="list-style-type: none">• Key Ideas and Details• Craft and Structure• Integration of Knowledge and Ideas
Science	<ul style="list-style-type: none">• Interpretation of Data• Scientific Investigation• Evaluation of Models, Inferences, and Experimental Results

Taking the ACT

Part 3

The ACT is administered only on specific dates at designated testing locations worldwide throughout the academic year. These standard dates fall in February, April, May, June, September, October, and December, with some exceptions. You can see the upcoming dates in your location on the ACT, Inc. website: www.act.org.

How Do I Register?

The easiest way to sign up for the exam is on the ACT website. You'll need to fill out a personal profile form, including your high school course information, and upload a recognizable photo, which will be included on your admission ticket.

You can also register by mail. To do this, ask your school counselor for the ACT Register-by-Mail packet or request this packet online at www.act.org.

When you register, you can sign up for your preferred date and location. However, testing centers often run out of room, so make sure you sign up early in order to reserve your place! There is also a cut-off for registrations approximately one month before the test date; after this point you'll need to contact the ACT to see if late registration or standby testing is an option.

When Should I Take the ACT?

Typically, students take the ACT during 11th grade or the beginning of 12th grade. You should plan to take the exam when you feel prepared, keeping in mind that you may wish to take the exam more than once and that you must take the exam in time to provide colleges with your scores.

Almost all schools will accept scores through December of your 12th grade year. After December, it really depends on the school to which you are applying. If you are planning to apply for Early Admission to any school, you'll need to take the test by November of 12th grade at the very latest.

Choosing an initial exam date several months ahead of the last available date that works for your application schedule will give you the opportunity to take the exam again if you need to. If you take the ACT in December, April, or June, certain centers may allow you to order a Test Information Release (TIR). If you order a TIR, you will receive a copy of the multiple choice test questions used to determine your score, a list of your answers, and the answer key. This may be very helpful in guiding your studies if you decide to take the exam more than once.

How Many Times Can I Take the ACT?

ACT, Inc. has no limits on how many times you can take the ACT. Many students take the exam two or three times to ensure their scores represent the best they can do. However, we don't recommend taking the exam more than two or three times, because you'll get fatigued and your score will start to plateau. Prepare to do your best each time you take the test, and you shouldn't have to re-take it too many times.

How Do I Send My Score to Colleges?

When you sign up for the ACT, you can select which schools you'd like to receive your scores. You can also do this after taking the ACT by logging onto your account on the ACT website. If you have taken the ACT more than once, the ACT "Score Choice" program allows you to choose which test results you would like to report to schools. You can't "divide up" the scores of different tests—all sections of the ACT from a single test date must be sent together.

However, certain schools don't participate in the "Score Choice" program. These schools request that applicants send the results of every ACT test they have taken. Even so, most schools have a policy of only considering your highest scores. Some schools will take your best overall score from a single administration while others will mix and match your best section scores from your entire test history, creating a new composite "Superscore." You can see how your prospective schools consider your scores by visiting their admissions websites.

How Do I Improve My Score?

The key to raising your ACT score is to adopt a long-term strategy. Score improvement on the ACT occurs only after consistently practicing and learning concepts over a long period of time. Early on in your high school career, focus on building vocabulary and improving essay-writing skills. Read as much as you can beyond your school curriculum—materials like novels, biographies, and current-event magazines. Keep up with the math taught in your classes and ask questions if you need help.

In addition to keeping up with the fundamental concepts and skills tested on the ACT, you'll need to learn how to approach the specific types of questions included on the exam. In the next section, we'll talk about some general test-taking strategies that will help you tackle the format of the ACT as a whole. Then, you can work through Chapters 2–6 to learn specific strategies for each part of the test. In Chapter 7, you'll be able to apply these strategies to three full-length practice tests. If you only have a short time to prepare, you can start with the practice tests to identify the areas you most need to focus on.

With enough practice, you'll be prepared to score your personal best on test day! Let's get started.

Section 2

Test-Taking Basics

In this section, we will help you prepare for the ACT with effective ways to approach studying and test taking. We will cover:

- Tips to keep in mind to help you as you approach the ACT exam
- How to create a study schedule, with a sample template to help you get started
- Important things to remember on the day of the exam

These essential strategies will help you before, during, and after the exam, providing you with key information so that you are prepared on the test day for what it is like to take the ACT.

How to Approach the ACT Exam

Part 1

Now that you're familiar with the ACT, here are a few key tips for taking the test:

- **Know the Test:** Because it is a standardized exam, the format of the ACT is the same every time it's administered. By knowing the time limit, number of questions, and directions for each section, you'll save time by skipping over the directions, and can relax knowing there won't be any surprises!
- **Manage Your Time:** Unlike a normal hour-long high school test, the ACT runs between three and four hours long—so you'll want to practice building your stamina! Doing timed practice tests or timed sections will help you learn to stay focused for the duration of the test. The Key Strategies section of this chapter discusses pacing for the ACT and how you can make the most of the time given to you.
- **Guess Effectively:** There is no downside to guessing! You should always guess on any questions you cannot answer with certainty. The Predicting and Process of Elimination strategies, found in the Key Strategies section of this chapter, will help you to make informed guesses. You may, however, not have time to attempt every question in a section. Because of this, it is a good idea to choose a letter beforehand that you will always use when guessing. This will save you from spending time deciding what answer choice to pick, and makes it easier to bubble in guesses.
- **Write and Bubble Clearly:** All of your work on the ACT, with the exception of the Writing Test, will be graded entirely by a machine. Make sure to fill in each bubble on your answer sheet completely using only a No. 2 pencil. Before beginning each section, double check that you are working on the corresponding section of the answer sheet.

For the Writing Test, remember to write your essay only in the lines of the lined pages provided in your answer sheet—your readers won't be able to see anything you write outside of these margins! Even though you are writing quickly, write as legibly as you can. Your readers need to be able to read your handwriting in order to give you points. Don't write any part of your essay in your test booklet, though you can use this space for jotting down notes or an outline for your essay.

Create a Study Schedule

Part 2

To prepare to do your best on test day, you'll need to organize your time leading up to the exam. First, you'll need to assess your strengths and weaknesses in order to figure out *what* to study. Then, you'll need to organize *how* you will study in order to make the best use of your time before your test date.

Identify Your Strengths and Weaknesses

To determine your areas of strength and weakness and to get an idea of which concepts you need to review, work through some practice questions. You can try out the questions for the English, Math, Reading, Science, and Writing tests in Chapters 2–6 of this book, or you can take one of the full-length practice tests in Chapter 7. Circle questions that you find more challenging.

After completing a section or a test, check your answers against the correct answers. Write down how many questions you missed, and review these questions. Also take a look at the topics or types of questions you found most difficult. What was challenging for you? What did you feel good about? Did you get questions wrong because you made an avoidable error, or did you get questions wrong because you did not know how to solve them? Reflecting on these questions will help you determine your individual strengths and weaknesses, and will help you decide what to focus on before your test date.

Plan Your Study Time

After determining your areas of strength and weakness, create a study plan and schedule for your ACT preparation. Work backward from your test date until you arrive at your starting point for studying. The number of weeks you have until your exam will determine how much time you can (and should) devote to your preparation. Make sure you leave enough time to review and practice each concept you'd like to improve—remember, practice is essential!

To begin, try using this sample study plan as a model for your own personalized study schedule.

My test date is: _____.

I have _____ weeks to study. I will make an effort to study _____ minutes/hours every day/week, and I will set aside extra time on _____ to take timed sections.

I plan to take _____ full-length tests between now and my test date. I will study for _____ weeks and then take a practice test. My goal for this test is to improve my score in the following specific areas:

If I do not make this goal, then I will spend more time studying.

Study Schedule				
Date	Plan of Study	Time Allotted	Goal Reached?	Further Action
Jan 1	Review 10 vocabulary words and quadratic equations	1 hr	Yes, I know these 10 words and feel comfortable with quadratic equations.	
Jan 3	Review the next 10 vocabulary words and parts of speech	1 hr	I know these 10 words, but I'm still a bit shaky on parts of speech.	I'll review this again tomorrow and ask my English teacher for advice.

Be Prepared on Test Day

Part 3

After you've prepared by reviewing and practicing each area you need to improve, you'll be ready for test day! Here are some tips to make sure you can do your best.

Before the Test

On the night before the test, review only lightly, if at all. You can review a few concepts you find challenging, but don't try to learn anything new. Pick out what you are going to wear to the test—try wearing layers in case the exam room is hotter or colder than you expect. Organize everything you need to bring. Know where the test center is located and how long it will take to get there. Have a nutritious meal and get plenty of rest!

On the morning of the exam, let your adrenaline kick in naturally. Eat a good breakfast and stay hydrated; your body needs fuel to help you perform. Allow enough time for traveling to the test center, and be sure to follow your admissions ticket for directions on how early you should arrive.

Remember to bring the following items with you:

Test Day Checklist

- Admission ticket
- Approved photo ID
- No. 2 pencils and erasers
- Calculator with new batteries and back-up batteries
- Non-beeping watch
- Healthy snacks and a water bottle
- Directions to the test center and instructions for finding the entrance

Make sure you set your alarm and plan a time to leave that allows for delays. You need to be on time, or you can't take the test!

During the Test

Stay focused. Keep your mind on the task at hand, which should be nothing but the question in front of you. If you find your mind wandering, pull your focus back to the test. Don't look around the room to compare your progress to that of your neighbors. Everyone works at their own pace, and you have no idea which particular part of the section your neighbors are working on.

Remember the test-taking strategies that you've practiced. Read and think carefully. Be sure to read each question in its entirety, and consider each answer choice. Work at a good, even pace, and keep moving. Keep an eye on your time throughout each section (and make sure your watch's time matches the proctor's clock). Frequently double check that you are bubbling answers in the correct section of your answer sheet.

Remember to utilize the 5 Ps and other relevant strategies that you'll learn in the following sections. Use your test booklet to cross out answers that you know are wrong, work out math problems, and annotate reading passages. Answer the easy questions first, and make a guess for those you're not sure of. Be sure to mark questions where you guessed so that you can quickly turn back to them after you finish all the other questions in the section.

You cannot overestimate the importance of a positive outlook during the test. You have spent months preparing for the ACT—now it is time to be confident in the work you have done and in the knowledge you have acquired. Stay confident. Trust yourself, your abilities, and all of your preparation. Walk into the test room with every expectation that you will do well and remember: you are smart and accomplished!

After the Test

First things first: give yourself a pat on the back! You have just completed a huge step in your educational career. Take some time to relax and unwind with friends or family.

Your score report should become available to you about two weeks after you take the test. This score report will contain your composite score, test scores, and subscores. While these scores are important, remember to keep things in perspective. College applications will also entail submitting essays, letters of recommendation, high school grades, an activities list, and more. Even if you feel that your ACT scores are not an accurate reflection of your capabilities, you have many opportunities to shine in the other areas of your applications.

Remember that you can also retake the ACT. After you take the ACT the first time, you can pinpoint which areas you need to practice more. Students often improve their scores after taking the test a second time.

Either way, congratulate yourself on completing this challenge!

Section 3

Key Strategies

In addition to learning the material tested on the ACT, to perform your best you must also use the best strategies for tackling the questions. Below are five key techniques that will help you greatly on the test: the **5 Ps**. They can be used across the test to help you choose answers confidently and improve your score. The strategies are:

- Pencil on Paper
- Prediction
- Process of Elimination
- Plugging in Options
- Pacing

Pencil on Paper

Part 1

As you take the ACT, you don't want to passively read the information presented to you, but rather engage with and understand it. We call this the **Pencil on Paper** strategy. The best way to do this is to be an **active reader**, meaning to pay attention and engage while you are reading a passage, question, or answer option. Doing this will not only allow you to understand the information you will be tested on, but will also save you from reviewing the same information multiple times. One way of doing this is to use your pencil to **mark up** or add information in your test booklet.

You can use active reading in the English Test to mark up or underline elements of a passage that you believe will be important, or to identify and underline key parts of a sentence in questions about grammar or sentence structure. Consider the following example:

Example	
<p><u>Standard safety features</u>, like the seatbelt in your car, <u>is</u> a good example of how consumer protection has advanced over time. These required safety features once cost extra—when they were available at all.</p>	<p>A. NO CHANGE B. are C. am D. was</p>

This question focuses on subject-verb agreement, a concept we'll discuss further in Chapter 3, Section 2. To correctly answer this type of question, you need to identify the subject of a verb. The ACT will often try to trick you by placing other phrases between the subject and the verb, but by consciously hunting for the subject and underlining it in the sentence you can avoid being tricked by other phrases. In this example, the correct answer is (B), "are," because that is the only verb that agrees with the plural subject "standard safety features," which has been marked up using a wavy line.

Some English passages will also seem to be missing information or have sentences that are in the wrong place in the paragraph. If you can identify and mark these types of errors while you're reading, selecting the correct answer choice will be much easier!

In the Math Test, you can use active reading techniques by underlining what the question is asking you to find. This will help you determine what is important to solve each problem, so that you can focus on key information rather than being distracted by details.

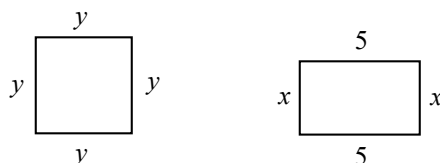
You can also actively use your pencil by drawing a diagram for questions where no diagram is provided. ACT Math Test diagrams are not necessarily drawn to scale, so redrawing them may help you visualize a challenging problem, even if a diagram is provided.

Example

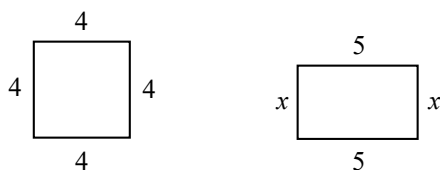
A square and a rectangle have the same perimeter. The area of the square is 16 and the rectangle has a length of 5. What is the area of the rectangle?

- F. 3
- G. 6
- H. 15
- J. 30
- K. 60

To begin this problem, you will first want to draw a diagram of the square and rectangle with the given information and with the question's unknowns:



Next, you want to make sure that you have all of the question's information on your diagram. The question says that the area of the square is 16. You know that $y^2 =$ the square's area; thus y , one side of the square, is equal to 4. $4y$, the perimeter of the square, is 16, and you know that the perimeter of the rectangle is also 16. Add the units for the square to your drawing:



Drawing a diagram like this can help you more easily find the correct answer. We'll finish solving this problem when we talk about the Process of Elimination strategy later in this section.

In the Reading Test, like the English Test, you can be an active reader by using your pencil to mark up passages as you read. This will help you stay focused, understand what you read, and make it easy to find ideas in the passage when you refer back to the text. We will discuss active reading further in Chapter 4, Section 1.

Here’s how a reading passage might look once it has been marked up. Aim to circle or underline two to three **main ideas** per paragraph that relate to the **5 Ws**: “who,” “what,” “where,” “when,” and “why.”

Example	
<p>Social Science: This passage is adapted from the article “Paid Sick Days and Physicians at Work: Ancient Egyptians Had State-Supported Health Care” by Anne Austin (©2015 by Anne Austin).</p> <p>We might think of <u>state-supported health care</u> as an innovation of the 20th century, but it’s a <u>much older tradition</u> than that. In fact, <u>texts from a village</u> dating back</p> <p>5 to Egypt’s New Kingdom period, about 3,100–3,600 years ago, suggest that in <u>ancient Egypt</u> there was a <u>state-supported health care network</u> designed to ensure that</p> <p>10 <u>workers making the king’s tomb were productive</u>.</p> <p>The <u>village of Deir el-Medina</u> was built for the <u>workmen</u> who made the royal tombs during the <u>New Kingdom (1550–1070 BCE)</u>. During this period, kings were buried in the</p> <p>15 Valley of the Kings in a series of rock-cut tombs, not the enormous pyramids of the past.</p>	<p>The village was <u>purposely built close enough</u> to the royal tomb to ensure that <u>workers could hike there</u> on a weekly basis. These</p> <p>20 workmen were not what we normally picture when we think about the men who built and decorated ancient Egyptian royal tombs—they were <u>highly skilled craftsmen</u>. The workmen at Deir el-Medina were given a</p> <p>25 variety of amenities afforded only to those with the craftsmanship and knowledge necessary to work on something as important as the royal tomb. The village was allotted <u>extra support</u>: the Egyptian state</p> <p>30 paid them <u>monthly wages</u> in the form of grain and provided them with <u>housing and servants</u> to assist with tasks like washing laundry, grinding grain, and porting water. <u>Their families lived with them in the village</u>,</p> <p>35 and their wives and children could also benefit from these provisions from the state.</p>

You can use the same approach for the Science Test. On the Science Test, you aren’t looking for repeated words or for the 5 Ws, but instead for the **3 Ds**: details, differences, and definitions. Normally, you only need to look at the figures and their labels, axes, keys, and notes, in order to find and circle these things. However, in the Conflicting Viewpoints passage, you’ll need to put your pencil on the paper for longer and do some actual reading.

As you read each viewpoint, circle its main idea. Then, note key differences between the viewpoints. Finally, write down the relationships that the viewpoint explains. In the example below, both viewpoints are marked up with circles and relationships—more on this in Chapter 5.

Example	
<p>Over the past 200 years, the temperature of the Earth has exponentially increased in a process many scientists call global warming. Global warming has an effect on all ecosystems through the destruction and creation of habitats and through exceeding the heat tolerance of different organisms.</p>	<p>One organism influenced by global warming is the polar bear (<i>Ursus maritimus</i>). Polar bears typically reside in or near the Arctic Circle, but have recently been spotted far south of their natural habitat. Two scientists discuss the appearance of polar bears in southern regions and its relation to global warming.</p>

↑T = ↓SI =
 ↓SH = South
 (This is the relationship, which explains the viewpoint: as temperature increases, sea ice decreases, seals hunted decrease, and polar bears move south.)

Scientist 1

Polar bears primarily prey on seals that live in the Arctic Ocean. Polar bears can swim for extended periods of time, but they need dry ground where they can rest and breathe. Typically, polar bears have used sea ice to rest and breathe while they hunt seals, but global warming has caused sea ice in the Arctic Ocean to melt. Without sea ice, polar bears cannot hunt seals, and lose their primary food source. They migrate southward, away from the Ocean and melting ice, in search of more food.

Scientist 2

Over thousands of years, polar bears have evolved translucent fur, which scatters and reflects visible light. This gives their fur the appearance of being white, which helps to camouflage them when they hunt for their prey in snow and ice. However, global warming has melted the snow and ice in much of the bears' habitats. Against the new habitat of grass and brush, the polar bears' white-looking fur is bright and obvious. No longer camouflaged, the bears are unable to successfully hunt for prey. They migrate northward in search of whiter habitats in which to hunt while camouflaged.

↑T = ↓S&I = ↓C =
 North (This is the relationship, which explains the viewpoint: as temperature increases, snow and ice decrease, camouflage decreases, and polar bears move north.)

If you're taking the Writing Test, you can use the Pencil on Paper strategy to organize your thoughts and plan your essay. You should take some time before actually writing your essay to identify the key facts in the prompt that you will focus on when building your argument, make brief notes about your preliminary thoughts on the perspectives presented, and sketch an outline.

Consider the following example of how you might mark up an essay prompt:

Commercials in School

Schools distribute various type of media: textbooks, yearbooks, school newspapers, and TV and radio content. Many of these types of content include advertisements and commercially sponsored content, and some are compulsory. For example, students may be required to watch a school news program at the beginning of each school day, and some of those programs may include commercial content. Including advertisements in school media provides a source of revenue for schools or providers of free content to schools, and is a standard practice in many other forms of media. However, critics argue that it is exploitative to require students to view advertisements, or that promoting commercial content in school media is contrary to the values of education. Is it appropriate for schools to raise revenue by selling advertisements in school media, or to promote free media that includes commercial content—or should schools be ad-free zones?

Only exploit if comp.-- just don't make it comp.?

Our paper sells ads— use example?

Which values?

→ Yes!
Read and carefully consider these perspectives. Each suggests a particular way of thinking about commercials in school.

Perspective 1

By providing advertisers with the opportunity to share relevant content with students, schools can raise revenues that allow them to provide better services to students. It's a win-win situation.

Perspective 2

Schools exist to provide students with an education, not to sell captive audiences to advertisers. School media has an ethical obligation to be educational--not commercial.

Perspective 3

Students have to view ads all the time, so learning how to evaluate them is important. True! School media should both include ads and encourage students to evaluate them critically.

Seriously?

Misses point: **COMPULSORY** is not a "win"

Not realistic!

Closest to my view, but no compulsory ads

By underlining items that are important to your own analysis and sketching out some of your thoughts as you read, you can begin to develop your thesis and select some areas for discussion. We'll talk about outlining your essay in Chapter 6.

Section 1

Approaching the English Test

The ACT English Test is a test of writing and editing skills. You will be presented with a series of passages written in a few different styles, and about various subjects. Questions in this section will test your knowledge of grammar rules and the elements of effective writing. Some questions will prompt you to correct errors of Usage and Mechanics in the areas of Punctuation, Grammar, and Sentence Structure, which we'll discuss in Sections 2–4. You'll also be prompted to improve or answer questions about the passages to demonstrate Rhetorical Skills in the areas of Writing Strategy, Organization, and Style, which we'll discuss in Sections 5–7.

In this section, we're going to explain the basic format of the English Test and how it is scored, explain how to interpret the questions and provide some examples, and tell you how you can best plan your overall approach to the English Test.

- The Basics
- Reading the English Test
- Planning your Approach

While the passages and questions will be new every time, the overall structure of the ACT English Test will always be the same. By becoming familiar with the ACT English Test now, you'll be well-prepared on test day!

The Basics

Part 1

Before we discuss strategies for tackling the test, we want to tell you about the format of the exam and how it is scored. Learning these basic facts will help you to understand the strategies that we recommend, and avoid surprises on test day.

ACT English Test by the Numbers

You will have 45 minutes to complete the ACT English Test, which is made up of five passages. Each passage will also be accompanied by 15 questions, for a total of 75 multiple choice questions.

The English Test		
Time	45 minutes	~9 minutes per passage
Text	5 passages	300–350 words per passage
Questions	75 questions	15 questions per passage

45 minutes to work through five passages averages out to nine minutes per passage. It also works out to about 36 seconds per question.

That may seem daunting, but the reality is that you'll probably answer a lot of the questions in just a few seconds and spend most of your time on a handful of the more challenging questions. Later in this section, we will discuss some strategies for reading the passages effectively and approaching the questions within the time limit.

There are two basic question types on the ACT English Test. The ACT is renaming the categories on score reports for September 2016 and later, but they still contain the same types of questions. We'll talk more about these question types later in this section.

Usage and Mechanics (40 Questions)		
Punctuation	10	~13% of test
Grammar	12	~16% of test
Sentence Structure	18	~24% of test

Rhetorical Skills (35 Questions)		
Writing Strategy	12	~16% of test
Organization	11	~15% of test
Style	12	~16% of test

Each of the Rhetorical Skills question types appears about as frequently as any other, but Sentence Structure is the most common question type in Usage and Mechanics and on the exam overall. That means that understanding Sentence Structure questions is key to doing well on the ACT.

Scoring

You will receive a couple of different scores based on your answers on the English Test. You will receive an English Test score on a scale of 1–36. You’ll also receive a percentile score, which shows what percentage of students received a lower score than you. For example: if you scored in the 55th percentile, you did better than 55% of students.

The English portion of your score report will look a bit like this:

	Score	U.S. Rank
English	20	51%

The English score is based on your answers to all of the questions on the English Test. You have a raw score that isn’t reported, which is equal to the number of questions you answer correctly. This is converted to a scaled score on a scale of 1–36. The scaled score is the score that is reported on your score report. The scale for the exam is set by the performance of all of the students taking the exam, so the conversion of a specific raw score to a specific scaled score varies from one exam to another—but usually not by very much.

The Passages

The passages on the English Test will be similar to passages you have read in the classroom. They will be 300–350 words in length, broken up into paragraphs. That’s a relatively short length for a passage: there are 333 words just on this page. However, because of the way that the ACT is formatted, each passage will be spread out across two or three pages. The passages will not be ordered by subject or difficulty.

The ACT English Test also asks you to demonstrate skills that you might not have been tested on in English class. Rather than just composing sentences without errors, you'll need to actually correct errors in a longer passage.

The English Test also focuses on very different skills than the Reading Test does. It will still pay to read passages carefully on the English Test, but you won't be asked detailed questions about their implicit or stated meanings as you would in a reading comprehension quiz or the ACT Reading Test. ACT English passages are also shorter than those on the Reading Test, and generally easier to read and understand.

ACT passages will cover a variety of subject areas and a variety of topics, and can be written in a variety of styles:

Subject Area	Example Topics
Science	Topics can include the natural sciences: anatomy, astronomy, biology, botany, chemistry, ecology, geology, medicine, meteorology, microbiology, natural history, physiology, physics, technology, and zoology.
History	Topics can range from ancient history to global contemporary history.
Humanities	Topics can include architecture, art, dance, ethics, film, language, literary criticism, music, philosophy, radio, television, and theater.
Narrative	Topics can include a wide range of personal narratives including memoirs, biographies, profiles, and anecdotes.

Style	Description
Anecdote	Anecdotes are personal stories. These will generally be written in the first-person ("I," "me," etc.), and can be fairly informal.
Nonfiction Narrative	Some of the stories on the ACT will be a little more formal in tone, and might be written in the third-person ("he," "she," etc.), while still describing a series of events.
Informative	Most of the ACT passages will fall into this fairly broad category. These will usually be written in the third-person, but less formal ones may include second-person ("you") components. The most formal passages on the ACT will fall into this category, but the category can also include some less formal writing.

In general, your approach to passages on different subjects should be similar. However, you'll need to pay attention to the style and tone of each passage in order to correctly answer certain question types. We'll discuss those question types further in the Style section of this chapter.

The Questions

The English Test is not like most classroom grammar or vocabulary tests. You won't be asked direct questions about grammatical rules, such as "What tense do you use for completed actions?" You also won't be quizzed on the meanings of obscure words.

Passages in the English Test will contain errors. The questions in this section mainly ask you to select revisions for selected portions of each passage to correct errors, or improve the writing of the passage. A few questions will ask about the likely effects of certain changes, or about the writing of the passage as a whole. Some of the questions will also ask you to add or remove information on the basis of its relevance or appropriateness, but you won't have to fact-check the information. The mistakes in the passages are grammatical, stylistic, and logical—not factual.

Some types of questions will appear only at the end of a passage. These questions ask you to think about the entire passage, so they can be more challenging than some other question types. Other than these, questions are not ordered by difficulty.

You will be asked questions about Punctuation, Grammar, Sentence Structure, Writing Strategy, Organization, and Style. The rest of this chapter will introduce you to all of these concepts in more detail, and will teach you strategies for approaching each question type.

You can work through the practice questions and exams in this book to figure out which question types are the most challenging for you, and focus on studying those question types. If you have room for improvement in more than one subject area, you can focus first on improving in the areas that make up more of the test.

Section 1

Approaching the Math Test

The ACT Math Test tests your ability to understand and apply math theory to solve a diverse array of problems. These concepts and skills provide the foundations for the math you will learn in college and use in everyday life. The ACT groups these concepts into six major areas on the Math Test:

- Pre-Algebra
- Elementary Algebra
- Intermediate Algebra
- Coordinate Geometry
- Plane Geometry
- Trigonometry

In this chapter, we will review all of the topics that you may see on the Math Test. We will also practice strategies for solving different types of questions and for tackling difficult or unfamiliar problems. But first, let's take a look at the format of the Math Test.

The Basics

Part 1

The Math Test is one continuous section with 60 questions. You have 60 minutes to complete the section, or an average of 1 minute per question. You can use your calculator for all of the Math Test.

This might not seem like a lot of time, but reviewing and practicing the concepts in this chapter will help you apply your knowledge quickly and efficiently on test day! We'll talk about time management and other test-taking strategies in Part 2 of this section.

By the Numbers

There are six main content areas covered by the Math Test. Here is a breakdown of the topics and number of questions in each content area:

Content Area	Topics Covered	Number of Questions
Pre-Algebra	Foundational concepts essential to algebra, such as number properties, the manipulation of fractions, factoring, and probability	14
Elementary Algebra	Solving single linear and quadratic equations, and manipulating higher order expressions	10
Intermediate Algebra	Advanced concepts in algebra, including inequalities, systems of equations, matrices, and complex numbers	9
Coordinate Geometry	Graphing algebraic functions, as well as points and basic shapes in the standard (x,y) plane	9
Plane Geometry	Using the properties of angles, lines, and shapes in two and three dimensions to solve problems	14
Trigonometry	Solving problems that require you to calculate, apply, and graph trigonometric ratios of sine, cosine, tangent, secant, cosecant, and cotangent	4
	Total	60

Note that the number of questions in any given area may vary, but this provides a good estimate of what you will most likely see on the Math Test. Sections 2–7 cover the topics in each of these content areas in depth. Fundamental math skills that apply to all of these topics are covered online.



For a fundamental review, visit ivyglobal.com/study.

Questions

The Math Test consists of multiple choice questions, each with five answer options. Each test contains two **problem sets**, which are two to four questions that are based on the same given information. These problem sets usually occur around the midpoint of the Math Test.

Questions on the Math Test are ordered by difficulty, which means that the test tends to emphasize Pre-Algebra and Elementary Algebra questions towards the beginning, Intermediate Algebra, Coordinate and Plane Geometry towards the middle, and Trigonometry towards the end of the test. While what you may perceive as difficult may vary, the ACT tends to define subject difficulty in this manner.

Some of the questions are written solely in text, while for others the equations will be given to you directly. You will also see graphs, charts, and diagrams in some of the problems and answer choices. Math Test questions require you to apply reasoning and critical thinking skills in order to analyze situations, create mathematical models, and find relevant solutions.

Scoring

Each question is worth one point and there is no penalty for guessing. The number of points you receive on each section contributes to your raw score, which is scaled to give you your final math score from 1–36.

The six content areas mentioned before are divided into three scoring categories for the Math Test: Pre- and Elementary Algebra (24 questions), Intermediate Algebra and Coordinate Geometry (18 questions), and Plane Geometry and Trigonometry (18 questions). While these categories will be included as subscores for all ACT tests taken before September of 2016, schools will mostly pay attention to your overall score. However, looking at these categories may help you to identify the areas that need further study as you prepare for the Math Test.

In the next section, we'll discuss the different question types on the Math Test and learn strategies for approaching and solving each type of question. The rest of the chapter provides an in-depth review of the topics covered on the Math Test. To practice applying your knowledge, make sure to do the practice exercises for each section. Let's get started!

Section 1

Approaching the Reading Test

The ACT Reading Test is a test of advanced reading comprehension. You will be presented with a variety of reading passages and asked questions about each one. While the passages and questions will be new every time, the structure of the ACT Reading Test will always be the same. By learning about it now, you can make sure you won't encounter any surprises on test day!

The following section will cover:

- The Basics
- Reading a Passage
- Question Strategies
- Additional Resources

The Basics

Part 1

You will have 35 minutes to complete the ACT Reading Test, which is composed of three individual passages and one passage pair. Each passage or pair will be between 700 and 900 words, or about one and a half pages. Each passage or pair of passages will have 10 questions, for a total of 40 questions.

ACT Reading Test by the Numbers

- 35 minutes to complete section
- Three single passages and one passage pair
- 700–900 words per passage or pair for a total of 2800–3600 words
- 10 questions per passage or pair for a total of 40 questions

Scoring

Each question is worth one point.

The number of questions you answer correctly will be scaled to give you a Reading Test score from 1–36.

All passages on the ACT Reading Test will come from previously published sources, and may represent a variety of tones and styles. The passages will contain all of the information you need to answer the related questions; you will never need to rely on any prior knowledge about the material. The following chart shows the specific passage types that you will see on each Reading Test.

Passage Breakdown

Passage Type	Topics and Passage Sources
Prose Fiction	A literary narrative based on passages from short stories, novels, memoirs, and personal essays
Social Science	Topics based on articles and essays taken from disciplines such as anthropology, archaeology, biography, business, economics, education, geography, history, political science, psychology, and sociology
Humanities	Subject matter drawn from essays, including memoirs and personal essays, from content areas including architecture, art, dance, ethics, film, language, literary criticism, music, philosophy, radio, television, and theater
Natural Science	Subjects in the natural sciences, including anatomy, astronomy, biology, botany, chemistry, ecology, geology, medicine, meteorology, microbiology, natural history, physiology, physics, technology, and zoology

The passages will always be presented in the above order. They are not presented in order of difficulty. If you know that you consistently perform better on certain types of passages than on others, you can choose to read the passages out of order, tackling the ones you are most comfortable with first. Remember the importance of Pacing strategies when working through the test!

Questions

The questions associated with the passages will assess whether or not you understand information and ideas in the text, and are able to analyze the author's argument and methods. When you encounter a passage pair, you will also be tested on your ability to synthesize, compare, and contrast information from the two passages.

The questions will generally not be presented in a consistent order, either in terms of question types or in terms of difficulty. You'll notice that every question will have a **question stem**, that is, the text of the question itself that appears before the four answer choices. Questions may be about structure, main ideas, the author's method, and more. You may also be asked specific questions about the meaning of a particular word or phrase, or about details or specific lines referenced in the question.

The rest of this chapter will introduce you to all of these concepts in more detail, and will teach you strategies for approaching the passages and correctly answering questions. Reading comprehension is something you can improve with practice; take your time to work through all of the lessons and exercises in this chapter and you will see yourself getting better!

Additional Resources

We have many additional online resources that will help you improve your reading and vocabulary.

The ACT's Reading Test will require you to understand and occasionally identify the meanings of various words in context. Understanding this vocabulary will help you not only on test day, but also in your future studies as you continue to engage with academic and other high-level writing.

One way to improve your vocabulary is to learn about word parts. Roots carry the basic meaning of a word, prefixes come before roots and alter their meaning, and suffixes come after roots and alter either their meaning or their part of speech. Because English is related to French, German, Spanish, Latin, and Greek, many of these word parts will look familiar if you know one of these languages. We have included lists that contain some of the most common English roots, prefixes, and suffixes in our supplementary materials online.

Further, you can improve your reading speed and comprehension by reading material that challenges you every day. You can find a reading list organized by grade and subject matter, also in our supplementary materials online.

You won't be asked about your knowledge of individual words on test day, but rather will need to understand words used in context. Thus, while we provide some additional vocabulary words online, don't spend hours memorizing long lists of vocabulary words! Instead, focus on building your vocabulary naturally through reading and reviewing the common roots, prefixes, and suffixes, which will help improve your passage comprehension and help you choose the best answers on the ACT Reading Test.



For additional resources, please visit [ivyglobal.com/study](https://www.ivyglobal.com/study).

Section 1

Approaching the Science Test

The Science Test is similar to the Reading Test, with the addition of some simple Math concepts and a collection of scientific graphics. This section will cover the format, content, and tactics you'll need to deal with every aspect of the Science Test. By the time you're done reading it, you'll have the knowledge and strategies necessary to get a great score.

This section will cover the following:

- Passage Types
- Question Types
- Variables and Relationships
- General Strategy

About the Science Test

The Science Test is the last section of the ACT, which means that there's a good chance test fatigue will set in. You may be tired, bored, or inattentive, and your score may suffer if you don't have strategies to combat these things (see the Key Strategies chapter).

The Science Test is also different from anything you've seen before. It's not like a high school science test, where you've reviewed the material and practiced beforehand; it's unfamiliar, and this is one of the single biggest sources of stress and low scores. It's not like "real" science either—it doesn't reward innovation, critical thinking, or imagination.

Instead, the Science Test rewards pattern recognition, matching, and attention to detail. The passages contain information, and the questions ask you to find it. Simple concepts—direct and inverse relationships, controls and other variables—are presented in odd and complicated ways. The passages are often hard to read, filled with unfamiliar terminology, complex figures, repetition, and symbols. This section will help you sort it all out.

The Science Test expects you to call upon outside scientific knowledge in four or fewer questions. Brushing up on your first two years of high school science is more than enough to prepare you for these few questions. The rest of the questions can be answered based entirely on the passage.

The Science Test by the Numbers

- 35 minutes to complete test
- 40 questions per test
- 6 passages per test
- 6–7 questions per passage
- 5 minutes 50 seconds per passage

All this information can be distilled into one important Pacing checkpoint: when you finish Passage III and all its questions, 15–18 minutes should have elapsed. Where your checkpoint falls in that range will depend on how you feel and on what passages you've completed.

If the passages you completed were simpler or were primarily Data Representation passages, your checkpoint may be closer to 15 minutes. If the first three passages were dense or included a Conflicting Viewpoints passage, your checkpoint may be closer to 18 minutes. After enough practice, you'll know exactly what your personal checkpoint should be, and you won't have to check your watch at the end of every passage. The checkpoint will indicate your pace and tell you if you have to speed up or slow down.

Section 1

Approaching the Writing Test

The ACT Writing Test tests your writing and analytical skills, specifically your ability to express judgments by taking a position on an issue. It also tests your skill in reading a short prompt, and planning and writing an essay in response to that prompt. In this section, we'll cover the following topics:

- The Basics
- Essay Scoring
- Strategies for the Writing Test

Unlike the rest of the ACT, the Writing Test is optional. If you take the Writing Test, it will be administered after the four multiple choice tests. While the Writing Test will use a different prompt for each exam, the overall structure of the Writing Test will always be the same. Becoming familiar with the format and scoring of the Writing Test now will help you prepare for test day!



English Test

45 Minutes—75 Questions

DIRECTIONS: In the five passages that follow, certain words and phrases are underlined and numbered. In the right-hand column, you will find alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is best, choose “NO CHANGE.” In some cases, you will find in the right-hand column a question about the underlined part. You are to choose the best answer to the question.

You will also find questions about a section of the passage, or about the passage as a whole. These questions do not refer to an underlined portion of the passage, but rather are identified by a number or numbers in a box.

For each question, choose the alternative you consider best and fill in the corresponding circle on your answer document. Read each passage through once before you begin to answer the questions that accompany it. For many of the questions, you must read several sentences beyond the question to determine the answer. Be sure that you have read far enough ahead each time you choose an alternative.

Passage I

Idia: The First Queen Mother of Benin

[1]

When the king of Benin, oba Ozolua, died in the late fifteenth century, the kingdom was thrown into a state of chaos as his two sons battled for the monarchy. One son, Esigie, controlled the kingdom’s political and cultural center, Benin City while his brother, Ahruaran ruled in the equally important city of Udo.

[2]

In addition to dividing the country, the war led to the conquest of Benin’s northern territories by the neighboring Igala peoples. Faced with the destruction of the country, Esigie made an unprecedented move, he turned to his mother, Idia, to help him gain control by using her mystical powers and providing political counsel.

1. A. NO CHANGE
B. century, as the kingdom
C. century, when the kingdom
D. century. The kingdom
2. F. NO CHANGE
G. Benin City, while his brother, Ahruaran
H. Benin City while his brother, Ahruaran,
J. Benin City, while his brother, Ahruaran,
3. A. NO CHANGE
B. unprecedented move he turned
C. unprecedented move; he turned
D. unprecedented move and he turned

GO ON TO THE NEXT PAGE.

Mathematics Test

60 Minutes—60 Questions

DIRECTIONS: For each problem, solve for the correct answer, select your choice and fill in the corresponding bubble on your answer document.

Some problems may take a longer time to solve, but do not take too much time on any single problem. Solve the easier questions first, then return to the harder questions in the remaining time for this test.

A calculator is allowed on this test. While you may be able to solve some problems without a calculator, you

are allowed to use a calculator for all of the problems on this test.

Note: Unless otherwise directed, all of the following statements are considered correct.

- All drawn figures are NOT necessarily drawn to scale.
- All geometric figures are in a plane.
- The word *line*, when used, is the same as a straight line.
- The word *average*, when used, is the same as arithmetic mean.

1. In scientific notation, $0.00000729 = ?$

A. 7.29×10^{-8}
 B. 7.29×10^{-6}
 C. 7.29×10^{-5}
 D. 7.29×10^{-4}
 E. 0.729×10^{-3}

2. The average of 2 numbers is 184. The smaller of the 2 numbers is 170. What is the value of the larger number?

F. 192
 G. 195
 H. 198
 J. 199
 K. 201

3. What is the greatest common factor of 72, 88, and 120?

A. 2
 B. 3
 C. 4
 D. 6
 E. 8

4. If $6z + 2 = 5 - 11z$, then $z = ?$

F. $\frac{3}{17}$
 G. $\frac{17}{3}$
 H. 3
 J. $\frac{7}{17}$
 K. $-\frac{7}{5}$

5. The rectangular field shown below has an area of 320,000 square feet. If the field is 400 feet wide, as shown below, what is the perimeter of the field?

A. 800 feet
 B. 1,200 feet
 C. 1,600 feet
 D. 1,800 feet
 E. 2,400 feet



6. Which of the following ratios is equivalent to $\frac{2}{5} : \frac{1}{8}$?

F. 1:20
 G. 2:5
 H. 8:5
 J. 16:5
 K. 5:16

GO ON TO THE NEXT PAGE.

7. If $f(x) = (a^4b^3)^{2x+1}$, what is the value of $f(2)$?

- A. a^9b^8
- B. $a^{10}b^9$
- C. $a^{15}b^{20}$
- D. $a^{20}b^{15}$
- E. $a^{24}b^{18}$

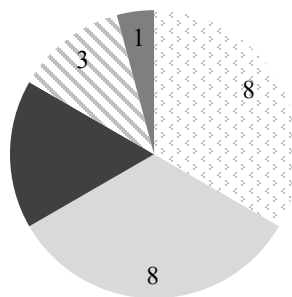
8. A recipe for 5 cupcakes calls for $1\frac{1}{4}$ cups of flour. A bag of flour contains $7\frac{1}{2}$ cups. How many cupcakes can be made with 1 bag of flour?

- F. 5
- G. 6
- H. 7
- J. 25
- K. 30

9. If n is a positive integer, which of the following *must* be odd?

- A. n
- B. $n + 1$
- C. $2n$
- D. $2n + 1$
- E. $3n$

10. A student creates a circle graph to help plan her homework time over the course of 24 hours, as shown below. If she sleeps for 8 hours, which of the following is the closest angle measure for the time she spends on homework?



- F. 15°
 - G. 30°
 - H. 60°
 - J. 70°
 - K. 105°
- Sleep
 School
 Homework
 Babysit
 Internet

11. For all x , $(x - 5)(x + 2) = ?$

- A. $x^2 + 3x - 10$
- B. $x^2 - 3x - 10$
- C. $x^2 - 3x + 10$
- D. $x^2 - 10$
- E. $x^2 - 3x$

12. If a is half of b , and c is 3 times a , how many times greater than b is c ?

- F. $\frac{1}{2}$
- G. $\frac{2}{3}$
- H. $\frac{3}{2}$
- J. 2
- K. 3

13. If $|x - 5| = 3$ and $4x + 1 = y$, which of the following is a possible value for y ?

- A. 42
- B. 9
- C. 0
- D. -9
- E. -33

14. A blueprint depicts the floor of a treehouse. The blueprint is a rectangle measuring 6 inches by 10 inches, and the floor's longer side measures 15 feet. To the nearest foot, what is the length of the shorter side of the floor?

- F. 4
- G. 6
- H. 9
- J. 10
- K. 15

GO ON TO THE NEXT PAGE.

Reading Test

35 Minutes—40 Questions

DIRECTIONS: There are multiple passages in this test. Each one is accompanied by several questions. After reading a passage, choose the best answer to every question and fill in the matching circle on your scoring sheet. You can refer back to the passages as often as necessary.

Passage I

Prose Fiction: This passage is adapted from the short story “Arrangement” by Rob Morris (©2003 by Rob Morris).

After they moved the fold-out sofa into the den and the old bed into the guest room, the men from the furniture store carried two new beds into the bedroom and arranged them side by side, leaving a corridor the width of the night table between them. She tipped the men and sent them away, and now it seemed to her that their heavy steps had stirred up a layer of dust.

She was sure the house needed cleaning, and she set to work with a rag and a can of furniture polish.

She felt industrious, the way she felt on the first mild day in April. In fact it was January. Snow had drifted into their driveway. Window panes made tiny cracking noises. She bent over the dining room table, wiping firmly in small circles. Even from a low angle, even with the sallow afternoon light illuminating the table’s surface, she had to admit that the table—and every other surface in the room—was remarkably clean.

And yet this fact made her work seem all the more necessary. The silver picture frame on the side table cried out to be held and buffed and set down at a jaunty angle. Her hands begged to wipe the candlesticks. The weight of the sugar bowl, the crust around its rim, the curve of the rocking chair’s legs—the house gathered itself up and called to her, and she responded, moving with a sure step from room to room.

In the den she discovered that her husband’s files were poorly kept, and she applied herself to the task of straightening them. But as she opened first one folder and then another, their contents seemed alien and brittle. There were ancient carbons the color of bad teeth, knickknacks and gifts from students and secretaries. A frog made from green felt dropped from a folder and into her lap. The frog had bubble eyes with black discs for pupils, and they made a weak rattle. The weight of his

life at the school pressed down on her shoulders. She had pulled out a file drawer, and now she saw it stretch before her like tracks laid across a prairie—all that distance covered with files, all those files filled with material that she could not improve. She tried to shut the door as she stood, and in her hurry she caught the tip of a finger in the drawer’s path.

She considered the benefit of yelling. It might release the hot thumping pulse in her finger, which she now held to her side.

She yelled. It was an orderly yell, and it offered no relief. Her finger still pulsed. She convinced herself that any swelling or injury would be less important than finishing the project she had started, so she picked up her rag and began again.

Now evening hung outside—the drifts were the color of light from television—and she went upstairs to start in on their bedroom. She imagined a traveler passing the house on foot and noticing the square of yellow light—their bedroom window—set against the dusk. He would gaze at her industry as if it were a fire.

She stood and squared herself to look at the beds. She gave them the face she would give an errant child. The mattresses had the sheen and smell of satin. The beds needed sheets, so she went to the hall linen closet to find them.

The closet needed straightening too, and she set it to rights while looking for single sheets. She refolded towels and stacked them neatly on one shelf. Washcloths were folded into squares and set on top of pillowcases, which looked as smooth and fine as party gloves. Sheets were held out and examined, then folded and set in separate stacks—one for top sheets, one for bottom sheets. All of the sheets were made for king-size beds.

“Well,” she said, shutting the closet door and holding two sets of sheets against her chest, “I guess we’ll just have to look a little baggy.”

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As she readied herself to spread out the first bottom sheet, a door clicked shut downstairs.

She set the sheets down on one bed, still folded.

75 Her husband wore soft-soled shoes, so she could hardly hear him come up the stairs. But she knew his pace well enough to count it off; she knew the exact moment when his head would poke around the corner of the stairwell. And there it was. And there, too, was the
80 sigh he let out as he pulled himself to the top step, exaggerating the effort.

“Oh, the banker’s wife, the banker’s wife,” he said. “You could have been the banker’s wife.” He said this facing the bathroom door, so she saw him in profile, like
85 a president on a coin. Now he turned to her and said, “Instead, you got me. How does it feel? How does it feel to be the principal’s wife?”

He looked into the room. “Ah hah,” he said. He pressed past her and slid into the room.

90 “Now this is something new.”

- The passage focuses mainly on:
 - the protagonist’s last-minute efforts to prepare the spare room for the arrival of an unexpected guest.
 - the conflicted feelings the protagonist experiences when her husband changes careers.
 - the protagonist’s tenseness and consequent desire to clean and rearrange her house.
 - the protagonist’s anguish about the cold and foreboding winter weather.
- As used in line 45, the word “orderly” most nearly means:
 - commanding.
 - clinical.
 - neat.
 - restrained.
- The passage implies that there are only king-sized sheets in the closet because:
 - the protagonist and her husband cannot afford other sizes of sheets.
 - before the time of the story, there were only ever king-sized beds in the house.
 - the family who lives in the house is forgetful and a little disorganized.
 - the furniture store made a mistake and sent the wrong size of sheets.
- Compared with the way she felt while cleaning the rest of the house, when the protagonist tries to clean up her husband’s files, she feels:
 - more welcome.
 - less comfortable.
 - more confident.
 - less rushed.
- In the context of the passage, lines 34-35 most likely indicate that the protagonist:
 - resents how often she had to help her husband finish his schoolwork when he was younger.
 - is fatigued after spending so much time arranging her husband’s files.
 - feels dejected that she is unable to engage with her husband’s work life.
 - has sympathy for the student who gave her husband the frog as a gift.
- Based on the passage, the protagonist would most likely describe her husband as:
 - unsentimental and distant.
 - genial and compassionate.
 - stately and dignified.
 - world-weary and hopeless.
- The third paragraph (lines 10-17) primarily serves to:
 - depict the desolate weather, which suggests the coldness of the characters.
 - clarify that the protagonist’s wish to clean is because of her inner emotional state, not the house’s untidiness.
 - describe the protagonist’s superior technique, which reveals an important aspect of her personality.
 - establish a timetable of events that foreshadows a later tragedy.
- Which of the following questions is NOT answered by information in the passage?
 - How long have the husband and protagonist been married?
 - What is the protagonist’s husband’s occupation?
 - Does the husband expect to see the new single beds?
 - Does the protagonist stop cleaning after she hurts her finger?
- As used in the passage in line 55, the word “industry” most nearly means:
 - machinery.
 - business.
 - skilled trade.
 - work.

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Passage V

Researchers studied how the Saharan silver ant, *Cataglyphis bombycina*, tolerates high temperatures using small hairs that cover its body. The hairs reflect light and emit heat, which allows *C. bombycina* to survive in a temperature range uninhabitable by many other species of ants.

Study 1

Researchers collected 200 Saharan silver ants from sand dunes in Morocco and anesthetized the ants through exposure to carbon dioxide (CO₂), a non-toxic gas. Next, they removed the hairs on 100 of the ants' abdomens using a scalpel, and divided the ants into two groups: one of 100 shaved ants, and one of 100 unshaved ants. Each group of ants was placed in a gray well plate (a plate containing a matrix of round depressions), one ant per well. Each ant was then illuminated by 9 wavelengths of light for 90 seconds using a fitted bulb. The reflectance—percent of light reflected—of each ant at each wavelength was measured using a spectrophotometer, and the results for the two groups were averaged. Researchers recorded these results in Table 1.

Wavelength (nm)	Reflectance of Shaved Ants	Reflectance of Unshaved Ants
400	2.2%	5.9%
450	2.6%	5.5%
500	2.9%	5.5%
550	3.3%	5.5%
600	3.4%	5.3%
650	3.6%	5.1%
700	3.8%	5.0%
750	3.9%	5.0%
800	4.0%	4.9%

Study 2

Using the same gray well plates, researchers exposed the abdomens of both the 100 shaved Saharan silver ants and the 100 unshaved ants from Study 1 to light from a solar simulator for 90 seconds, and measured the ants' internal temperature using a digital thermometer. The internal temperatures of each group were averaged and recorded in Figure 2.

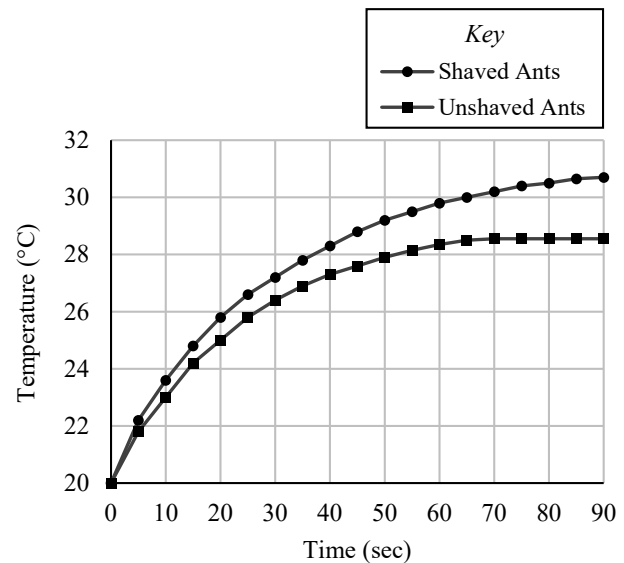


Figure 1

Table and figures adapted from Quentin Willot et al., "Total Internal Reflection Accounts for the Bright Color of the Saharan Silver Ant." ©2016 by PLOS One. 10.1371/journal.pone.0152325.

28. Based on Table 1, which of the following groups has the highest reflectance?
- F. Shaved ants exposed to light of 500 nm
 - G. Shaved ants exposed to light of 750 nm
 - H. Unshaved ants exposed to light of 500 nm
 - J. Unshaved ants exposed to light of 750 nm
29. What was the dependent variable in Study 1?
- A. Heat emission
 - B. Amount of hair
 - C. Wavelength
 - D. Reflectance
30. Suppose that an additional trial in Study 1 had been performed using a wavelength of 350 nm. The reflectance of shaved ants would most likely be:
- F. less than 1.7%.
 - G. between 1.7 and 2.2%.
 - H. between 2.2 and 2.7%.
 - J. greater than 2.7%.

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31. The researchers had predicted that shaving ants' hair would make them more likely to be affected by a temperature increase. Are the results of Study 2 consistent with this prediction?
- A. No; the internal temperature of shaved ants rose more rapidly than the internal temperature of unshaved ants.
 - B. No; the internal temperature of unshaved ants rose more rapidly than the internal temperature of shaved ants.
 - C. Yes; the internal temperature of shaved ants rose more rapidly than the internal temperature of unshaved ants.
 - D. Yes; the internal temperature of unshaved ants rose more rapidly than the internal temperature of shaved ants.
32. One way Study 1 differed from Study 2 was that in Study 1:
- F. ants with only one type of hair were measured under different conditions, while in Study 2, ants with different types of hair were measured.
 - G. ants with different types of hair were measured, while in Study 2, ants with only one type of hair were measured under different conditions.
 - H. ants' internal temperature was measured, while in Study 2, ants' reflectance was measured.
 - J. ants' reflectance was measured, while in Study 2, ants' internal temperature was measured.
33. A researcher discovers that Saharan silver ants perish when their internal temperature reaches 30°C. Based on the results of Study 2, which of the following groups would not survive?
- A. Shaved ants after 70 seconds of exposure
 - B. Shaved ants after 50 seconds of exposure
 - C. Unshaved ants after 70 seconds of exposure
 - D. Unshaved ants after 50 seconds of exposure
34. One group of ants reached an internal temperature of 30°C after 65 seconds of exposure to light from a solar simulator. At 450 nm, what would the reflectance of these ants most likely be?
- F. 2.6%
 - G. 4.0%
 - H. 5.5%
 - J. It is impossible to determine from the given information.

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