

# What to expect on the ACT

## **Math**

You will have 60 minutes to answer 60 multiple choice questions.

The ACT Math Test usually is broken down into 6 question types:

- Pre-algebra, elementary algebra, intermediate algebra questions
  - 14 pre-algebra questions based on:
    - Basic operations using whole numbers, decimals, fractions, and integers
    - Place value
    - Square roots and approximations
    - The concept of exponents
    - Scientific notation
    - Factors
    - Math terminology (integers, prime numbers, etc.)
    - Basic number theory (rules of zero, order of operations, etc.)
  
  - 10 elementary algebra questions based on:
    - Properties of exponents and square roots
    - Evaluation of algebraic expressions through substitution
    - Using variables to express functional relationships
    - Understanding algebraic operations
    - The solution of quadratic equations by factoring
    - Linear equations in one variable
    - Inequalities
    - Ratio, proportions and percent
    - Absolute value and ordering numbers by value
    - Elementary counting techniques and simple probability
    - Data collection, representation, and interpretation
    - Understanding simple descriptive statistics
  
  - 9 intermediate algebra questions based on:
    - The quadratic formula
    - Rational and radical expressions
    - Absolute value equations and inequalities
    - Sequences and patterns
    - Systems of equations
    - Quadratic inequalities
    - Functions and modeling
    - Matrices
    - Roots of polynomials
    - Complex numbers

***Total: 33 questions***

- Plane geometry and coordinate geometry questions
  - 14 plane geometry questions based on:
    - Properties and relations of plane figures, including angles and relations among perpendicular and parallel lines
    - Properties of circles, triangles, rectangles, parallelograms, and trapezoids
    - Transformations
    - The concept of proof and proof techniques
    - Volume
    - Applications of geometry to three dimensions
  - 9 coordinate geometry questions based on slope, distance, midpoint, parallel and perpendicular lines, points of intersection, and graphing
    - Graphing and the relations between equations and graphs, including points, lines, polynomials, circles, and other curves
    - Graphing inequalities
    - Slope
    - Parallel and perpendicular lines
    - Distance
    - Midpoints
    - Conics

**Total: 23 questions**

- Some trigonometry questions
  - 4 questions based on:
    - Trigonometric relations in right triangles
    - Values and properties of trigonometric functions
    - Graphing trigonometric functions
    - Modeling using trigonometric functions
    - Use of trigonometric identities
    - Solving trigonometric equations

**Total: 4 questions**

**Here's the general breakdown of difficulty:**

**Easy:** Questions 1 through 20

**Medium:** Questions 21-40

**Hard:** Questions 41-60

**Take two passes on the math section.**

**Pass 1:** Start with Question 1 and work your way forward, answering questions that look relatively quick and easy and skipping those that look a little more challenging or time-consuming.

**Pass 2:** After you've answered all the quick and easy questions, circle back to the first question you skipped over and work your way forward to the end again.

## Math Formulas to Remember for the ACT

Average formula:  $Average = \frac{\text{Sum of the numbers in the set}}{\text{Amount of numbers in the set}}$

Area of a triangle, where  $b$  is the base and  $h$  is the height:

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

Area of a rectangle, where  $l$  is the length and  $w$  is the width:

$$A = lw$$

Area of a trapezoid, where  $b$  is each of the two bases and  $h$  is the height:

$$A = \frac{1}{2}(b_1 + b_2)h$$

Volume of a rectangular solid, where  $l$  is the length,  $w$  is the width, and  $h$  is the height:

$$V = lwh$$

Area of a circle, where  $r$  is the radius:

$$A = \pi r^2$$

Circumference of a circle, where  $r$  is the radius:

$$C = 2\pi r$$

Formula for finding the distance between points on the coordinate plane, where  $x$  is each of the two  $x$ -coordinates and  $y$  is each of the two  $y$ -coordinates:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Sum of series of numbers, where  $n = \#$  of terms,  $a = 1^{\text{st}}$  term, and  $d$  is difference between each of the terms:

$$Sum = \frac{n}{2}[2a_1 + (n-1)d]$$

## English

You will have 45 minutes to answer 75 multiple choice questions.

The English test is broken down into six question types:

- Usage/Mechanics Questions
  - 10 punctuation questions based on:
    - Commas
    - Apostrophes
    - Colons
    - Semicolons
    - Dashes
    - Periods
    - Question marks
    - Exclamation points
  - 18 grammar and usage questions based on:
    - Subject-verb agreement
    - Pronoun agreement
    - Pronoun forms and cases
    - Adjectives
    - Adverbs
    - Verb forms
    - Comparative and superlative modifiers
    - Idioms
  - 11 sentence structure questions based on:
    - Subordinate or dependent clauses
    - Run-on or fused sentences
    - Comma splices
    - Sentence fragments
    - Misplaces modifiers
    - Shifts in verb tense or voice
    - Shifts in pronoun person or number

**Total: 40**

- Rhetorical Skills
  - 12 sentence/paragraph strategy questions
    - Adding, revising or deleting sentences
    - How a sentence fits with the purpose, audience and focus of a paragraph or the essay as a whole
  - 11 passage organization questions
    - Opening, transitional and closing phrases or statements
    - Order and focus of sentences or paragraphs
  - 12 style questions
    - Writing style, tone, clarity and effectiveness
    - Eliminating ambiguity, wordiness and redundant material
    - Clarifying vague and awkward material

**Total: 35**

## Science

You will have 35 minutes to answer 40 multiple choice questions.

If you can read and interpret graphs, charts, and tables, analyze differing opinions, and understand the scientific method and study design, you will do well on ACT Science. This section tests your scientific skills, not your knowledge of scientific facts.

The science section is usually broken down into 3 passage types:

- About 15 data representation questions
  - Read and understand data
- About 18 research summary questions
  - Interpret the design and results of experiments
- About 7 conflicting viewpoint questions
  - Compare, contrast and analyze opposing viewpoints

Understanding the three passage types is key to figuring out how to answer each question.

- **Passage Type 1: Data representation passages**
  - Question Type 1: Factual questions are based on:
    - Ability to read graphs, tables and/or scatterplots
    - Be able to pull out specific data points from the passage
  - Question Type 2: Interpreting trends questions are based on:
    - Evaluating graphs, tables and/or scatterplots
    - Be able to make educated, scientific inferences from information given
  - Question Type 3: Calculation questions are based on:
    - Take what is given and figure out where it is going
    - Be able to draw conclusions from data provided
- **Passage Type 2: Research summaries passages.** They focus on a specific experiment or a couple of experiments.
  - Question Type 1: Experimental design/researcher intent questions are based on:
    - Ability to determine why the researcher designed the experiment a certain way
    - Figure out the controls and variables in the experiment
    - Figure out the hypothesis on which an experiment was based
  - Question Type 2: Hypothetical experimental questions are based on:
    - Be able to determine what would happen if there was a change in the experiment (in the temperature, solution, etc.)
    - Make predictions from data
  - Question Type 3: Interpreting experiment questions are based on:
    - Interpretation of given information or data
    - These are often framed in a 2x2 matrix
- **Passage Type 3: Conflicting viewpoints passages.** You are presented with two short essays that represent conflicting scientific viewpoints or theories. First, figure out the difference in opinion between the two writers.
  - Question Type 1: Understanding of viewpoint questions are based on:
    - Be able to check for understanding of author's point of view
  - Question Type 2: Comparing viewpoints questions are based on:

- Point of view
- Similarities and differences between authors
- Save this passage for last because it takes the longest because you have to read the whole passage.

## **SCIENCE STRATEGY:**

**Go straight to the questions without reading. Try to answer all of the questions using only the visuals.**

Many students get bogged down in reading the science passage. There are dozens of data points to consider, and most of them won't have any questions about them. So, you'll end up wasting time trying to understand data that really aren't important.

Instead, **try to answer questions without reading the passage.** This lets you avoid wasting too much time understanding parts of the passage that aren't important.

## **Reading**

You will have 35 minutes to answer 40 multiple choice questions.

There are five passages that come from four topic areas:

- Prose Fiction questions are based on:
  - Excerpts from novels or short stories
  - Contemporary, emphasize diversity, and often center on family relationships
    - Setting
    - Atmosphere
    - Relationships between characters
    - Identifying the implied meanings vs. what was directly stated
- Social Science
  - Anthropology
  - Biography
  - Business
  - Economics
  - Education
  - Geography
  - History
  - Political science
  - Psychology
  - Sociology
    - Organization flows logically with clear topic sentences and well-chosen transitions to develop the main idea
    - Author point of view on the subject or may simply deliver informative facts in a neutral tone
- Humanities
  - Nonfiction passages—usually memoirs or personal essays
  - Architecture
  - Art
  - Dance
  - Ethics
  - Film

- Language
- Literary criticism
- Music
- Philosophy
- Physics
- Technology
- Zoology
  - May use a more organize development instead of a linear one
  - Tone will be more personal and perhaps more emotional
- Natural Science
  - Anatomy
  - Astronomy
  - Biology
  - Botany
  - Chemistry
  - Ecology
  - Geology
  - Medicine
  - Meteorology
  - Microbiology
  - Natural history
  - Physiology
  - Physics
  - Technology
  - Zoology
    - Lots of details and sometimes very technical descriptions
    - Linear organization with clear topic sentences and transitions to develop the main idea
    - Author may or may not have an opinion on the topic
    - Questions usually track the text pretty closely and require you to make few inferences

***The 8 types of questions that are on the ACT:***

- Detail questions-find and interpret details
- Main Idea questions-identify the main idea of a passage, paragraph or paragraphs
- Comparative Relationships questions-interpret comparative relationships (similarities and differences)
- Cause-Effect relationships questions-interpret cause and effect relationships
- Generalizations questions-draw generalizations
- Vocabulary-in-Context questions-identify the meaning of words in context
- Sequence of Events questions-determine when events happened and/or the order of events
- Author's Voice and Method questions-identify the author's style, attitude, and point of view; the main purpose of a sentence, a paragraph or a passage as a whole