



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.

Fanny Pack

Although the name—*fanny pack*—did not appeal to me as the product itself did. It was sleek,

1

eye-catching, and best of all; appeared to be

2

actually functional. Pocketless shorts have always posed a problem for those who jog or bike. No

doubt the fear of being caught without so much as

3

a dollar bill or an identification card was the reason

1. A. NO CHANGEB. myself, thoughC. me,D. me, like2. F. NO CHANGEG. eye-catching, and, best, of allH. eye-catching and best of, all,J. eye-catching, and, best of all,3. A. NO CHANGEB. for as little asC. likeD. OMIT the underlined portion.

I'm keeping its spot by the television set warm.

4

The fanny pack provided an easy solution for the shortcomings of shorts without pockets,

though it would allow me to break free from the TV

5

to explore the outdoor world. The packs zipper

6

compartments could hold all manner of things: keys, sweatbands, and candy bars. If too much exercise left me thirsty, I could reach into the special pocket for my wallet and buy something cold and refreshing.

No question about it—the fanny pack was the total solution!

Imagining that I myself might become as sleek and

7

dashing as the fanny pack. Who knows, I thought, with

8

a little ingenuity I might be able to pack enough into the thing for some *really* long trips. The fanny

pack would then enable me to achieve a previously

9

4. F. NO CHANGE

G. it kept a

H. I kept my

J. it's kept the

5. A. NO CHANGE

B. therefore,

C. because

D. and

6. F. NO CHANGE

G. pack zippers's

H. packs' zippered

J. pack's zippered

7. A. NO CHANGE

B. Imagination leading me to think

C. I began to imagine

D. I will have imagined

8. F. NO CHANGE

G. Who could have known that, thinking that

H. He knew that

J. Not having had that thought, with

9. A. NO CHANGE

B. had since enabled me

C. enabling

D. since enabling me

unimagined level of personal fitness.

10

What I hadn't counted on, however, was the

relations of its size for my necessities. When I

11

laid everything out on the kitchen table, I realized I

couldn't fit everything I needed into the pack.

Granted, I found room for my house keys and wallet,

but every time I tried to stuff a large bag of chips

into one of the zippered compartments, resulting

12

was a bag filled with millions of minuscule potato

chip fragments.

13

10. Suppose that the writer were to change the end of the preceding sentence from "a previously unimagined level of personal fitness" to read simply "better health." If made, this change would cause this sentence to be more:

F. dramatic.

G. unreasonable.

H. fantastic.

J. straightforward.

11. A. NO CHANGE

B. relative size of

C. relationship with

D. relatively sizing as to

12. F. NO CHANGE

G. as a result

H. the result

J. thus resulting

13. The way in which the words *millions* and *minuscule* function in the preceding sentence might best be described as being:

A. exaggeration working on behalf of humor.

B. understatement acting to restrict the essay's dramatic impact.

C. accuracy intended to mask the writer's disgust with fanny packs.

D. nonsense working to further the writer's strongly impassioned prose style.

Because my dream of taking fitness to new

14. F. NO CHANGE

14

levels by racing around the countryside with my

faithful fanny pack died a sad death. I found

15

other uses for my investment, however. It turns out

to be the perfect place to store my remote control

and *TV Guide*.

G.

Whereas,

H.

Yet

J.

So,

15. A.

NO CHANGE

B.

was dead

C.

expired as

D.

dying



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.

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. 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.

1. If $5a = 25$, then $a^2 = ?$

A. 5

B. 20

C. 25

D. 125

E. 625

2. A rock group gets 30% of the money from sales of their newest compact disc. That 30% is split equally among the 5 group members. If the disc generates \$1,000,000 in sales, how much does one group member receive?

F. \$ 30,000

G. \$ 50,000

H. \$ 60,000

J. \$200,000

K. \$300,000

3. If the expression $x^2 - kx - 12$ is equal to zero when $x = 4$, what is the value of k ?

A. 7

B. 1

C. -1

D. -3

E. -7

4.

If $x = 4$, then $\frac{1}{\frac{1}{x} + \frac{1}{2}} = ?$

F. $\frac{1}{6}$

G. $\frac{3}{4}$

H. $\frac{4}{3}$

J. 6

K. 8

5.

If $\frac{5}{u-2} = \frac{15}{u+4}$, then $u = ?$

A. -3

B. -1

C. 3

D. 4

E. 5

6. What positive value of k would make the lines below parallel in the standard (x, y) coordinate plane?

$$kx + 2y = 8$$
$$18x + ky = 12$$

F. 0

G. 2

H. 6

J. 8

K. 12

7.

A circular coin has a radius of $\frac{3}{8}$ inch. When lying flat, how much area does the coin cover, in square inches?

A. $\frac{3\pi}{4}$

B. $\frac{3\pi}{16}$

C. $\frac{6\pi}{16}$

D. $\frac{9\pi}{8}$

E. $\frac{9\pi}{64}$

8. If the angles $\angle X$ and $\angle Y$ each measure between 0° and 90° , and if $\sin X = \cos Y$, what is the *sum* of the measures of the angles $\angle X$ and $\angle Y$?

F. 30°

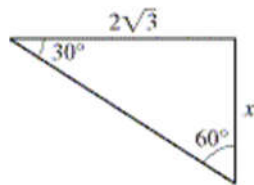
G. 45°

H. 60°

J. 90°

K. 135°

9. Lengths for the triangle below are given in feet. What is the value of x ?



A. 2

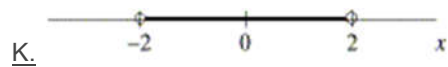
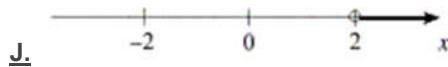
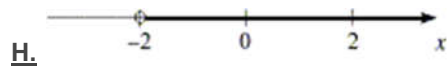
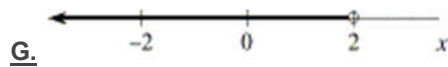
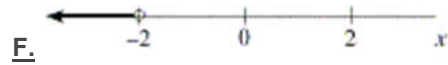
B. $\sqrt{3}$

C. 4

D. 5

E. $\sqrt{15}$

10. Which of the following is the graph of the solution set of $-2x > 4$?



11. Which of the following is an equation of a line that passes through the origin and is parallel to the line $2x - y = 5$?

A. $-2x + y = 5$

B. $2x + y = 5$

C. $x - y = 0$

D. $2x - y = 0$

E. $2x + y = 0$

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.

NATURAL SCIENCE: This passage is adapted from Mark Littman's *Planets Beyond: Discovering the Outer Solar System* (©1990 by John Wiley & Sons).

5 [From the surface of the planet Pluto,] we look up at Charon in the sky, 20 times closer to Pluto than our Moon is to Earth. It is an impressive sight. Charon may rank twelfth in size among moons in the solar system, but it is so close to Pluto—only 11,650 miles (18,800 kilometers) above Pluto's equator—that it appears larger than any other moon appears from the surface of its planet. Charon covers almost 4 degrees in Pluto's sky—eight times as wide as our Moon appears from Earth. On our planet, you can hold a pea out at arm's length and completely eclipse our Moon. On Pluto, to block Charon from view, you would need a billiard ball.

15 It was no surprise that Charon rotates in the same period of time as it revolves so that it always presents the same hemisphere to Pluto. All the inner satellites and all the major satellites in the solar system have synchronous rotation and revolution because they are tidally coupled to their planets. A planet's gravity creates a slight tidal bulge in its moons and pulls on that bulge so that the moons cannot turn it away from the planet. One side of the satellite always faces the planet and the other side always faces away while the planet rotates rapidly, so that the moon rises and sets for all parts of the planet.

30 But Pluto furnished a surprise. Pluto and Charon are so close to twins in size and so close together that Charon's gravity induces a bulge in Pluto. The bulge is great enough that Pluto is tidally coupled to Charon just as Charon is tidally coupled to Pluto. Thus, Pluto always shows the same face to Charon just as Charon always shows the same face to Pluto. It is the only example of mutual tidal coupling in the solar system. The result is that for an astronaut standing on Pluto, Charon is either always visible or never visible.

35

The shadows we see on Charon reveal an uneven, cratered landscape. Like Pluto, Charon is light gray, although somewhat darker and more even in color than Pluto, as was known from measurements made from Earth using the Pluto-Charon eclipses. The very slightly reddish brown hue of Pluto is missing from Charon—or at least from Charon's Pluto-facing side, that is the only side we get to see from the surface of Pluto. Missing too from Charon is the methane frost which partially covers Pluto. With Charon's smaller mass and therefore weaker gravity, whatever methane ice there was at the surface has evaporated. Perhaps this in part explains why Charon is less reflective. The escaping methane has exposed frozen water to view.

On Earth, we are used to the rising and setting of the Sun, Moon, and stars as our planet turns. On Pluto, the Sun rises and sets, if somewhat slowly, but Charon stays fixed in the sky. It never rises or sets, thanks to tidal coupling. As Charon revolves once around Pluto in 6.4 days, Pluto spins once around on its axis in that same period of time. The result is that Charon hangs almost stationary in the sky while the Sun and stars glide slowly past in the background. Because Charon is so large in the sky, stars are frequently blocked from view. These stellar occultations are the only eclipses visible during the 120-year gap between seasons of solar and lunar eclipses.

From the vantage point of Earth, Pluto and Charon pass in front of and behind one another very rarely. The Earth experiences solar and lunar eclipses at least four times and sometimes as many as seven times a year. Because of Pluto's axial tilt and Charon's position over Pluto's equator, the pair go for almost 120 years without their shadows ever falling upon one another. Then, in a period roughly six years long, Charon's orbit is nearly edge on to Earth and every 6.39-day orbit Charon makes carries it across the face of Pluto and then around behind Pluto. The result is an eclipse frenzy. Serendipitously, that eclipse season began in 1985, soon after Charon was discovered.

During an eclipse of the Sun on Pluto, Charon would look like a giant dark hole in the sky, marked only by the absence of stars. It would be dark but not black because it would be illuminated by reflected light from Pluto. The corona—the outer atmosphere of the Sun, which makes solar eclipses seen from Earth so beautiful—would be visible only just after the Sun vanished and just before it reappeared. At mid-eclipse, the disk of Charon covers the entire orbit of the Earth. The corona is far too faint at that distance from the Sun to peer around the edges of Charon.

1. The passage states that Charon never sets because of:

- A. an eclipse frenzy.
- B. stellar occultations.
- C. tidal coupling.
- D. escaping methane.

2. The passage asserts that Charon's relationship with Pluto is unique in our solar system in regard to:

- F. frequency of eclipses.
- G. mutual tidal coupling.
- H. synchronous rotation.
- J. axial tilt.

3. The main point of the first paragraph is that:

- A. Charon is more similar to Earth's moon than you might expect.
- B. Charon is surprisingly similar to Pluto.
- C. Charon's closeness to Pluto makes it appear huge from the surface of its planet.
- D. in terms of size, the Earth is to Pluto as a billiard ball is to a pea.

4. As it is defined in the passage, the Sun's corona is:

- I. the Sun's outer atmosphere.
- II. illuminated by reflected light.
- III. reflected light.

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

6. The passage asserts that one feature of Pluto that is lacking on Charon is:

- F. escaping methane.
- G. noticeable gravity.
- H. a cratered landscape.
- J. methane frost.

7. It can reasonably be deduced from the first paragraph that the number of degrees in the Earth's sky taken up by our Moon is roughly:

- A. 0.5 degree.
- B. 1.0 degree.
- C. 4.0 degrees.
- D. 8.0 degrees.

8. The passage states that the methane ice on Charon evaporated because of that moon's:

- I. smaller mass.
- II. weaker gravity.
- III. axial tilt.

- E. II only
- G. I and II only
- H. I and III only
- J. I, II, and III

9. The passage states that all major satellites in our solar system have in common the fact that they have:

- A. axial tilt and somewhat noticeable mutual tidal coupling.
- B. closer proximity to their respective planets than our Moon has to Earth.
- C. synchronous rotation caused by tidal coupling to their planets.

D. periods of eclipse that are frenzied and also serendipitous.

5. The long spans of time that elapse between periods of eclipse frenzy on Pluto are the result of:

- I. Pluto's axial tilt.
- II. methane escaping Charon's surface.
- III. Charon's position relative to Pluto's equator.

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

10.

The passage suggests that the discovery of Charon was made even more interesting for scientists because that discovery coincided with:

- F. the discovery of the synchronous rotation of satellites.
- G. a large number of eclipses occurring on Pluto.
- H. the realization that our Moon is identical to Charon.
- J. a demonstration of tidal coupling by Earth and its Moon

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.

Several methods were investigated to reduce pollution emissions from a steel mill smokestack. Steel is mostly iron (Fe), but it also contains carbon (C). Impurities containing sulfur (S), nitrogen (N), or phosphorus (P) form gaseous compounds with oxygen that become pollutants. The smoke contains these pollutants and also tiny dust particles that pollute the air, are blown around by the wind, and eventually fall to the ground.

Method 1

Steel mill smoke was passed across a set of electrified plates in the smokestack. The electrified plates attracted the dust particles in the smoke and removed them from the emissions. The efficiency of dust particle removal, which is dependent on the size of the particles, is shown in Table 1.

Voltage on plates (V)	Particles removed (%)
100	20
200	50
500	90
1,000	80
3,000	70

Method 2

The smoke was passed through filters of different pore size in the smokestack that trapped dust particles and also decreased the amount of smoke leaving the stack. The data are shown in Table 2.

Filter pore size (microns)	Particles trapped (%)	Amount of time for filters to drop to 50% efficiency (hours)
1,000	5	2,000
500	20	1,000
200	50	200
100	80	25
50	90	1

Method 3

To reduce pollution by chemical means, the smokestack emissions were bubbled through solutions of concentrated alkali (solutions of OH^- ions). Table 3 shows the percent of the 3 pollutants removed versus the alkali concentration.

Alkali concentration (%)	S removed (%)	N removed (%)	P removed (%)
1	80	60	10
3	90	65	40
5	91	60	35
10	92	50	30
15	93	20	25

1. If the plant's smoke contained equal amounts of S, N, and P, which of the following alkali concentrations would remove the most total pollution?
- A. 1%
 - B. 3%
 - C. 5%
 - D. 10%
2. Which of the following statements about the alkali concentration is consistent with the results of Method 3 ?
- F. A higher alkali concentration results in more P removed.
 - G. A higher alkali concentration results in more S removed.
 - H. A lower alkali concentration requires more filters to remove dust particles.
 - J. A lower alkali concentration results in an increased time required to remove all of the chemical pollutants.
3. Based on the characteristics of the filters used in Method 2, which of the following best describes the practical problem involved in choosing the best type of smokestack filter? The filter that traps the highest percentage of particles:
- A. requires the highest voltage across the electrified plates.
 - B. reacts with alkali solutions.
 - C. needs to be replaced least often.
 - D. needs to be replaced most often.
4. If the smokestack of the steel mill was doubled in height, what effect, if any, would this be expected to have on the removal of pollutants?
- F. Filter efficiency would decrease because dust particles could more easily fall back down the stack.
 - G. Electrostatic plate efficiency would increase because voltage increases with height.
 - H. Dust particles would accumulate into larger pieces and would be more easily removed from the smoke.
 - J. It cannot be determined from the given information.
5. Which of the following assumptions about reducing pollution emissions is common to both Methods 1 and 2 ?
- A. Emissions can only be removed by filters.
 - B. Emissions can only be removed by electrified plates.
 - C. Emissions must be captured in the smokestack to be removed.
 - D. Emissions must be captured after they leave the smokestack.
6. To further investigate the effects of voltage on the removal of dust particles from steel mill smoke, the scientists could use which of the following procedures?
- F. Determining where the particulate matter falls to the ground after leaving the smokestack
 - G. Determining what sizes of particles are removed from the smoke at different voltages
 - H. Determining how the filters react when an alkali solution is passed through them
 - J. Determining how the filters react when an acid solution is passed through them