BESPOKE EDUCATION

The SAT and ACT: an Overview

Panelists

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Bespoke Curriculum Expert

Welcome!
The webinar will begin shortly

November 2024

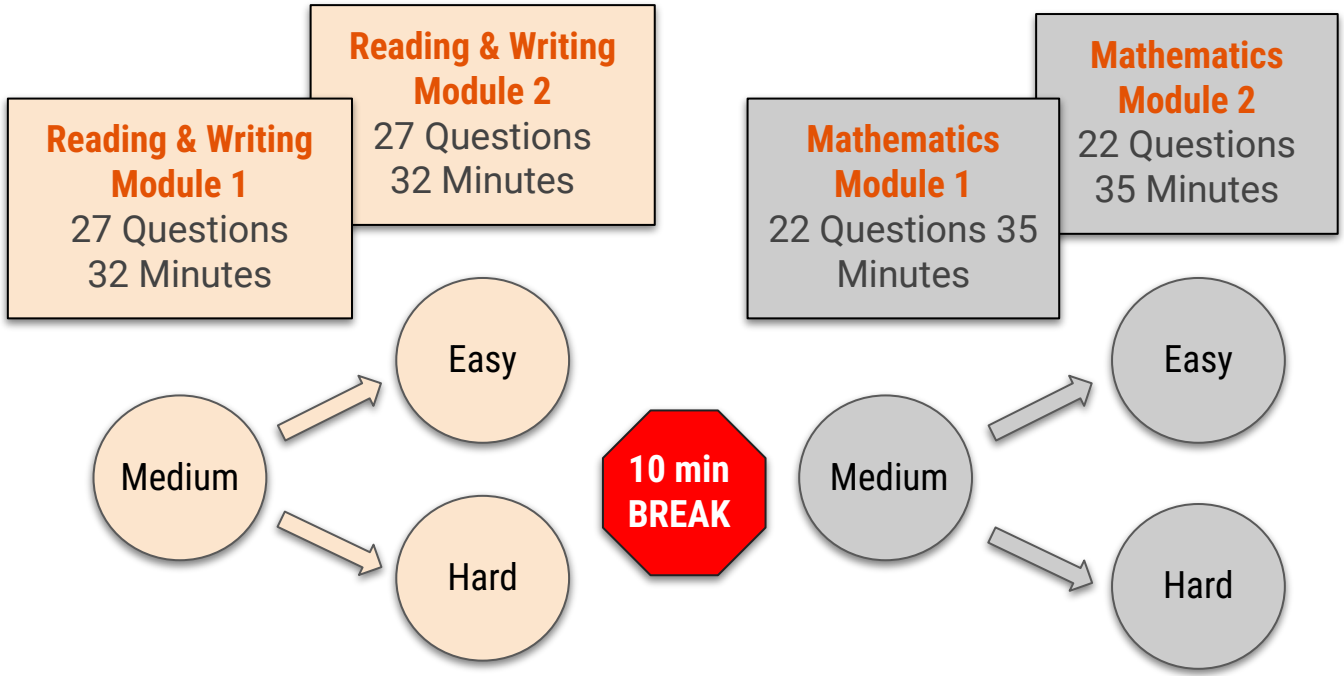
The SAT & ACT: Schedule For Today

- The SAT
  - The new digital test
  - What we've learned
- The ACT
  - The current test
  - Big changes on the horizon
- Side-by-Side Comparison
  - English / Writing
  - Math
  - Reading
  - Science / Charts & Graphs
- Test Preparation: Timing & Core Principles

The SAT: Overview

- Shorter (2+ hours)
- Digital (no more bubble sheets!)
- Mostly Multiple Choice
- More Minutes per Question
- Helpful Digital Tools
- Feels Less Wordy
- BUT… Similar Difficulty
- Accommodations available
- No Essay

The SAT: Structure & Adaptivity



- Within each Module you *can* go back and forth between questions
- You *cannot* go back and forth between Modules or Sections

R&W Scoring: 200-800

Math Scoring: 200-800

Composite Scoring: 400-1600

The SAT: Reading & Writing

- Four Content Domains - weighted roughly equally
- Every Domain appears on each module, in the same order
- The same question types appear in every Domain

The SAT: Math

- Four Content Domains - not weighted equally
- All Domains appear on each module in random order
- Greater variety of questions but they still become familiar

The SAT: Digital Tools

8 Mark for Review

The student wants to emphasize a similarity between the two works. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A *Erasure* (2008) uses discarded objects such as audiocassette tapes and magnets; *Home Grown* (2009), however, includes pushpins, plastic plates and forks, and wood.

B Tubbs's work, which often features discarded objects, has been shown both within the United States and abroad.

C Like many of Tubbs's sculptures, both *Erasure* and *Home Grown* include discarded objects: *Erasure* uses audiocassette tapes, and *Home Grown* uses plastic forks.

D Tubbs completed *Erasure* in 2008 and *Home Grown* in 2009.

Section 1, Module 1: Reading and Writing Questions

Current Unanswered For Review

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27			

Go to Review Page

Question 10 of 27

SAT Math: Desmos

12 Mark for Review

$$y = (x - 2)(x + 4)$$

$$y = 6x - 12$$

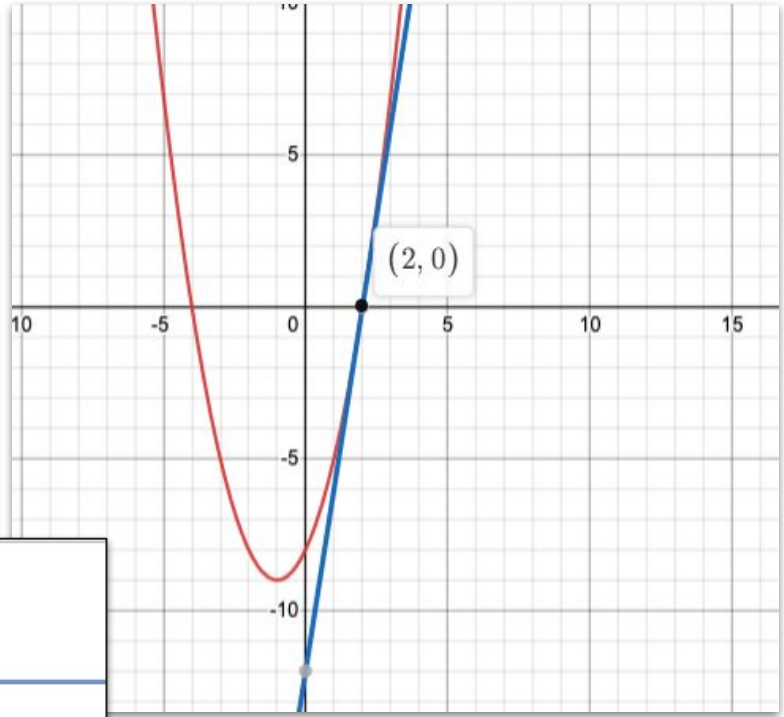
Which ordered pair (x, y) is the solution to the given system of equations?

(A) $(0, 2)$

(B) $(-4, 2)$

(C) $(2, 0)$

(D) $(2, -4)$



1 $y = (x - 2)(x + 4)$

2 $y = 6x - 12$

The SAT: What We've Learned

- Effective Rollout & Adoption
  - Big numbers
  - Bluebook platform worked as predicted
  - Very few glitches, mostly avoidable
  - Practice makes a big difference
- Student Response
  - Strong enthusiasm
  - Slight negative reactions to real tests
  - Appetite still high & increasing, especially as school policy news breaks
  - But there's a catch…
- Real tests are more difficult than practice tests… but how?

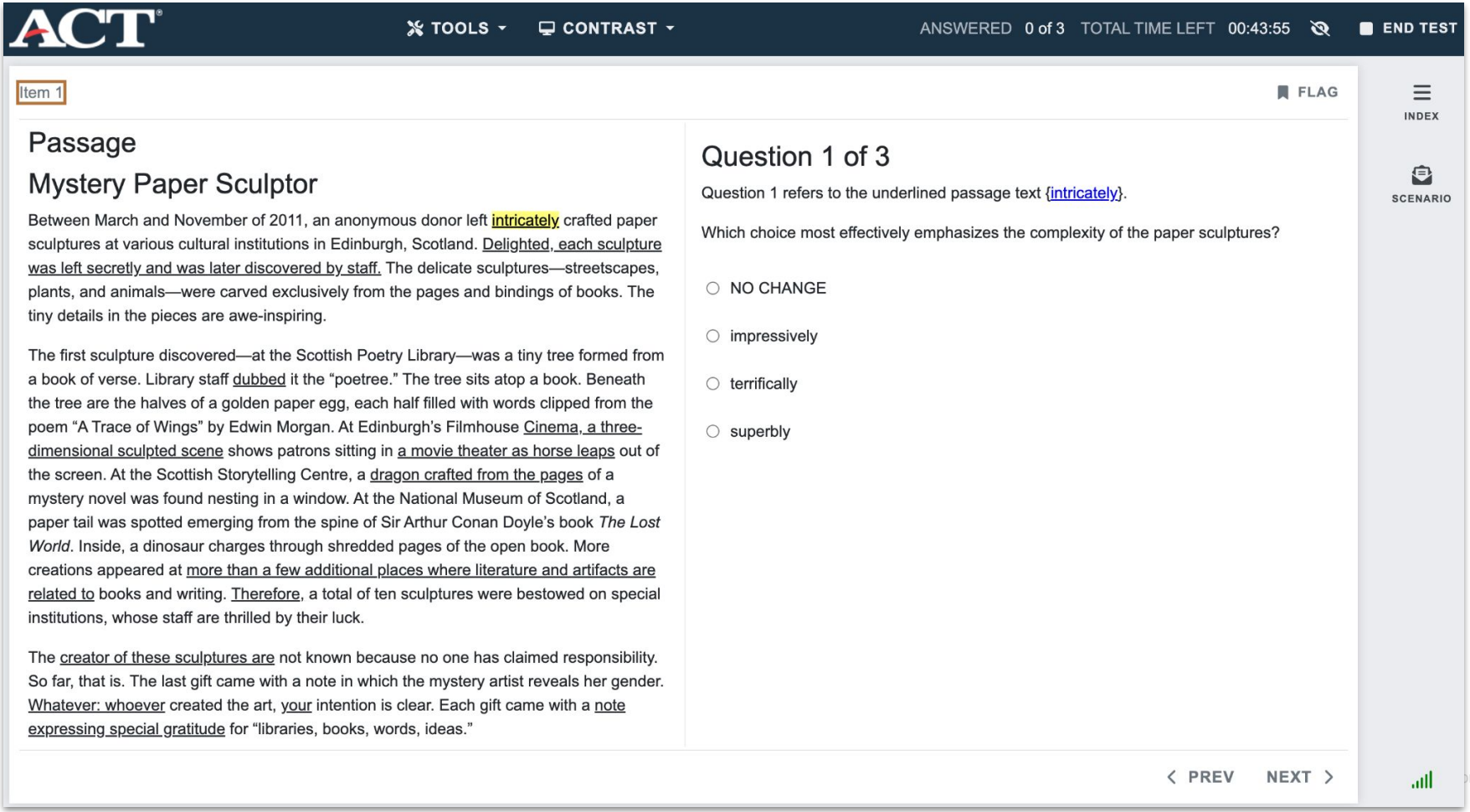
ACT: Current Test Overview

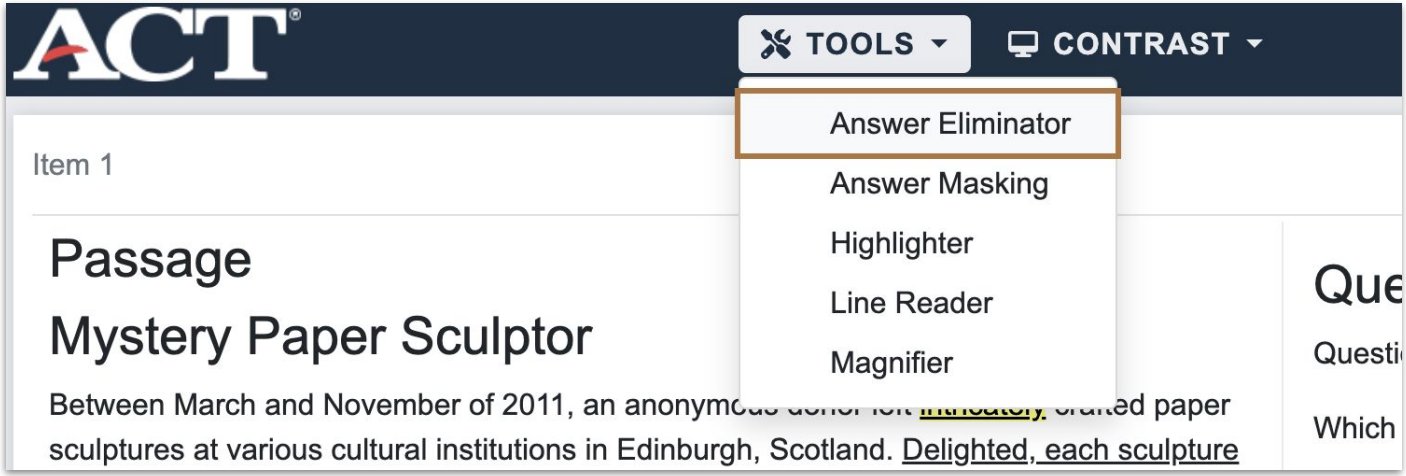
- Longer (3+ hours)
- Time Challenge
- Feels Wordier
- Science Section is Unique
- Multiple Choice
- Accommodations available
- Essay? Optional
- Composite Score of 1-36

Sections	Time	Questions	Score
English	45 mins	75	1-36
Math	60 mins	60	1-36
Reading	35 mins	40	1-36
Science	35 mins	40	1-36
Essay (Optional)	40 mins	1 prompt	2-12

ACT: Changes on the Horizon

- Updates to the Test:
  - Shorter (125 minutes instead of 195)
  - Optional sections
  - Fewer questions overall
  - More time per question but still linear / non-adaptive
  - New composite score will be average of English, Math & Reading sections
- Road Map for Updates
  - The ACT will be available via Paper & Pencil (P&P) and Online
    - Check your registration!
  - April 2025: Online version updated; P&P version stays current
  - September 2025: Online and P&P versions updated
  - April 2026: School-Day & District versions updated


ACT
TOOLS
CONTRAST
ANSWERED 0 of 3
TOTAL TIME LEFT 00:43:55
END TEST
Item 1
FLAG
INDEX
SCENARIO
Passage
Mystery Paper Sculptor
Between March and November of 2011, an anonymous donor left intricately crafted paper sculptures at various cultural institutions in Edinburgh, Scotland. Delighted, each sculpture was left secretly and was later discovered by staff. The delicate sculptures—streetscapes, plants, and animals—were carved exclusively from the pages and bindings of books. The tiny details in the pieces are awe-inspiring.
The first sculpture discovered—at the Scottish Poetry Library—was a tiny tree formed from a book of verse. Library staff dubbed it the "poetree." The tree sits atop a book. Beneath the tree are the halves of a golden paper egg, each half filled with words clipped from the poem "A Trace of Wings" by Edwin Morgan. At Edinburgh's Filmhouse Cinema, a three-dimensional sculpted scene shows patrons sitting in a movie theater as horse leaps out of the screen. At the Scottish Storytelling Centre, a dragon crafted from the pages of a mystery novel was found nesting in a window. At the National Museum of Scotland, a paper tail was spotted emerging from the spine of Sir Arthur Conan Doyle's book The Lost World. Inside, a dinosaur charges through shredded pages of the open book. More creations appeared at more than a few additional places where literature and artifacts are related to books and writing. Therefore, a total of ten sculptures were bestowed on special institutions, whose staff are thrilled by their luck.
The creator of these sculptures are not known because no one has claimed responsibility. So far, that is. The last gift came with a note in which the mystery artist reveals her gender. Whatever: whoever created the art, your intention is clear. Each gift came with a note expressing special gratitude for "libraries, books, words, ideas."
Question 1 of 3
Question 1 refers to the underlined passage text {intricately}.
Which choice most effectively emphasizes the complexity of the paper sculptures?
NO CHANGE
impressively
terrifically
superbly
PREV
NEXT


ACT
TOOLS
CONTRAST
Answer Eliminator
Answer Masking
Highlighter
Line Reader
Magnifier
Item 1
Passage
Mystery Paper Sculptor
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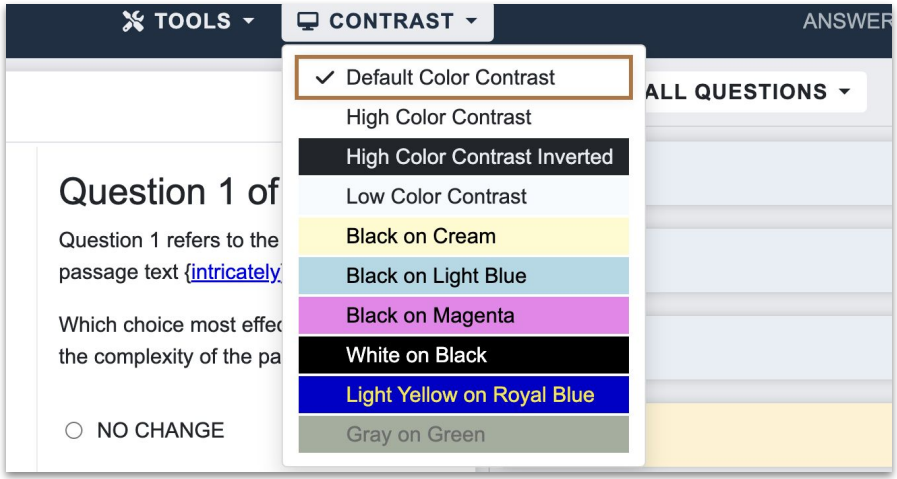
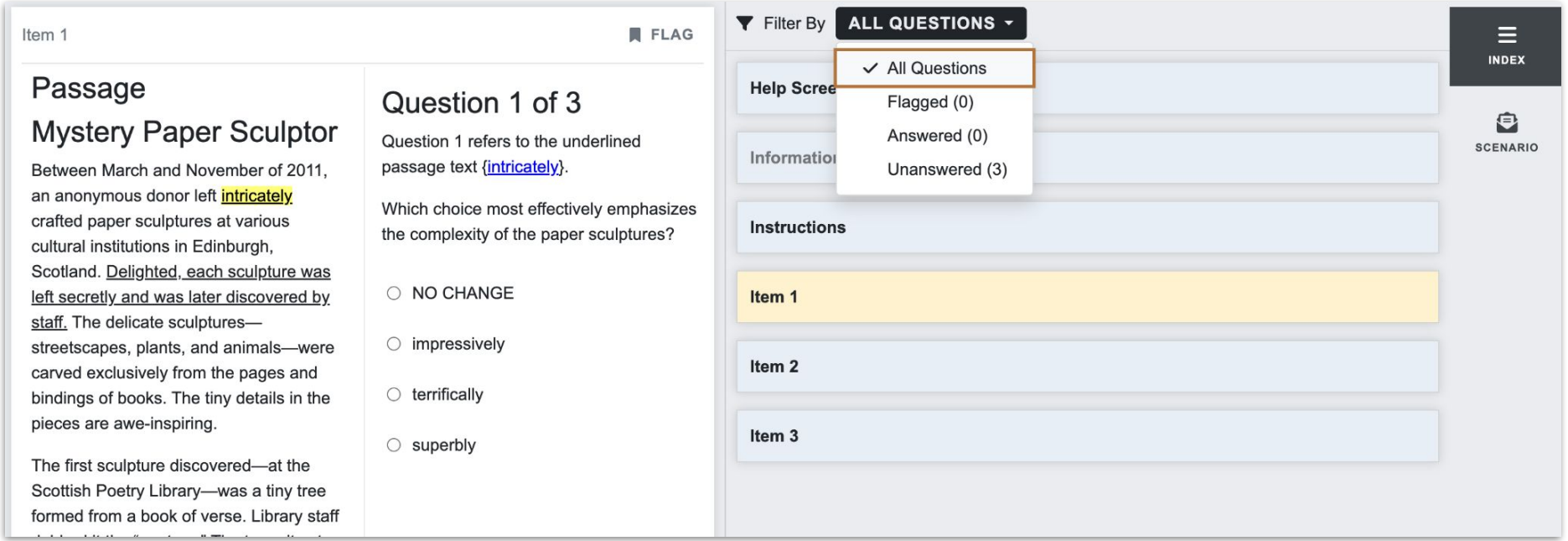
Que
Questi
Which


TOOLS
CONTRAST
ANSWER
Default Color Contrast
High Color Contrast
High Color Contrast Inverted
Low Color Contrast
Black on Cream
Black on Light Blue
Black on Magenta
White on Black
Light Yellow on Royal Blue
Gray on Green
ALL QUESTIONS
Question 1 of
Question 1 refers to the
passage text {intricately
Which choice most effec
the complexity of the pa
NO CHANGE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FLAG
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Question 1 of 3
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Which choice most effectively emphasizes the complexity of the paper sculptures?
NO CHANGE
impressively
terrifically
superbly
Filter By
ALL QUESTIONS
All Questions
Flagged (0)
Answered (0)
Unanswered (3)
Help Scree
Information
Instructions
Item 1
Item 2
Item 3
INDEX
SCENARIO

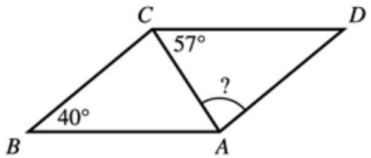
ACT® TOOLS CONTRAST ANS

Item 1

Question 1 of 6

In parallelogram $ABCD$ below, $\overline{AC}$ is a diagonal, the measu is the

ZOOM



- 40°
- 57°
- 77°
- 83°
- 97°

Scientific Calculator

Rad 0

HISTORY SHIFT

Abs	Rand	Deg	%	MC	M+	M-	MR
(	)	2^x	x^2	←	CE	C	×
y^x	$1/x$	x!	$\sqrt{x}$	7	8	9	÷
sin	cos	tan	$\log_2$	4	5	6	−
sinh	cosh	tanh	$\log_{10}$	1	2	3	+
π	e	e^x	ln	±	0	.	=

Side-by-Side: English on the ACT

Position
- 1st of 4 sections

Current Format
- 75 questions in 45 minutes
- 5 passages of 15 questions each, with underlined words, phrases or paragraphs

Future Format:
- 50 questions in 35 minutes & each question gets its own stem

What it Tests
- Grammar and usage, punctuation, sentence structure and rhetorical skills
- Questions ask students to correct portions, improve diction and restructure paragraphs or passages

ACT English: Example

[4]

I headed off on my journey not knowing what I was going to find. When I stepped out of the Dakar airport, it was nearly 100 degrees, the midday sun[8] was scorching. It was also monsoon season. Every day it rained buckets.[9] In the afternoons, it would pour. I would walk the streets of my neighborhood, ankle deep in running water, but[10] by the next morning, it would have all evaporated in the sun. 11

[5]

The best part of the trip was just staying up late and

C. Its
D. It was

8. F. NO CHANGE
G. degrees; and the midday sun
H. degrees from the midday sun that
J. degrees and the midday sun

9. A. NO CHANGE
B. Every day, it rained a lot.
C. We don't have monsoons in the U.S.
D. DELETE the underlined portion.

10. F. NO CHANGE
G. so
H. however
J. except

11. For the sake of the logic and coherence, Paragraph 4 should be placed:

A. where it is now.
B. before Paragraph 1.
C. after Paragraph 1.
D. after Paragraph 2.

ACT English: Difficult Example

me. "Anthony," she says, "tell them something they need to know."
13 13

13. The essay writer is considering deleting the underlined portion. Should the underlined portion be kept or deleted?

A. Kept, because it introduces the grandmother's voice to the narrative.
B. Kept, because it reiterates the main theme of the narrative.
C. Deleted, because it fails to explain how the grandmother is qualified to give the narrator advice.
D. Deleted, because it takes the focus away from the narrator's writing technique.

Questions 14 and 15 ask about the preceding passage as a whole.

14. The essay writer is considering adding the following sentence to the essay:

"This is a good start, Anthony," she said.

The sentence would most logically be placed at:

F. Point A in Paragraph 1.
G. Point B in Paragraph 2.
H. Point C in Paragraph 2.
J. Point D in Paragraph 3.

15. Suppose the essay writer's primary purpose had been to provide a brief overview of the narrator's fifteen-year career as a news writer. Would this essay accomplish that purpose?

A. Yes, because it describes the narrator's most significant news stories and how they shaped him as a writer.
B. Yes, because it focuses on the news stories the narrator wrote when he was nine years old.
C. No, because it instead focuses on the narrator's grandmother's experiences as a news writer and how those experiences shaped her career.
D. No, because it instead describes a single story that marked the beginning of the narrator's interest in news writing.

Side-by-Side: Writing on the SAT

- Two Domains:
  - Standard English Conventions (Grammar & Punctuation)
  - Expression of Ideas (Transitions, Evidence & Arguments)
- Very few question types in Writing Domains
- One passage per question

SAT Writing: Example

While researching a topic, a student has taken the following notes:

- Seven species of sea turtle exist today.
- Five sea turtle species can be found in the Atlantic Ocean.
- One of those species is the Kemp's ridley sea turtle.
- Its scientific name is *Lepidochelys kempii*.
- Another of those species is the olive ridley sea turtle.
- Its scientific name is *Lepidochelys olivacea*.

25 Mark for Review

The student wants to emphasize a similarity between the two sea turtle species. Which choice most effectively uses relevant information from the notes to accomplish this goal?

(A) Among the seven species of sea turtle is the olive ridley sea turtle, which can be found in the Atlantic Ocean.

(B) The Kemp's ridley sea turtle is referred to as *Lepidochelys kempii*, while the olive ridley sea turtle is referred to as *Lepidochelys olivacea*.

(C) Both the Kemp's ridley sea turtle and the olive ridley sea turtle can be found in the Atlantic Ocean.

(D) The Kemp's ridley sea turtle (*Lepidochelys kempii*) and the olive ridley sea turtle (*Lepidochelys olivacea*) are different species.

SAT Writing: Difficult Example

In 1943, in the midst of World War II, mathematics professor Grace Hopper was recruited by the US military to help the war effort by solving complex equations. Hopper's subsequent career would involve more than just _____ as a pioneering computer programmer, Hopper would help usher in the digital age.

22 Mark for Review

Which choice completes the text so that it conforms to the conventions of Standard English?

(A) equations, though:

(B) equations, though,

(C) equations. Though,

(D) equations though

Side-by-Side: Math on the ACT

Position
- 2nd of 4 sections

Current Format
- 60 questions in 60 minutes
- General increase in difficulty, with random topic order
- 5 answer options per question

Future Format
- 45 questions in 50 minutes
- 4 answer options per question

What it Tests
- “Broad and shallow” comprehension
- Calculator allowed throughout
- No reference guide
- Foundation in Algebra and Geometry with niche precalculus topics as well

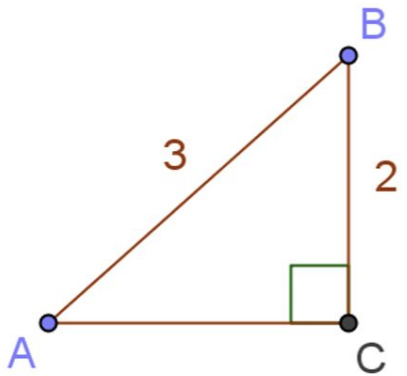
ACT Math: Examples

4. $3x^9 \cdot 5x^9$ is equivalent to:

F. $8x^{18}$
G. $8x^{81}$
H. $15x^9$
J. $15x^{18}$
K. $15x^{81}$

What is the cosine of angle A in right triangle ΔABC below?

F. $\frac{2}{\sqrt{5}}$
G. $\frac{2}{3}$
H. $\frac{\sqrt{5}}{3}$
J. $\frac{\sqrt{5}}{2}$
K. $\frac{3}{\sqrt{5}}$

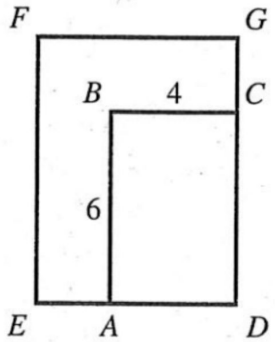


In scientific notation, 20,000 + 3,400,000 = ?

A. 3.42×10^6
B. 3.60×10^6
C. 3.42×10^7
D. 3.60×10^7
E. 3.60×10^{12}

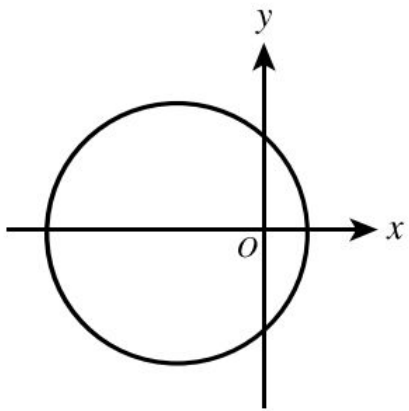
14. In the figure shown below, $\overline{CG} \cong \overline{AE}$, and rectangle $ABCD$ has a length of 6 inches and a width of 4 inches. The area of rectangle $EFGD$ is 2 times the area of rectangle $ABCD$. What is the length, in inches, of $\overline{CG}$?

F. 2
G. 2.4
H. 3.5
J. 4
K. 4.8



ACT Math: Difficult Examples

54. One of the following equations is an equation of the circle graphed in the standard (x,y) coordinate plane below. Which one is it?



F. $x^2 + y^2 = 1$
G. $x^2 + y^2 - 2x = 1$
H. $x^2 + y^2 - 2y = 1$
J. $x^2 + y^2 + 2x = 1$
K. $x^2 + y^2 + 2y = 1$

60. Rectangle P has an *area* of 24 square inches. Rectangle Q has a *perimeter* of 24 inches. The ratio of the area of Rectangle P to the area of Rectangle Q is 2:3. Which of the quantities below can be determined from just the given information?

I. The perimeter of Rectangle P
II. The area of Rectangle Q
III. The ratio of the perimeter of Rectangle P to the perimeter of Rectangle Q

F. I only
G. II only
H. III only
J. I and II only
K. I, II, and III

Side-by-Side: Math on the SAT

Domain	Description	Distribution
Algebra	Linear equations, linear functions, linear inequalities, systems of linear equations	≈ 35%
Advanced	Nonlinear equations, nonlinear functions, systems of nonlinear equations, equivalent expressions	≈ 35%
Problem-Solving & Data Analysis	Proportional relationships, percents, statistics, probability	≈ 15%
Geometry & Trigonometry	Area and Volume, lines and angles, triangles, circles, right triangles and trigonometry	≈ 15%

SAT Math: Example

3 Mark for Review

Jay walks at a speed of 3 miles per hour and runs at a speed of 5 miles per hour. He walks for w hours and runs for r hours for a combined total of 14 miles. Which equation represents this situation?

(A) $3w + 5r = 14$

(B) $\frac{1}{3}w + \frac{1}{5}r = 14$

(C) $\frac{1}{3}w + \frac{1}{5}r = 112$

(D) $3w + 5r = 112$

SAT Math: Difficult Example

22 Mark for Review

In the xy-plane, a parabola has vertex $(9, -14)$ and intersects the x-axis at two points. If the equation of the parabola is written in the form $y = ax^2 + bx + c$, where a, b, and c are constants, which of the following could be the value of $a + b + c$?

(A) -23

(B) -19

(C) -14

(D) -12

Side-by-Side: Reading on the ACT

Position
- 3rd of 4 sections

Current Format
- 40 questions in 35 minutes
- 4 passages with 10 questions each

Future Format
- 36 questions in 40 minutes
- Shorter reading passages

What it Tests
- Fast reading speed
- Reading recall & comprehension
- Student's ability to remember and/or find supporting & refuting evidence

ACT Reading: Example

Passage II

SOCIAL STUDIES: This passage has been adapted from "Aggression in People Diagnosed with Autism," an article by P. Taylor Van Zile IV (© 2013).

Since Leo Kanner's groundbreaking work on early infantile autism in 1943, researchers have been trying to understand the disorder more clearly. Understanding the intricacies of this disorder becomes even more imperative as diagnostic rates continue to rise. The Center for Disease Control's most recent numbers indicate that one in 88 children will be diagnosed with autism, almost twice the estimate from five years earlier.

A whole host of theories have been advanced to explain the origins of autism. The "frigid mother" theory of the 1960's, which held that a lack of affection from cold and unloving mothers caused children to become autistic, has since been debunked. So has the more recent immunization hypothesis, which proposed that common vaccinations could induce the disease. While we are beginning to know what *doesn't* cause autism, we still don't know what does. Tens of millions of dollars have been poured into researching its root cause, yet no clear answers are on the horizon.

One topic that has not received enough attention from autism researchers is aggression. Aggression in children with autism is important to understand for several reasons. Research has shown that autistic children who display aggression are at greater risk for an overall diminished quality of life, and the same might be said of their caregivers. While it is certainly true that many children and adults with autism do not display aggression (in the form of either self-injurious behaviors or violence toward others), aggression and conduct problems are still cited as the largest source of stress in the caregivers of children with autism. What's worse, such stress can increase the likelihood that a caregiver will become physically abusive. Additionally, people with autism who display aggressive behavior are much more likely to be isolated in their communities or even removed from their homes altogether. They may end up in residential care facilities, away from their families and their more comfortable home environments. What is abundantly clear is that there are enormous negative consequences for children with autism who display aggressive behaviors.

While some research has been conducted on this topic, an understanding of the issues at hand is far from complete. One of the primary deficits in this area of research has been the ongoing lack of consistency as to what constitutes aggression and how to measure it scientifically. In the eleven studies performed over the last 35 years that looked exclusively at the relationship between autism and aggression, eight different measures for aggression were used. This lack of consensus within the scientific community over how to measure aggression has been a major roadblock to a clearer understanding of the relationship between aggression and autism.

Yet another challenge has been determining how age figures into the relationship between violent behavior and autism. Most studies on this issue have focused solely on typically developing children. Several early studies showed that aggressive behavior decreases with age, while some later studies found no significant relationship between age and levels of aggression. Most recently, researchers have come to the consensus that in typically developing children, aggression tends to peak in the early childhood years and then taper off with age.

Some researchers have theorized that toddlers' lack of emotion regulation, impulse control, and communication skills is at the root of their aggressive behavior. Another theory maintains that aggressive behavior occurs in the very young because they have not yet learned how to adapt to their environments, and that once they master this skill, they become less likely to aggress. A third theory holds that language provides an outlet for aggression, and that before language skills develop, aggressive acts may be seen as a form of communication. Despite the multitude of theories to explain why younger children may be more prone to aggression, researchers have yet to pinpoint a specific cause of childhood aggression. If the understanding of how age affects aggression in typical children is cloudy at best, then research on this relationship in autistic children is stalled in a total fog. Moreover, what may hold true for typically developing children may not hold true for those with autism. Because children with autism often struggle with impulse control, language acquisition, and acclimation to novel environments, all of these factors may be at play.

While much has been done since Kanner's work in 1943, a good deal of the most recent research on autism has yielded more questions than answers. With autism on the rise, it is crucial that we not only discover its causes so that we may find ways to prevent the disease, but also understand its complex nature so that we may improve the lives of those already affected.

11. The author suggests that research into the causes of autism:

- **A.** has led to the development of several credible theories.
- **B.** is not as urgent as research into the disorder's symptoms or treatment.
- **C.** should be terminated because it is too expensive.
- **D.** is important because it could lead to ways to reduce the incidence of the disease.

12. The main idea of the passage is that:

- **F.** current research on the relationship between autism and aggression is incomplete.
- **G.** conduct problems are the largest stressor for autistic individuals and their caretakers.
- **H.** children act violently as a means of communication.
- **J.** the recent rise in the rates of autism diagnosis is a cause for concern.

13. The author states that all of the following factors can hinder research on aggression in autistic individuals EXCEPT:

- **A.** researchers' inconsistency in measuring aggression.
- **B.** researchers' tendency to focus research on typically developing children.
- **C.** the fact that not all autistic patients display aggressive behaviors.
- **D.** the fact that there may be several interrelated causes of aggression.

14. The primary purpose of the second paragraph is to:

- **F.** debunk erroneous theories about the causes of autism.
- **G.** provide an example of a topic that has been the focus of autism research.
- **H.** show how money tends to be squandered in mental health research.
- **J.** suggest that the vaccination hypothesis is more credible than the frigid mother theory.

15. According to the passage, which of the following are potential consequences of aggressive behavior in individuals with autism?

I. isolation.
II. hospitalization.
III. self-injury.

- **A.** I only.
- **B.** III only.
- **C.** I and III only.
- **D.** I, II, and III.

16. The author uses the words *cloudy* (line 77) and *fog* (line 79) in order to:

- **F.** acknowledge the challenge of weather conditions.
- **G.** help the reader visualize a setting.
- **H.** distinguish between relative degrees of confusion.
- **J.** provide examples of current questions in autism research.

17. The passage suggests that present-day researchers agree that:

- **A.** aggression increases and then decreases in typically developing children.
- **B.** aggressive behavior is limited to early childhood.
- **C.** children aggress because they feel uncomfortable in their surroundings.
- **D.** aggression plays a similar role in autistic and typically developing children.

18. The author uses italics in line 16 in order to:

- **F.** stress the wrongheadedness of early theories about autism.
- **G.** reveal how little science can tell us about psychological disorders.
- **H.** distinguish between two popular but erroneous theories.
- **J.** highlight the failure of extensive research to identify the cause of autism.

19. The final paragraph (lines 84–90) is mainly concerned with:

- **A.** criticizing Kanner's early work on autism.
- **B.** explaining the advances in the field since 1943.
- **C.** underscoring the field's remaining research needs.
- **D.** appealing to the reader's sense of reason.

20. The author mentions "residential care facilities" (lines 36–37) in order to:

- **F.** give an example of a problem mentioned elsewhere.
- **G.** provide evidence for a widely accepted theory.
- **H.** undermine the conclusions of earlier research.
- **J.** provide a counterpoint to an earlier argument.

Side-by-Side: Reading on the SAT

- Two Domains:
  - Craft & Structure (Vocabulary & Context)
  - Information & Ideas (Reading Comprehension)
- More varied question types in Reading Domains
- One passage per question

SAT Reading: Example

In habitats with limited nutrients, certain fungus species grow on the roots of trees, engaging in mutually beneficial relationships known as ectomycorrhizae: in this symbiotic exchange, the tree provides the fungus with carbon, a nutrient necessary for both species, and the fungus _____ by enhancing the tree's ability to absorb nitrogen, another key nutrient, from the soil.

1 Mark for Review

Which choice completes the text with the most logical and precise word or phrase?

(A) overreacts

(B) reciprocates

(C) retaliates

(D) deviates

SAT Reading: Difficult Example

Text 1

Ecologists have long wondered how thousands of microscopic phytoplankton species can live together near ocean surfaces competing for the same resources. According to conventional wisdom, one species should emerge after outcompeting the rest. So why do so many species remain? Ecologists' many efforts to explain this phenomenon still haven't uncovered a satisfactory explanation.

Text 2

Ecologist Michael Behrenfeld and colleagues have connected phytoplankton's diversity to their microscopic size. Because these organisms are so tiny, they are spaced relatively far apart from each other in ocean water and, moreover, experience that water as a relatively dense substance. This in turn makes it hard for them to move around and interact with one another. Therefore, says Behrenfeld's team, direct competition among phytoplankton probably happens much less than previously thought.

9 Mark for Review

Based on the texts, how would Behrenfeld and colleagues (Text 2) most likely respond to the "conventional wisdom" discussed in Text 1?

(A) By arguing that it is based on a misconception about phytoplankton species competing with one another

(B) By asserting that it fails to recognize that routine replenishment of ocean nutrients prevents competition between phytoplankton species

(C) By suggesting that their own findings help clarify how phytoplankton species are able to compete with larger organisms

(D) By recommending that more ecologists focus their research on how competition among phytoplankton species is increased with water density

Side-by-Side: Science on the ACT

Position
- 4th of 4 sections

Current Format
- 40 questions in 35 minutes
- 6 passages with 6-7 questions each

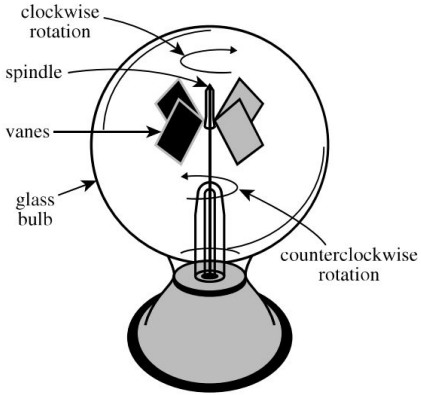
Future Format
- Optional
- 40 questions in 40 minutes
- Other kinds of content?

What it Tests
- Fast processing speed & parsing skill
- “Science Reasoning” - a student’s ability to interpret, analyze, and draw conclusions from charts, graphs and summaries of scientific experiments and information
- Very little outside scientific knowledge

ACT Science: Example

Passage IV

A *Crooke's radiometer* (CR) is a sealed glass bulb, from which most of the air has been removed, that contains 4 metal vanes mounted on a spindle. The same side of each vane is painted black, and the other is silver. See the diagram.



diagram

When a CR is placed in light, the vanes rotate. For the CR shown in the diagram, four students each provided an explanation for the rotation and predicted the direction—clockwise or counterclockwise—the vanes would rotate.

Student 1

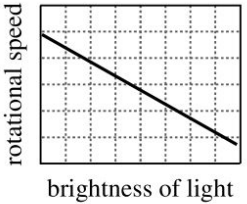
Photons (particles of light) exert a greater force when they are absorbed by a material than when they are reflected by a material. This force is weaker than air resistance, so it can cause rotation only when enough of the air has been removed from the bulb. Photons are absorbed only by the black side of each vane, exerting a stronger force on that side that causes the vanes to rotate clockwise. The brighter the light in which the CR is placed, the more photons are absorbed by the black sides and the faster the vanes rotate.

Student 2

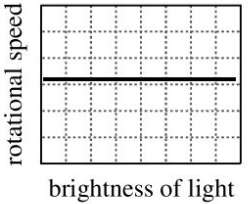
Student 1 is correct except that photons exert a greater force when they are reflected by a material than when they are absorbed by a material. Photons are reflected only by the silver side of each vane, exerting a force that causes the vanes to rotate counterclockwise.

20. Based on the explanation given by Student 1, which of the following plots best shows the predicted relationship between the brightness of light and the rotational speed of the CR vanes?

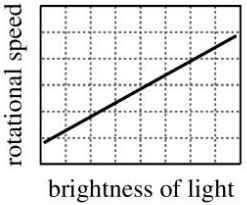
F.



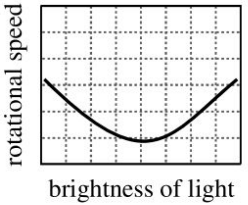
H.



G.



J.



Science ACT: Difficult Examples

24. Suppose that the silver sides of the vanes in the CR shown in the diagram had been painted white instead. Further suppose that when placed in light the vanes of this CR still rotated. Would this finding be consistent with the explanation given by Student 3 ?

- **F.** Yes; the black side of each vane was likely warmer than the white side, so the vanes should still have rotated.
- **G.** Yes; the black side of each vane was likely cooler than the white side, so the vanes should still have rotated.
- **H.** No; the black side of each vane was likely warmer than the white side, so the vanes should not have rotated.
- **J.** No; the black side of each vane was likely cooler than the white side, so the vanes should not have rotated.

25. Suppose that, when a photon is reflected by a surface, it exerts twice as much force as when it is absorbed by a surface. This information is consistent with the explanation given by which student: Student 1 or Student 2 ?

- **A.** Student 1; that student stated that a greater force is exerted on the black sides of the vanes.
- **B.** Student 1; that student stated that a greater force is exerted on the silver sides of the vanes.
- **C.** Student 2; that student stated that a greater force is exerted on the black sides of the vanes.
- **D.** Student 2; that student stated that a greater force is exerted on the silver sides of the vanes.

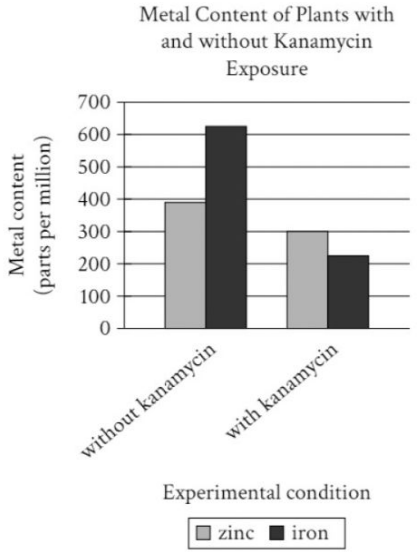
1. To determine how many *C. elegans* moved toward each compound in Experiments 1 and 2, the students most likely used which of the following pieces of laboratory equipment?

- **A.** Balance
- **B.** Graduated cylinder
- **C.** Microscope
- **D.** pH meter

6. Based on the description of *C. elegans* in the passage, a cell from a *C. elegans* lacks which of the following structures?

- **F.** Cell wall
- **G.** Mitochondria
- **H.** Nucleus
- **J.** Plasma membrane

Side-by-Side: Charts & Graphs on the SAT



Many plants lose their leaf color when exposed to kanamycin, an antibiotic produced by some soil microorganisms. Spelman College biologist Mentewab Ayalew and her colleagues hypothesized that plants' response to kanamycin exposure involves altering their uptake of metals, such as iron and zinc. The researchers grew two groups of seedlings of the plant *Arabidopsis thaliana*, half of which were exposed to kanamycin and half of which were a control group without exposure to kanamycin, and measured the plants' metal content five days after germination.

11 Mark for Review

Which choice best describes data in the graph that support Ayalew and her colleagues' hypothesis?

(A) The control plants contained higher levels of zinc than iron, but plants exposed to kanamycin contained higher levels of iron than zinc.

(B) Both groups of plants contained more than 200 parts per million of both iron and zinc.

(C) Zinc levels were around 300 parts per million in the control plants but nearly 400 parts per million in the plants exposed to kanamycin.

(D) The plants exposed to kanamycin showed lower levels of iron and zinc than the control plants did.

Testing Calendar: When to Test

- Regular timeline: first real test in spring of 11th grade
- Students typically take real tests 2-3 times (avoid 4 or more)
  - Score Choice
  - Superscoring
- Students can take tests as late as the fall of 12th grade
  - October of 12th grade is the last option for Early Applications
  - December of 12th grade is the last option for for Regular Applications
- Accelerated: Testing in fall of Junior year? [why and why not]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		SAT		SAT	SAT		SAT		SAT	SAT	SAT
	ACT		ACT		ACT	ACT*		ACT	ACT		ACT

*The ACT is not offered in July in New York State

Standardized Test Preparation

- Focus on schoolwork and grades
- What can test prep look like?
  - Work with a tutor
  - Enroll in a class
  - Work on your own
- Make a Schedule
  - Regularity beats volume
  - Consistency is key
- What does test prep involve?
  - Learning
  - Studying
  - Focused practice
  - Reflective review
- Be Patient: improvement takes time

Homework & Practice Testing

- Think of test prep as an additional course of study
  - ~25 minutes of practice, 4-5 days a week
  - Connect your practice to what you learn
- Aim for 4-6 full-length practice tests before first real test
  - https://www.bespokeeducation.com/mock-testing/
- The role of practice tests:
  - Get comfortable with timing and endurance
  - Test strategies and habits for effectiveness
  - Identify areas of improvement
  - Demonstrate progress
  - Modify your approach

Upcoming Webinars in our College Testing Agenda Series

A Deep Dive on the SAT

- Question walkthroughs and analysis
- Strategies, habits, tips & tricks for a successful approach to the test
- Tuesday November 19th, 6:30-7:30pm

A Deep Dive on the ACT

- Same as above
- With (hopefully!) more details about the future format changes
- Wednesday December 11th, time TBD

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Thank you!

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