



ENGLISH TEST QUESTIONS

Click on the letter choices to determine if you have the correct answer and for question explanations.
(An actual ACT English Test contains 75 questions to be answered in 45 minutes.)

DIRECTIONS: In the passage that follows, 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 oval on your answer document. Read the 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.

Philosophy and Baseball

In the fall of 1967, the Boston Red Sox were playing in the World Series. I was a freshman at a university that was located in the Midwest¹ at the time, enrolled in a philosophy course that met at two in the afternoon. The course was taught by a native Bostonian. He wanted to watch the games on television, but he was too responsible to cancel class. So he conducted classes, those October afternoons, while actually listening to the games on a small transistor radio propped up inside his lectern, the volume turned down so that only he could hear.

2 Baseball is unique among

1. A. NO CHANGE
 - B. midwestern university then
 - C. midwestern university
 - D. university which was in the Midwest
2. Which of the following sentences, if inserted at this point, would provide the most effective transition to the second paragraph?
 - F. Accounting for this kind of behavior is easy.
 - G. Most of the students in the class

American sports ^{by}/₃ its ability to appeal to a

love resembling that of a child₄ of fable and legend. Babe Ruth, Ted Williams, Joe DiMaggio, Roberto Clemente—names like these will echo through

time that are₅ trumpet calls to storied battles fought

and won in ages past. 6 When Hank Aaron

stretched out a sinewy arm to pull one down,₇

were not fond of this instructor.

H. Today, most World Series games are played in the evening.

J. He did a remarkable job, considering how distracted he must have been.

3. A. NO CHANGE

B. as

C. in

D. because

4. F. NO CHANGE

G. love that seems to occur during childhood

H. love like that of children

J. childlike love

5. A. NO CHANGE

B. time like

C. time in which

D. time, which is like

6. Which of the following sentences, if added at this point, would most effectively lead the reader from the generalization in the preceding sentence to the specific examples that follow?

F. These heroes of baseball embodied the ancient legends, bringing them to life.

G. Baseball, of course, is not the only sport that provides heroes.

H. Those battles lasted for nine innings, unless a tie led to extra innings.

J. The truly great thing about it is that these men are as human as you or I.

7. A. NO CHANGE

striding up to a rack of ash-hewn bats,
7 he became a

B. strode up to a rack of ash-hewn bats, stretching out a sinewy arm to pull one down,

C. strode up to a rack of ash-hewn bats to stretch out a sinewy arm, pulling one down,

D. pulled one down, stretching out his sinewy arm as he strode up to a rack of ash-hewn bats,

modern-day knight selecting their
8 lance. And when glints of the afternoon sun shone off Mickey

8. F. NO CHANGE

G. there

H. his

J. one's

Mantle's colossal bat, there will have to
9 be seen for one brief, stirring moment the glimmer of the jewels in King Arthur's own mighty sword, Excalibur.

9. A. NO CHANGE

B. will

C. can

D. could

So
10 there he stood, that learned professor of

10. E. NO CHANGE

G. (Begin new paragraph) To summarize,

H. (Do NOT begin new paragraph) So

J. (Do NOT begin new paragraph) Yet

mine, lecturing about the ideas, that
11 have engaged people's minds for centuries. Then he'd interrupt himself to announce, with smiling eyes, that the Sox had taken a two-to-nothing lead. Here was a

11. A. NO CHANGE

B. ideas that

C. ideas. That

D. ideas, which

man who's
12 mind was disciplined

12. F. NO CHANGE

G. man whose

H. man, who's

J. man that's

inside his schoolbook
13 to contemplate the collected wisdom of the ages—and he

13. A. NO CHANGE

B. (Place after ages)

was behaving like a boy with a contraband comic opened. On those warm October days, as

the afternoon sun dances and plays
14 on the domes
and spires of the university, the philosophers

had to stand aside, for the professor's imagination
15
had transported him to the Boston of his youth.
15

C. (Place after *boy*)

D. (Place after *opened* and end sentence with a period)

14. E. NO CHANGE

G. dances, playing

H. danced and played

J. dancing and playing

15. Which of the alternatives would conclude this sentence so that it supports the writer's principal reflections on the professor's behavior?

A. NO CHANGE

B. due to the fact that the professor was about to hand out a test.

C. while the professor told the class about King Arthur and the Knights of the Round Table.

D. as the professor recounted all the great baseball stars he'd seen play.



MATHEMATICS TEST QUESTIONS

Click on the letter choices to determine if you have the correct answer
and for question explanations.

(An actual ACT Mathematics Test contains 60 questions to be answered in 60 minutes.)

DIRECTIONS: Solve each problem, choose the correct answer, and then fill in the corresponding oval on your answer document.

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

Do not linger over problems that take too much time. Solve as many as you can; then return to the others in the time you have left for this test.

1. Illustrative figures are NOT necessarily drawn to scale.
2. Geometric figures lie in a plane.
3. The word *line* indicates a straight line.
4. The word *average* indicates arithmetic mean.

You are permitted to use a calculator on this test. You may use your calculator for any problems you choose, but some of the problems may best be done without using a calculator.

1. Which of the following is divisible by 3 (with no remainder)?

A. 2,725

B. 4,210

C. 4,482

D. 6,203

E. 8,105

2. A particle travels 1×10^8 centimeters per second in a straight line for 4×10^{-6} seconds. How many centimeters has it traveled?

F. 2.5×10^2

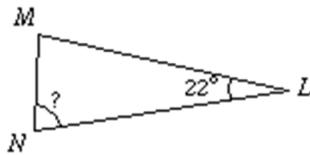
G. 2.5×10^{13}

H. 4×10^2

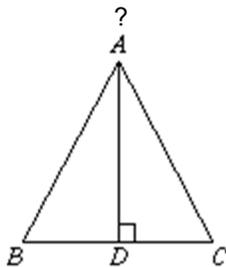
J. 4×10^{-14}

K. 4×10^{-48}

3. The triangle below is isosceles and is drawn to scale. What is the measure of $\angle N$?



- A. 22°
B. 68°
C. 78°
D. 79°
E. 89°
4. In the figure below, $\overline{AB} \cong \overline{AC}$ and \overline{BC} is 10 units long. What is the area, in square inches, of $\triangle ABC$?



- F. 12.5
G. 25
H. $25\sqrt{2}$
J. 50
K. Cannot be determined from the given information

5. If $7y = 2x - 5$, then $x = ?$

- A. $5y + 5$
B. $\frac{1}{2}y - 5$
C. $\frac{1}{2}y + 5$
D. $\frac{7y - 5}{2}$
E. $\frac{7y + 5}{2}$

6. Which of the following statements completely describes the solution set for $3(x - 4) = 3x - 12$?

F. $x = 3$ only

G. $x = 0$ only

H. $x = -12$ only

J. There are no solutions for x .

K. All real numbers are solutions for x .

7. When graphed in the (x,y) coordinate plane, at what point do the lines $x + y = 5$ and $y = 7$ intersect?

A. $(-2,0)$

B. $(-2,7)$

C. $(0,7)$

D. $(2,5)$

E. $(5,7)$

8. The area of a trapezoid is $\frac{1}{2}h(b_1 + b_2)$, where h is the altitude, and b_1 and b_2 are the lengths of the parallel bases. If a trapezoid has an altitude of 5 inches, an area of 55 square inches, and one base 13 inches long, what is the length, in inches, of its other base?

F. 9.0

G. 16.8

H. 19.4

J. 45.0

K. 97.0

9. If you have gone 4.8 miles in 24 minutes, what was your average speed, in miles per hour?

A. 5.0

B. 10.0

C. 12.0

D. 19.2

E. 50.0

10. If a and b are any real numbers such that $0 < a < 1 < b$, which of the following *must* be true of the value of ab ?

F. $0 < ab < a$

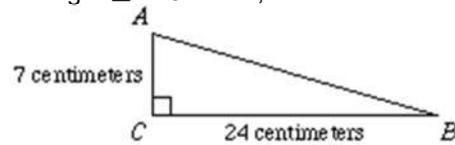
G. $0 < ab < 1$

H. $a < ab < 1$

J. $a < ab < b$

K. $b < ab$

11. In right triangle $\triangle ABC$ below, what is the sine of $\angle A$?



A. $\frac{7}{24}$

B. $\frac{7}{25}$

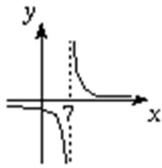
C. $\frac{24}{7}$

D. $\frac{24}{25}$

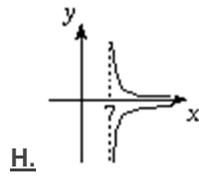
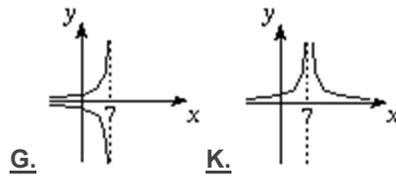
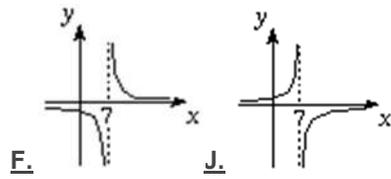
E. $\frac{25}{24}$

12.

The graph of $y = \frac{7}{x-7}$ is shown below.



Among the following, which is the best representation of $y = \frac{7}{|x-7|}$?



READING TEST QUESTIONS

Click on the letter choices to determine if you have the correct answer and for question explanations.

(An actual ACT Reading Test contains 40 questions to be answered in 35 minutes.)

DIRECTIONS: The passage in this test is followed by several questions. After reading the passage, choose the best answer to each question and fill in the corresponding oval on your answer document. You may refer to the passage as often as necessary.

SOCIAL SCIENCE: This passage is adapted from Leonard W. Levy's *Origins of the Fifth Amendment: The Right Against Self Incrimination*. (©1968 by Clio Enterprises Inc.).

Community courts and community justice prevailed in England at the time of the Norman Conquest [1066]. The legal system was ritualistic, dependent upon oaths at most stages of litigation, and permeated by both religious and superstitious notions. The proceedings were oral, very personal, and highly confrontative. Juries were unknown. One party publicly "appealed," or accused, the other before the community meeting at which the presence of both was obligatory.

To be absent meant risking fines and outlawry. After the preliminary statements of the parties, the court rendered judgment, not on the merits of the issue nor the question of guilt or innocence, but on the manner by which it should be resolved. Judgment in other words preceded trial because it was a decision on what form the trial should take. It might be by compurgation, by ordeal, or, after the Norman Conquest, by battle. Excepting trial by battle, only one party was tried or, more accurately, was put to his "proof." Proof being regarded as an advantage, it was usually awarded to the accused party; in effect he had the privilege of proving his own case.

Trial by compurgation consisted of a sworn statement to the truth of one's claim or denial, supported by the oaths of a certain number of fellow swearers.

Presumably they, no more than the claimant, would endanger their immortal souls by the sacrilege of false swearing. Originally the oath-helpers swore from their own knowledge to the truth of the party's claim. Later they became little more than character witnesses, swearing only to their belief that his oath was trustworthy. If he rounded up the requisite number of compurgators and the cumbrous swearing in very exact form proceeded without a mistake, he won his case. A mistake "burst" the oath, proving guilt.

Ordeals were usually reserved for more serious crimes, for persons of bad reputation, for peasants, or

40 for those caught with stolen goods. As an invocation of
immediate divine judgment, ordeals were consecrated
by the Church and shrouded with solemn religious mys-
tery. The accused underwent a physical trial in which
he called upon God to witness his innocence by putting
a miraculous sign upon his body. Cold water, boiling
45 water, and hot iron were the principal ordeals, all of
which the clergy administered. In the ordeal of cold
water, the accused was trussed up and cast into a pool
to see whether he would sink or float. On the theory
that water which had been sanctified by a priest would
50 receive an innocent person but reject the guilty, inno-
cence was proved by sinking—and hopefully a quick
retrieval—guilt by floating. In the other ordeals, one
had to plunge his hand into a cauldron of boiling water
or carry a red hot piece of iron for a certain distance, in
the hope that three days later, when the bandages were
55 removed, the priest would find a "clean" wound, one
that was healing free of infection. How deeply one
plunged his arm into the water, how heavy the iron or
great the distance it was carried, depended mainly on
the gravity of the charge.

60 The Normans brought to England still another
ordeal, trial by battle, paradigm of the adversary
system, which gave to the legal concept of "defense" or
"defendant" a physical meaning. Trial by battle was a
savage yet sacred method of proof which was also
65 thought to involve divine intercession on behalf of the
righteous. Rather than let a wrongdoer triumph, God
would presumably strengthen the arms of the party who
had sworn truly to the justice of his cause. Right, not
might, would therefore conquer. Trial by battle was
70 originally available for the settlement of all disputes
but eventually was restricted to cases of serious crime.

Whether one proved his case by compurgation,
75 ordeal, or battle, the method was accusatory in char-
acter. There was always a definite and known accuser,
some private person who brought formal suit and
openly confronted his antagonist. There was never any
secrecy in the proceedings, which were the same for
criminal as for civil litigation. The judges, who had no
80 role whatever in the making of the verdict, decided only
which party should be put to proof and what its form
should be; thereafter the judges merely enforced an
observance of the rules. The oaths that saturated the
proceedings called upon God to witness to the truth of
85 the respective claims of the parties, or the justice of
their cause, or the reliability of their word. No one gave
testimonial evidence nor was anyone questioned to test
his veracity.

1. According to the passage, being put to the proof (lines 18–19) most nearly means the person was:
- A. considered innocent until proven guilty.
 - B. considered guilty no matter what he did.
 - C. supposed to prove his own innocence.
 - D. given the privilege of presenting his side first.
2. In a trial by ordeal, innocence could be proven by:
- F. displaying an uninfected wound.
 - G. floating when cast into the water.
 - H. wearing bandages for three days.
 - J. swearing an oath in a precise form.
3. The forms of trial discussed in the passage all assume that truth is best determined by:
- A. carefully questioning witnesses.
 - B. carefully assessing physical evidence.
 - C. an adversary proceeding, or battle.
 - D. relying on the assistance of God.
4. The medieval trials discussed in the passage used judges to:
- F. decide what form the trial should take.
 - G. determine whether to use criminal or civil procedure.
 - H. determine which of the witnesses were telling the truth.
 - J. determine the guilt or innocence of the parties.
6. According to the passage, an oath was declared "burst" during compurgation if the:
- F. swearer made an error in the exact form of the required ritual.
 - G. swearer could not round up the required number of oath-helpers.
 - H. swearer preferred trial by ordeal, or by battle.
 - J. judges decided that the oath was false or unnecessary.
7. Trial by compurgation was usually selected when:
- I. there were no oath-helpers available
 - II. the crime was not too serious.
 - III. the person was a peasant or had a bad reputation.
- A. I only
 - B. II only
 - C. III only
 - D. I and III only
8. According to the passage, a medieval trial was always begun by an accusation by:
- F. a clergyman.
 - G. God.
 - H. a private person.
 - J. the person who had been put to his proof.
9. According to the passage, how did trial by battle *differ* from trial by compurgation and ordeal in England?
- A. It had a definite, known accuser.
 - B. It was only used after the Norman Conquest.
 - C. It had no secrecy in the proceedings.
 - D. It required judges to question witnesses.

5.

Which of the following factors did all the trials discussed have in common?

- I. A definite and known accuser
- II. Secrecy
- III. Oaths and invocations of divine assistance

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

10.

As it is used in line 33, the word *cumbrous* most nearly means:

- F. comfortable.
- G. untruthful.
- H. mistaken.
- J. burdensome.

SCIENCE TEST QUESTIONS

Click on the letter choices to determine if you have the correct answer and for question explanations.

(An actual ACT Science Test contains 40 questions to be answered in 35 minutes.)

DIRECTIONS: The passage in this test is followed by several questions. After reading the passage, choose the best answer to each question and fill in the corresponding oval on your answer document. You may refer to the passage as often as necessary.

You are NOT permitted to use a calculator on this test.

Passage I

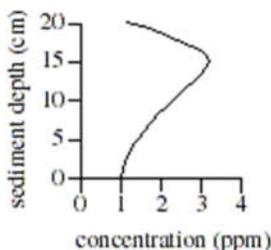
The following table represents the concentration of ions and dissolved gases in the sediment at the bottom of an ocean. A depth of 0 centimeters (cm) represents the top of the sediment. The concentrations are expressed in parts per million (ppm). The acidity of a solution is represented on a scale known as *pH*. A pH of 1 is very acidic, a pH of 7 is neutral, and a pH of 14 is very basic.

Depth (cm)	Temperature (°C)	pH	Concentration in sediment (ppm)					
			SO ₄ ²⁻	S ²⁻	CO ₂	Fe ³⁺	Fe ²⁺	O ₂
0	4	7.0	7.0	0.0	1.0	4.0	0.5	2.0
5	5	6.5	5.0	2.0	1.5	3.0	1.5	1.0
10	7	6.0	3.5	3.5	2.0	2.0	2.0	0.0
15	9	5.5	3.3	3.8	3.0	0.8	3.8	0.0
20	10	5.0	3.0	4.0	1.0	0.5	4.0	0.0

Table adapted from R.M. Atlas and R. Bartha, *Microbial Ecology: Fundamentals and Applications*. ©1981 by Addison-Wesley Publishing Company.

- According to the information provided in the table, the concentration of which of the following ions and dissolved gases is constant for sediment depths of 10 cm or more?
 - Sulfide (S²⁻)
 - Carbon dioxide (CO₂)
 - Ferric iron (Fe³⁺)
 - Oxygen (O₂)
- If the trends indicated in the table were to continue, one would predict the pH of the sediments at a depth of 35 cm to be:
 - 1.5.
 - 3.5.
 - 4.5.
 - 6.0.

2. The graph below best represents the relationship between concentration and sediment depth for which of the following ions and dissolved gases?



- F. Ferrous iron (Fe^{2+})
G. Oxygen (O_2)
H. Carbon dioxide (CO_2)
J. Sulfate (SO_4^{2-})

4. A certain type of bottom-dwelling microorganism thrives under the following environmental conditions: low concentrations of Fe^{2+} , high concentrations of O_2 , and a neutral pH. Based on the table, at which of the following sediment depths would one most likely find this microorganism?

- F. 0 cm
G. 5 cm
H. 10 cm
J. 15 cm

5. A researcher wants to determine whether an unidentified sediment sample was drawn from a depth of 15 cm or 20 cm. Based on the information in the table, which of the following would NOT confirm the depth of the sample?

- A. O_2 concentration
B. Fe^{3+} concentration
C. S^{2-} concentration
D. pH

Passage II

The Sun's path from sunrise to sunset varies with the time of year. A student performed the following experiments on three clear, sunny days at three- or four-month intervals throughout the course of a year to study the path of the Sun through the sky.

Experiment 1

At a chosen Northern Hemisphere location, the student placed a stick vertically into the ground so that 1 meter of its length was left above ground. The student knew that the length of the shadow was related to the height of the Sun above the horizon and that the shadow would point away from the direction of the Sun. The length in meters (m) and direction of the shadow cast by the stick were measured one hour after sunrise (Shadow A), at mid-morning (B), at noon (C), at mid-afternoon (D), and one hour before sunset (E) on each of the three days. The direction of each shadow was determined by placing a magnetic compass at the base of the stick and aligning the north arrow with the north mark on the compass. The direction of each shadow was then determined by a comparison with the compass face markings. The results are recorded in Table 1.

Shadow	Day 1		Day 2		Day 3	
	Length (m)	Shadow direction	Length (m)	Shadow direction	Length (m)	Shadow direction
A	5.0	SW	8.6	NW	6.8	W
B	1.2	W	2.9	NNW	1.7	NW

C	0.3	N	2.3	N	0.9	N
D	1.2	E	3.0	NNE	1.8	NE
E	5.0	SE	8.6	NE	6.9	E

Experiment 2

The following year, the student repeated Experiment 1 at a chosen location in the Southern Hemisphere. The results are in Table 2.

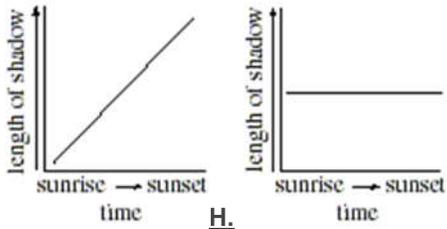
Shadow	Day 1		Day 2		Day 3	
	Length (m)	Shadow direction	Length (m)	Shadow direction	Length (m)	Shadow direction
A	9.0	SW	5.0	NW	6.9	W
B	3.2	SSW	1.1	W	1.8	SW
C	2.5	S	0.3	S	1.0	S
D	3.2	SSE	1.1	E	1.8	SE
E	9.1	SE	5.0	NE	6.9	E

6. Which of the following was a constant in both experiments?
- F. Length of vertical stick exposed
- G. Shadow direction
- H. Day of the year
- J. Shadow length
7. If the experiments were repeated after pounding the stick farther into the ground so that only 0.5 m was exposed, how would this affect the shadow lengths?
- A. They would be twice as long as those in the original experiments.
- B. They would be one-and-one-half times as long as those in the original experiments.
- C. They would be one-half as long as those in the original experiments.
- D. They would be one-fourth as long as those in the original experiments.
9. When the Sun is at an altitude 45° above the horizon, a vertical object will cast a shadow with a length equal to the object's height. Which of the following days included a measurement taken when the Sun was at an altitude of 45° ?
- A. Day 1 in Experiment 1
- B. Day 1 in Experiment 2
- C. Day 2 in Experiment 1
- D. Day 3 in Experiment 2
10. Which of the following statements is best supported by the direction of Shadow A on each of the three days in Experiment 1 ?
- F. The direction of sunrise along the horizon varies throughout the year.
- G. Shadows never point due south in the Northern Hemisphere.
- H. Shadows never point due north in the Northern Hemisphere.
- J. The Sun's brightness varies throughout the year.

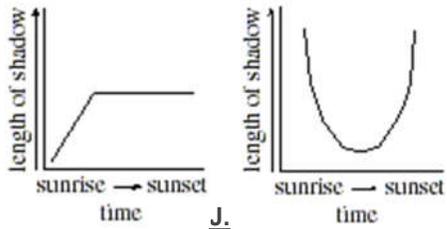
8.

Which of the following graphs best represents the relationship between the length of the stick's shadow and the time of day?

F.



G.



11. Based on the shadow directions in these experiments, which of the following best describes the difference between the apparent path of the Sun as seen from the observation points in the Northern and Southern Hemispheres?

- A. The Sun travels a more southerly path in the Southern Hemisphere than in the Northern Hemisphere.
- B. The Sun travels a more northerly path in the Southern Hemisphere than in the Northern Hemisphere.
- C. The Sun rises in the East and sets in the West in the Northern Hemisphere, but the opposite is true in the Southern Hemisphere.
- D. The Sun rises in the West and sets in the East in the Northern Hemisphere, but the opposite is true in the Southern Hemisphere.