KAPLAN

TEST PREP AND ADMISSIONS

SAT®*/ACT®**

Combo Sample Test
with Answers & Explanations

For more information on Kaplan's College Admissions Programs, go to www.kaptest.com/college or call 1-800-KAP-TEST.

Welcome to Kaplan's SAT/ACT Combo Practice Test. Congratulations on taking this important step toward gaining admission to the college of your choice. As you know, colleges use your scores on tests like the SAT and ACT to make admission decisions. This practice test combines representative parts of the SAT and the ACT. Your results will give you a sense of how you might do on the actual tests.

Keep in mind that a full SAT is 3 hours and 45 minutes and a full ACT (with essay) is 3 hours and 25 minutes. This Combo Test sampler will take 90 minutes. At the end, we'll guide you on how to score your answers to calculate a percentage on each section.

Here's what we did:

	Actual Tests	Our Combo Test
SAT	1 Essay Prompt	Section 1: 1 Essay Prompt
	1 35-question Writing Section 1 14-question Writing Section	Section 2: 10-question Writing Section
	1 18-question Math Section 1 20-question Math Section 1 16-question Math Section	Section 3: 10-question Math Section
	2 24-question Critical Reading Sections 1 19-question Critical Reading Section	Section 4: 10-question Critical Reading Section
	1 Experimental Section	*None*
ACT	1 75-question English Test	Section 5: 10-question English Test
	1 60-question Math Test	Section 6: 10-question Math Test
	1 40-question Reading Test	Section 7: 10-question Reading Test
	1 40-question Science Test	Section 8: 10-question Science Test
	1 30-minute Writing Test (Essay)	Section 1: 1 Prompt Essay

Before you begin—when to guess:

On the SAT:
 • Each correct answer increases your raw score by 1 point.
 • Each incorrect answer decreases your raw score by a fraction of a point (except for Grid-Ins).

1. ● ⒷⒸⒹⒺ ✗ $-\frac{1}{4}$
2. ● ⒷⒸⒹⒺ ✗ $-\frac{1}{4}$
3. ● ⒷⒸⒹⒺ ✗ $-\frac{1}{4}$
4. ● ⒷⒸⒹⒺ ✗ $-\frac{1}{4}$
5. ● ⒷⒸⒹⒺ ✓ $+1$

If you guess randomly, the points you lose for incorrect answers will likely cancel out the points you get for correct answers. However, if you can eliminate at least one wrong answer, your odds of guessing correctly increase.
Bottom line: On the SAT, if you can eliminate at least one answer choice, it is in your best interest to guess.

On the ACT:
 • Each correct answer increases your raw score by 1 point.
 • Incorrect answers do NOT decrease your raw score.
Bottom line: On the ACT, you should never leave an answer choice blank.

MATHEMATICS TEST

10 Minutes—10 Questions

Directions: Solve each of the following problems, select the correct answer, and then fill in the corresponding space on your answer sheet.

Don't linger over problems that are too time-consuming. Do as many as you can, then come back to the others in the time you have remaining.

The use of a calculator is permitted on this test. Though you are allowed to use your calculator to solve any questions you choose, some of the questions may be most easily answered without the use of a calculator.

Note: Unless otherwise noted, all of the following should be assumed.

1. Illustrative figures are *not* necessarily drawn to scale.
2. All geometric figures lie in a plane.
3. The term *line* indicates a straight line.
4. The term *average* indicates arithmetic mean.

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1. Simone has $6.00 to spend on soda and lemonade. Soda costs $1.00 per 2-liter bottle and lemonade costs $1.50 per 2-liter bottle. Which of the following could be the number of bottles of lemonade she purchased if she used all the money?
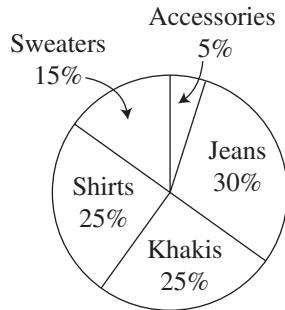
    I. 0
    II. 2
    III. 3

    A. I only
    B. II only
    C. I and II only
    D. I and III only
    E. I, II, and III
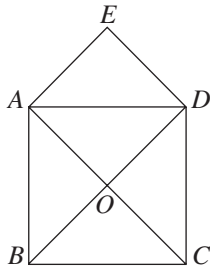
DO YOUR FIGURING HERE.

2. Last month, a clothing store sold a total of $48,000 of merchandise. The pie chart below shows how much each clothing category contributed to the total sales. In dollars, what were the combined total sales of jeans and khakis last month?

- **A.** $7,000
- **B.** $14,400
- **C.** $21,600
- **D.** $24,000
- **E.** $26,400

3. Sides $\overline{AO}$ and $\overline{DO}$ of square *AODE* lie on the diagonals of square *ABCD*, as shown below. If the area of square *ABCD* is 64 square inches, what is the area of square *AODE*, in square inches?


- **A.** 8
- **B.** 16
- **C.** 32
- **D.** 42
- **E.** 50.5

4. The sum of the measures of $\angle X$ and $\angle Y$ is 90° and the sum of the measures of $\angle Y$ and $\angle Z$ is 90°. Which of the following must be true about $\angle X$ and $\angle Z$?

    A. $\angle X$ and $\angle Z$ are congruent.
    B. $\angle X$ and $\angle Z$ form a right angle.
    C. $\angle X$ and $\angle Z$ form a straight line.
    D. The degree measure of $\angle X$ is less than the degree measure of $\angle Z$.
    E. The degree measure of $\angle X$ is greater than the degree measure of $\angle Z$.

5. If the lines l and m, shown below, are parallel, which of the following must be true?
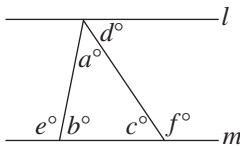
    A. $b° = d°$
    B. $c° = d°$
    C. $d° = e°$
    D. $a° + f° = 180°$
    E. $d° + e° = 180°$

6. At 9 A.M. on Monday, a researcher measured the mass of a sample of a certain radioactive element to be 1 gram. The half-life of this element, or the time it takes for half of a sample to decay, is known to be 4 hours. What does the researcher expect the mass of the sample, in grams, to be at 9 A.M. on Tuesday?

    A. $\dfrac{1}{64}$
    B. $\dfrac{1}{32}$
    C. $\dfrac{1}{9}$
    D. $\dfrac{1}{8}$
    E. $\dfrac{1}{2}$

DO YOUR FIGURING HERE.

GO ON TO THE NEXT PAGE

7. In the figure below, D, E, F, G, H, and J are collinear points. Point H bisects $\overline{GJ}$. The sum of the lengths of $\overline{EF}$ and $\overline{GH}$ is 15. The length of $\overline{FG}$ is $\frac{3}{4}$ the length of $\overline{HJ}$. If the length of $\overline{DE}$ is half the length of $\overline{FG}$, and the length of $\overline{DE}$ is 3, how long is $\overline{EJ}$?
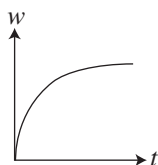
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•    •        •      •        •        •
D    E        F      G        H        J
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- **A.** 16
- **B.** 23
- **C.** 26.5
- **D.** 29
- **E.** 32

8. If you rolled a die, the probability of getting a 1 would be $\frac{1}{6}$. If you rolled a die 3 times, what would be the probability of getting a 1 all 3 times?

- **A.** $\dfrac{1}{1,296}$
- **B.** $\dfrac{1}{216}$
- **C.** $\dfrac{1}{18}$
- **D.** $\dfrac{1}{6}$
- **E.** $\dfrac{1}{2}$

GO ON TO THE NEXT PAGE

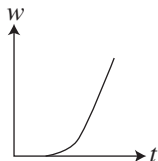**9.** For a science fair project, Tristan took measurements of the weight of his pet mouse as it grew from infancy to adulthood. He found that the mouse's weight increased rapidly during its first few weeks of life, then increased more slowly as the mouse approached adulthood. Which of the following graphs could represent the relationship Tristan found between time (t) and the mouse's weight (w) ?

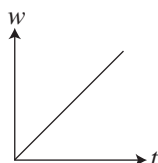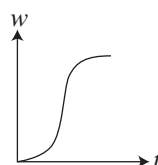**DO YOUR FIGURING HERE.**

A.

B.

C.

D.

E.

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10. Salma, Luis, and Veronica are siblings. Salma is half as old as Veronica, and Veronica is 3 years younger than Luis. If Luis is L years old, what is the sum of the three children's ages?

A. $\dfrac{5}{2}L - \dfrac{9}{2}$

B. $\dfrac{5}{2}L - \dfrac{3}{2}$

C. $2L - 3$

D. $\dfrac{1}{2}L - \dfrac{9}{2}$

E. $\dfrac{1}{2}L - \dfrac{3}{2}$

DO YOUR FIGURING HERE.

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON THIS SECTION ONLY. DO NOT TURN TO ANY OTHER SECTION IN THE TEST.

STOP

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SCORING YOUR TEST

SAT: On Test Day, for each section (Critical Reading, Math, and Writing), your score will range from 200-800. Your total score is the sum of these three and can range from 600-2400.

ACT: On Test Day, for each Test (English, Math, Reading, and Science), your score will range from 1-36. Your combined score is the average of these four, and also ranges from 1-36.

Your performance on the quizzes in this test is only a rough guide to your abilities and skills and is in no way meant to predict your actual Test Day performance.

Step 1: Score Your SAT Essay

Self-score your essay using the following criteria. On the actual SAT, the essay accounts for approximately 25% of your Writing scaled score.

6 Outstanding—Though it may have a few small errors, the essay is well organized and fully developed with supporting examples. It displays consistent language facility, varied sentence structure, and varied vocabulary.

5 Solid—Though it has occasional errors or lapses in quality, the essay is generally organized and well developed with appropriate examples. It displays language facility, syntactic variety, and varied vocabulary.

4 Adequate—Though it has some flaws, the essay is organized and adequately developed and has some examples. It displays adequate but inconsistent language facility.

3 Limited—The essay does not adequately fulfill the writing assignment and has many flaws. It has inadequate organization and development, along with many errors in grammar or diction (or both). In general, the essay lacks variety.

2 Flawed—The essay demonstrates incompetence with one or more weaknesses. Ideas are vague and thinly developed. It contains frequent errors in grammar and diction and almost no variety.

1 Deficient—The essay demonstrates incompetence with serious flaws. It has no organization, no development, and severe grammar and diction errors. The essay is so seriously flawed that its basic meaning is obscured.

0 Off-Topic—The essay does not follow the assignment.

How did you rate your essay? If you did not get as high a score on the essay as you would like and need, don't worry-Kaplan has designed a writing course to help you correctly answer grammar questions and write a strong essay under extreme time pressure.

Step 2: Compute Your Percent Correct

SAT: Check your answers against the Answers and Explanations on the preceding pages. Count up the number of answers you got right and the number you got wrong for each section, then enter your results in the table on the next page. Remember, do not count questions left blank as wrong. Note: Grid-in questions do not have a wrong-answer penalty, so do not deduct anything for wrong answers.

ACT: Check your answers against the Answers and Explanations on the preceding pages. Count the number of answers you got right and enter your results in the table on the next page.

SAT				ACT	
Section 2 Writing				**Section 5 English**	
# Right	−1/4 # Wrong		= % Correct	# Right	= % Correct
_____	−1/4 · _____		= _____ · 10 = _____%	_____	= _____ · 10 = _____%
Section 3 Math				**Section 6 Math**	
# M-C Right (Questions 1-4)	−1/4 # M-C Wrong	+ # Grid Ins Right (Questions 5-10)	= % Correct	# Right	= % Correct
_____	−1/4 · _____	+ _____	= _____ · 10 = _____%	_____	= _____ · 10 = _____%
Section 4 Critical Reading				**Section 7 Reading**	
# Right	−1/4 # Wrong		= % Correct	# Right	= % Correct
_____	−1/4 · _____		= _____ · 10 = _____%	_____	= _____ · 10 = _____%
				Section 8 Science	
				# Right	= % Correct
				_____	= _____ · 10 = _____%

Step 3: Compare your Results

Compare your SAT Writing and ACT English scores. While these two tests are not identical (SAT has three question types and ACT has one), you will get a sense whether you do much better on one than the other. Count the number wrong you got on the SAT. Is this lowering your score? Learning some Kaplan elimination strategies will help reduce the number of wrong answers you have on Test Day.

Now compare your SAT Math and ACT Math. There are three main differences between these two tests: the SAT has a wrong answer penalty, the SAT contains Grid-Ins, and the ACT contains trigonometry questions. Compare your two % correct scores. Is one much higher than the other? In Kaplan classes, we will teach you our proven math strategies, such as Picking Numbers and Backsolving, to help you get the best possible math score on either test.

Now compare your SAT Critical Reading and ACT Reading scores. There are three main differences between these two tests: the SAT contains both short and long passages whereas the ACT has only long passages, the SAT includes sentence completion questions, and the SAT has a wrong answer penalty. Compare your two % correct scores. Is your SAT score much higher? Maybe you're acing the sentence completions because of your great vocabulary. Is your ACT score higher? Maybe the SAT wrong answer penalty is dragging you down. In Kaplan classes, our carefully chosen teachers teach our proven methods and strategies to raise your SAT Critical Reading and ACT Reading scores. We will also offer you a vast array of resources, from practice tests to flashcards to online activities that will help improve your skills.

Now look at your Science score. No comparison here: Science is not tested on the SAT. If you do well with science and scientific reasoning, then consider the ACT.

Explanations

Section 6 (ACT Math)

1. **C** **Strategic Advice:** An easy way to solve Roman numeral questions is to use the answer choices to evaluate each Roman numeral. Remember to start with the numeral that appears most often in the answer choices.
    Getting to the Answer: Set up an equation with s standing for the number of bottles of soda and l standing for the number of bottles of lemonade. Since Simone spent exactly $6.00, $1.00s + $1.50l = 6.00. Then plug in each possible value of l and solve for s, which must be a whole number (since you can't buy half a bottle of soda).
    I. $1.00s + $1.50(0) = 6.00
    $$\$1.00s = \$6.00$$
    $$s = 6$$
    Simone could buy 6 bottles of soda and 0 bottles of lemonade. This works, so eliminate **B**.
    II. $1.00s + $1.50(2) = 6.00
    $$\$1.00s + \$3.00 = \$6.00$$
    $$\$1.00s = \$3.00$$
    $$s = 3$$
    Simone could buy 3 bottles of soda and 2 bottles of lemonade. This works, so eliminate **A** and **D**.
    III. $1.00s + $1.50(3) = 6.00
    $$\$1.00s + \$4.50 = \$6.00$$
    $$\$1.00s = \$1.50$$
    $$s = 1.5$$
    If Simone bought 3 bottles of lemonade, she would not be able to buy a whole number of bottles of soda. This does not work, so **C** is correct.

2. **E** **Strategic Advice:** Charts and graphs usually contain more information than you need, so make sure you answer the question that is asked.
    Getting to the Answer: Jeans were 30% of the total sales and khakis were 25% of the total sales, so combined they were 55% of the total sales. 55% of $48,000 is $0.55(\$48,000) = \$26,400$.

3. **C** **Strategic Advice:** Whenever you see multiple shapes in a figure, look for lengths or angles that are part of more than one shape.
    Getting to the Answer: The area of square *ABCD* is the length of a side squared
    $$AB^2 = 64$$
    $$AB = 8$$
    The diagonals of a square divide it into two 45–45–90 triangles. The sides of a 45–45–90 triangle are in the ratio $x : x : x\sqrt{2}$, so *AC* and *BD* equal $AB\sqrt{2} = 8\sqrt{2}$.
    The center of square *ABCD*, *O*, is the midpoint of $\overline{AC}$, so *AO* equals $\dfrac{AC}{2} = \dfrac{8\sqrt{2}}{2} = 4\sqrt{2}$. The area of square *AODE* is the length of a side squared, or $AO^2 = (4\sqrt{2})^2 = 32$.

    Another way to solve this problem is to notice that all the small triangles in the figure are equal: $\triangle AOB = \triangle BOC = \triangle COD = \triangle AOD = \triangle ADE$. Square *ABCD* consists of 4 small triangles and square *AODE* consists of 2 small triangles. Therefore, the area of *AODE* is half of the area of *ABCD*, or $\dfrac{64}{2} = 32$. Thus, **C** is correct.

4. **A** **Strategic Advice:** Two angles are congruent if and only if their degree measures are equal.
Getting to the Answer: You are given that $\angle X + \angle Y = 90°$ and $\angle Y + \angle Z = 90°$. Thus, $\angle X = \angle Z = 90° - \angle Y$. Since the measures of $\angle X$ and $\angle Z$ are equal, $\angle X$ and $\angle Z$ are congruent. **A** is correct.

5. **B** **Strategic Advice:** Don't assume too much. Only the corresponding angles between a transversal and the parallel lines must be equal. Remember, ACT diagrams are not always drawn to scale.
Getting to the Answer: A, **C**, and **E** compare angles that are formed by different transversals intersecting parallel lines, so these angles don't have any necessary relationship. Angle $a°$ is formed by two transversals, so you don't have any information about what other angles it might equal. However, angles $c°$ and $d°$ are both formed by the same transversal intersecting parallel lines, so they must be equal. **B** is correct.

6. **A** **Strategic Advice:** Exponents are a short way to write a number multiplied by itself several times.
Getting to the Answer: The time it takes for half of the sample to decay is 4 hours. That means that if the mass of the sample is 1 gram at 9 A.M., then it will be half of a gram after 4 hours, or at 1 P.M. Since at 9 A.M. on Tuesday 24 hours, or 6 4-hour periods, will have passed since 9 A.M. on Monday, the mass of the sample at 9 A.M. on Tuesday will be $\left(\dfrac{1}{2}\right)^6 (1) = \dfrac{1}{64}$ grams.

7. **D** **Strategic Advice:** Sometimes you will need to work backwards to find the answer.
Getting to the Answer: Write down what you know from the problem. Start with the line segment you know the length of ($\overline{DE}$), and figure out the lengths of other segments from there.

$DE = 3$

$DE = \dfrac{1}{2}FG$

$2DE = FG$

$6 = FG$

$FG = \dfrac{3}{4}HJ$

$\dfrac{4}{3}FG = HJ$

$\dfrac{4}{3}(6) = HJ$

$8 = HJ$

H bisects $\overline{GJ}$, so $HJ = GH = 8$

$GH + EF = 15$

$8 + EF = 15$

$EF = 7$

$EJ = EF + FG + GH + HJ = 7 + 6 + 8 + 8 = 29$

D is the correct answer. **E** is the length of the *entire* line segment. Don't fall into this trap.

8. **B** **Strategic Advice:** The probability of a series of independent events is the product of the probabilities of all the events.
Getting to the Answer: Any time you roll a die, the probability of getting a 1 is $\frac{1}{6}$.
Each roll is an independent event, so the probability of getting a 1 3 times if you roll a die 3 times is $\frac{1}{6} \cdot \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{216}$.

9. **A** **Strategic Advice:** A steep slope represents a fast rate of change, while a shallow slope represents a slow rate of change.
Getting to the Answer: Look for a graph with a positive slope over the entire domain. The slope should be steep when t is small and shallow when t is large. The only graph that fits this description is **A**.

10. **A** **Strategic Advice:** When there are variables in the answer choices, you can pick numbers to avoid complicated calculations or difficult translations.
Getting to the Answer: Say Luis is 9 years old, so $L = 9$. Veronica is 3 years younger than Luis, so Veronica's age is $9 - 3 = 6$. Salma is half Veronica's age, so Salma's age is $\frac{6}{2} = 3$. The sum of the children's ages is $9 + 6 + 3 = 18$. Plug $L = 9$ into the answer choices and look for one which equals 18.

A. $\frac{5}{2}(9) - \frac{9}{2} = \frac{45}{2} - \frac{9}{2} = \frac{36}{2} = 18$

B. $\frac{5}{2}(9) - \frac{3}{2} = \frac{45}{2} - \frac{3}{2} = \frac{42}{2} = 21$

C. $2(9) - 3 = 18 - 3 = 15$

D. $\frac{1}{2}(9) - \frac{9}{2} = \frac{9}{2} - \frac{9}{2} = 0$

E. $\frac{1}{2}(9) - \frac{3}{2} = \frac{9}{2} - \frac{3}{2} = \frac{6}{2} = 3$

The only choice that gives a sum of 18 when $L = 9$ is **A**.
To solve the problem algebraically, get each child's age in terms of L. Luis is L years old, Veronica is 3 years younger than Luis, or $L - 3$ years old, and Salma is half Veronica's age, or $\frac{L - 3}{2}$ years old. Add the ages and simplify:

$$L + L - 3 + \frac{L - 3}{2} = \frac{2L}{2} + \frac{2L}{2} - \frac{6}{2} + \frac{L}{2} - \frac{3}{2} = \frac{5}{2}L - \frac{9}{2}.$$