

75 Growing Your Brain



Jean Piaget (1896–1980), an influential experimenter and theorist in developmental psychology, identified changes in the way children think at different stages in their development. Piaget stated that there are four distinctly different periods of mental development and that each involves increasingly more complex thought processes.

The first stage is *sensorimotor*, lasting from birth to the beginning of language, or about the first year and half of life. In this period of development, children function at a practical, nonsymbolic level.

The second stage is *preoperational*, which includes the early childhood years up to the age of six or seven. This is a stage of egocentrism in which children are incapable of taking into account the point of view of others. They learn to use language, symbols, and mental imagery. Putting objects in sequence, from first to last or smallest to largest, is difficult, as is understanding past, present, and future.

The *concrete operational* stage consists of the elementary school years until the age of 11. Children in this stage normally acquire the ability to organize and relate experiences into an ordered pattern. They begin to understand reversibility—that altering an object or event's properties—such as its shape, form, size, or color—does not change its basic properties. They also understand multiple classification and are capable of classifying items according to more than one attribute.

The *formal operational* stage consists of the years of middle school, beginning around the age of 11. A new form of thinking emerges as children begin to manipulate symbols and ideas and to think abstractly. They can develop and test hypotheses, make inferences, draw conclusions, and engage in problem solving.

Main Idea

1

Mark the *main idea*

Mark the statement that is *too broad*

Mark the statement that is *too narrow*

Answer

Score

☒ M

15

☐ B

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a. New thinking emerges for children in the middle school years.

☐

b. Theories about mental processes are part of the study of psychology.

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c. Piaget's theory identified four stages of intellectual development.

☐

Score 15 points for each correct answer.

Score

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|-----------------------|---|--|-------|
| Subject Matter | 2 | The information in this passage has mostly to do with the field of
☐ a. philosophy.
☐ b. interpersonal relations.
☐ c. sociology.
☐ d. child psychology. | _____ |
| Supporting Details | 3 | Between the ages of 7 and 11 most children are likely to be in the
☐ a. sensorimotor stage.
☐ b. preoperational stage.
☐ c. concrete operational stage.
☐ d. formal operational stage. | _____ |
| Conclusion | 4 | Children in the preoperational stage would be most likely to
☐ a. refuse to share toys with others.
☐ b. enjoy a game that required helping a partner.
☐ c. group their toys into the categories of vehicles, dolls, and games.
☐ d. make an inference from a story they hear. | _____ |
| Clarifying Devices | 5 | Words like <i>sensorimotor</i> and <i>formal operational</i> are italicized in this passage because they
☐ a. are words Piaget made up.
☐ b. are key words.
☐ c. represent the exact words of a speaker.
☐ d. are part of a list. | _____ |
| Vocabulary in Context | 6 | In this passage <u>attribute</u> means
☐ a. give credit to.
☐ b. share with a group.
☐ c. quality.
☐ d. belief. | _____ |

Add your scores for questions 1–6. Enter the total here and on the graph on page 216.

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Score



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Score 15 points for each correct answer.

Score

- Subject Matter** 2 This passage is mainly about
- ☐ a. measuring angles.
 - ☐ b. flat shapes with all equal sides and angles.
 - ☐ c. triangles with three equal sides.
 - ☐ d. names for different kinds of polygons.

- Supporting Details** 3 The angles of a rhombus are
- ☐ a. less than 90 degrees.
 - ☐ b. more than 90 degrees.
 - ☐ c. all the same size.
 - ☐ d. not all the same size.

- Conclusion** 4 A protractor is a tool used to
- ☐ a. measure and draw angles.
 - ☐ b. measure circles.
 - ☐ c. draw straight line segments.
 - ☐ d. draw equilateral triangles.

- Clarifying Devices** 5 The material in parentheses in this passage is used for
- ☐ a. definitions.
 - ☐ b. information unrelated to the topic.
 - ☐ c. explanatory notes.
 - ☐ d. side comments by the writer.

- Vocabulary in Context** 6 In this passage the word evidences means
- ☐ a. surprises.
 - ☐ b. denies.
 - ☐ c. shows clearly.
 - ☐ d. contradicts.

Add your scores for questions 1–6. Enter the total here
and on the graph on page 217.

Total
Score

77 Time Passes, Seasons Change



Living in an age of renowned religious painters, Pieter Bruegel the Elder was perhaps the most important essentially secular artist of the 16th century. Bruegel did his share of religious works as well, but he is far better known for paintings that give a glimpse of the life of the common people, the peasants, in his native Flanders.

Toward the end of his life Bruegel did a series of paintings commonly referred to as "The Months" that in many ways may be called the high point of his work. The five remaining paintings from the series portray a mountainous landscape and peasants performing typical activities in it in all seasons except spring.

The general view of all five paintings is very similar, for each looks down from a high point onto a wide and winding river that seems to lead out to a sea. The atmosphere of one of the paintings, *Hunters in the Snow*, portrays the dull, leaden skies and snow-covered environment of midwinter as well as the harshness of life, for the hunters are returning almost empty-handed. By contrast the late summer painting, *The Harvest*, depicts rich, golden fields of grain and a group of peasants pausing in their work for a pleasant midday meal. The other three paintings in the series—*The Gloomy Day*, *Haymaking*, and *The Return of the Herd*—represent typical scenes from late winter, midsummer, and autumn.

Since so few details of Bruegel's life are known to us, this series of paintings has raised many questions. For a long time, for example, debate raged among art critics as to whether the full series consisted of six or twelve paintings, though the consensus has finally settled on the former figure. Which work is to be considered first in the series is another mystery, as is, of course, the fate of the missing painting.

Main Idea

1

Mark the *main idea*

Mark the statement that is *too broad*

Mark the statement that is *too narrow*

Answer

Score

☒ M

15

☐ B

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a. Bruegel was a famous 16th-century painter.

☐

b. Bruegel's paintings of "The Months" show typical scenes of peasant life throughout the year.

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c. No painting in the series shows spring.

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Score 15 points for each correct answer.

Score

- Subject Matter** 2 This passage focuses primarily on
- ☐ a. painters of the 16th century.
 - ☐ b. an overview of Bruegel's work.
 - ☐ c. Bruegel's paintings of "The Months."
 - ☐ d. a painting called *Hunters in the Snow*.

- Supporting Details** 3 All five remaining paintings in the series "The Months"
- ☐ a. can be found in museums.
 - ☐ b. are situated in the fields around a castle.
 - ☐ c. have a winding river running through them.
 - ☐ d. are painted in bright colors.

- Conclusion** 4 Each painting in the series probably represents
- ☐ a. one month.
 - ☐ b. two months.
 - ☐ c. three months.
 - ☐ d. a particular festival of the year.

- Clarifying Devices** 5 The author conveys a sense of the paintings by
- ☐ a. telling about Bruegel's brush strokes and other techniques.
 - ☐ b. describing their content.
 - ☐ c. presenting them in chronological order.
 - ☐ d. explaining why Bruegel painted them.

- Vocabulary in Context** 6 Secular means
- ☐ a. religious.
 - ☐ b. of the nonreligious world.
 - ☐ c. talented.
 - ☐ d. having to do with peasants.

Add your scores for questions 1–6. Enter the total here
and on the graph on page 217.

Total
Score

#3

#4



78 Real-World Robots

When you think of a robot, do you envision a shiny, metallic device having the same general shape as a human being, performing humanlike functions, and responding to your questions in a monotone voice accentuated by high-pitched tones and beeps? This is the way many of us imagine a robot, but in the real world a robot is not humanoid at all. Instead a robot often is a voiceless, box-shaped machine that efficiently carries out repetitive or dangerous functions usually performed by humans. Today's robot is more than an automatic machine that performs one task again and again. A modern robot is programmed with varying degrees of artificial intelligence—that is, a robot contains a computer program that tells it how to perform tasks associated with human intelligence, such as reasoning, drawing conclusions, and learning from past experience.

A robot does not possess a human shape for the simple reason that a two-legged robot has great difficulty remaining balanced. A robot does, however, move from place to place on wheels and axles that roll and rotate. A robot even has limbs that swivel and move in combination with joints and motors. To find its way in its surroundings, a robot utilizes various built-in sensors. Antennae attached to the robot's base detect anything they bump into. If the robot starts to teeter as it moves on an incline, a gyroscope or a pendulum inside it senses the vertical differential. To determine its distance from an object and how quickly it will reach the object, the robot bounces beams of laser light and ultrasonic sound waves off obstructions in its path. These and other sensors constantly feed information to the computer, which then analyzes the information and corrects or adjusts the robot's actions. As science and technology advance, the robot too will progress in its functions and use of artificial-intelligence programs.

Main Idea

1

Answer

Score

Mark the *main idea*☒ M

15

Mark the statement that is *too broad*☐ B

5

Mark the statement that is *too narrow*☐ N

5

- a. A robot, aided by artificial intelligence, can perform certain human functions. ☐
- b. Today's robots move on wheels and axles. ☐
- c. Robots can be useful to people. ☐



Score 15 points for each correct answer.

Score

- Subject Matter** 2 Another good title for this passage would be
- ☐ a. Robots: Taking the Place of Humans.
 - ☐ b. Artificial Intelligence Programs.
 - ☐ c. Today's Robots and How They Function.
 - ☐ d. Modern-Day Sensors.

- Supporting Details** 3 Artificial intelligence is
- ☐ a. the unnatural way in which robots move.
 - ☐ b. a voiceless, box-shaped machine that performs repetitive tasks.
 - ☐ c. sensors such as antennae and a gyroscope.
 - ☐ d. a computer program that imitates human intellectual processes.

- Conclusion** 4 The last paragraph suggests that future robots will be
- ☐ a. more humanlike in behavior and actions.
 - ☐ b. more like automatic machines.
 - ☐ c. better able to move on inclines.
 - ☐ d. better equipped with laser light sensors.

- Clarifying Devices** 5 The writer begins the passage by comparing
- ☐ a. the shape of a human being with a box.
 - ☐ b. a modern robot with a fictional robot.
 - ☐ c. an imaginary machine with a human.
 - ☐ d. a computer program with artificial intelligence.

- Vocabulary in Context** 6 The word humanoid means
- ☐ a. lacking human characteristics.
 - ☐ b. anything having the appearance of a humanoid.
 - ☐ c. being void or vacant.
 - ☐ d. having a human form or characteristics.

Add your scores for questions 1–6. Enter the total here and on the graph on page 217.

Total Score

9 Psychological Research



Psychologists use a research approach just as other scientists do. They develop hypotheses, which are possible explanations for what they have observed, and scientific methods to test the hypotheses. There are three main techniques used in psychological research.

Naturalistic observation, the first technique, involves watching the behavior of human beings and animals in their natural environment. The researcher looks for broad patterns of behavior. Psychologists conducting such studies try to observe a representative sample. This sample should be a large, typical group that reflects the whole population. Naturalistic observation is usually used to gain insights and ideas for later testing.

Systematic assessment, the second technique, includes case histories, surveys or public opinion polls, and standardized tests. These are used to examine people's thoughts, feelings, and personality traits. Systematic assessments enable psychologists to gather information that they could not get by naturalistic observation. The accuracy of this information depends on well-designed studies and truthful, complete responses from participating individuals.

The third technique, experimentation, allows scientists to test a theory under controlled conditions as they attempt to discover or confirm cause-and-effect relationships. The researcher randomly divides subjects into two groups. One group is the experimental group and the other is the control group. The condition to be tested is changed only for the experimental group. If the experimental group behaves differently from the control group, then the tested condition probably caused the difference.

1. Main Idea

1

	Answer	Score
Mark the <i>main idea</i>	☒ M	<u>15</u>
Mark the statement that is <i>too broad</i>	☒ B	<u>5</u>
Mark the statement that is <i>too narrow</i>	☒ N	<u>5</u>
a. Psychologists research individual behavior.	☐	_____
b. Psychologists develop and test hypotheses.	☐	_____
c. Psychologists use three techniques in their scientific research.	☐	_____



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Score 15 points for each correct answer.

Score

- Subject Matter** 2 This passage is primarily focused on
- ☐ a. hypotheses, explanation, and observation.
 - ☐ b. naturalistic observation, systematic assessment, and experimentation.
 - ☐ c. people's thoughts, feelings, personalities.
 - ☐ d. individual behavior and scientific manner.

- Supporting Details** 3 Case histories, surveys, and standardized assessment are part of
- ☐ a. experimentation.
 - ☐ b. naturalistic observation.
 - ☐ c. systematic assessment.
 - ☐ d. people's personality traits.

- Conclusion** 4 A psychologist watching children at play on a school playground would most likely be using
- ☐ a. standardized testing.
 - ☐ b. analysis of cause-effect relationships.
 - ☐ c. experimentation.
 - ☐ d. naturalistic observation.

- Clarifying Devices** 5 The words *first*, *second*, and *third* in this passage alert the reader that
- ☐ a. this is the order of steps in a research study.
 - ☐ b. this is the order of importance.
 - ☐ c. these are items in a list of research techniques.
 - ☐ d. these are the numbers of the paragraphs.

- Vocabulary in Context** 6 The word representative in this passage means
- ☐ a. large.
 - ☐ b. serve as an example of something.
 - ☐ c. natural.
 - ☐ d. a person appointed to speak for others.

Add your scores for questions 1–6. Enter the total here and on the graph on page 217.

Total
Score

Passage III

HUMANITIES: One of the most enjoyable ways to analyze culture is through music. By analyzing musical styles and lyrics, one can explore quintessential characteristics of particular cultures.

Passage A

Country music has its roots in the southern portions of the United States, specifically in the remote and undeveloped backcountry of the central and southern areas of the Appalachian mountain range. Recognized as a distinct cultural region since the late nineteenth century, the area became home to European settlements in the eighteenth century, primarily led by Ulster Scots from Ireland. Early inhabitants have been characterized as fiercely independent, to the point of rudeness and inhospitality. It was in this area that the region's truly indigenous music, now known as country music, was born.

Rooted in spirituals as well as folk music, cowboy songs, and traditional Celtic melodies, country music originated in the 1920s. The motifs are generally ballads and dance tunes, simple in form and accompanied mostly by guitar, banjo, and violin. Though today there are many genres of country music, all have their roots in this mélange of sources.

The term "country" has replaced the original pejorative term, "hillbilly." Hillbillies referred to Appalachian inhabitants who were considered poor, uneducated, isolated, and wary; the name change reflects a more accepting characterization of these mountain dwellers.

Hank Williams put country music on the map nationally, and is credited with the movement of country music from the South to more national prominence. Other early innovators include the Carter family, Ernest Tubb, Woody Guthrie, Loretta Lynn, and Bill Monroe, father of bluegrass music. More recently, Faith Hill, Reba McEntire, and Shania Twain have carried on the tradition.

What might be considered the "home base" of country music is in Nashville, Tennessee, and the legendary music hall, the Grand Ole Opry. Founded in 1925 by George D. Hay, it had its genesis in the pioneer radio station WSM's program *Barn Dance*. Country singers are considered to have reached the pinnacle of the profession if they are asked to become members of the Opry. While noted country music performers and acts take the stage at the Opry numerous times, Elvis Presley performed there only once, in 1954. His act was so poorly received that it was suggested he return to his job as a truck driver.

The offshoots and relatives of country music highlight the complexity of this genre. In a move away from its mountain origins, and turning a focus to the West, honky-tonk music became popular in the early twentieth century. Its name is a reference to its roots in honky-tonk bars, where the music was played. Additionally, Western Swing emerged as one of the first genres to blend country and jazz musical styles, which required a great deal of skill and creativity. Some of the most talented and sophisticated musicians performing in any genre were musicians who played in bluegrass string bands, another relative of country music.

Country music has always been an expression of American identity. Its sound, lyrics, and performers are purely American, and though the music now has an international audience, it remains American in its heart and soul.

Passage B

A style of music closely related to country is the similarly indigenous music known as bluegrass, which originated in the Appalachian highland regions extending westwards to the Ozark Mountains in southern Missouri and northern Arkansas. Derived from the music brought over by European settlers of the region, bluegrass is a mixture of Scottish, Welsh, Irish,

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Reading Test

and English melodic forms, infused, over time, with African-American influences. Indeed, many bluegrass songs, such as "Barbara Allen" and "House Carpenter" preserve their European roots, maintaining the traditional musical style and narratives almost intact. Story-telling ballads, often laments, are common themes. Given the predominance of coal mining in the Appalachian region, it is not surprising that ballads relating to mining tragedies are also common.

Unlike country music, in which musicians commonly play the same melodies together, bluegrass highlights one player at a time, with the others providing accompaniment. This tradition of each musician taking turns with solos, and often improvising, can also be seen in jazz ensembles. Traditional bluegrass music is typically played on instruments such as banjo, guitar, mandolin, bass, harmonica, and Dobro (resonator guitar). Even household objects, including washboards and spoons, have, from time to time, been drafted for use as instruments. Vocals also differ from country music in that, rather than featuring a single voice, bluegrass incorporates baritone and tenor harmonies.

Initially included under the catch-all phrase "folk music," and later referred to as "hillbilly," bluegrass did not come into its own category until the late 1950s, and appeared first in the comprehensive guide, *Music Index*, in 1965. Presumably it was named after Bill Monroe's Blue Grass band, the seminal bluegrass band. A rapid, almost frenetic pace, characterizes bluegrass tempos. Even today, decades after their most active performing era, The Foggy Mountain Boys members Lester Flatt, a bluegrass guitarist and mandolinist, and Earl Scruggs, known for his three-finger banjo picking style, are widely considered the foremost artists on their instruments.

Partially because of its pace and complexity, bluegrass has often been recorded for movie soundtracks. "Dueling Banjos," played in the movie *Deliverance*, exemplifies the skill required by the feverish tempo of the genre. The soundtrack for

O Brother, Where Art Thou? incorporates bluegrass and its musical cousins folk, country, gospel, and blues. Bluegrass festivals are held throughout the country and as far away as the Czech Republic. Interactive, often inviting audience participation, they feature performers such as Dolly Parton and Alison Krauss.

Central to bluegrass music are the themes of the working class—miners, railroad workers, farmers. The phrase "high, lonesome sound" was coined to represent the bluegrass undertones of intensity and cheerlessness, symbolizing the hard-scrabble life of the American worker. As with so much of a nation's traditional music, and for better or worse, bluegrass music reflects America.

Questions 21–23 ask about Passage A.

21. According to the passage, country music originated from all of the following EXCEPT:
 - A. Celtic melodies.
 - B. spirituals.
 - C. jazz.
 - D. cowboy songs.
22. Which of the following would be the most logical place to hear the best of country music?
 - F. Honky-tonk bars
 - G. Ireland
 - H. The Appalachian backcountry
 - J. The Grand Ole Opry
23. As it is used in line 23, the word *pejorative* most nearly means:
 - A. traditional.
 - B. accurate.
 - C. disparaging.
 - D. mountain dwelling.

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Questions 24–26 ask about Passage B.

24. If a song were a lament with Welsh and African-American derivation, the author of Passage B would classify it as:
- F. bluegrass.
 - G. country.
 - H. jazz.
 - J. hillbilly.
25. According to the passage, the instruments played in bluegrass music are:
- A. both typical and unusual.
 - B. derived from African-American influences.
 - C. made famous by the piece “Dueling Banjos.”
 - D. restricted to those used in the Ozarks.
26. In addition to highlighting one player at a time, bluegrass music differs from country music because it often:
- F. features harmonies sung by bass and tenor voices.
 - G. features a single voice.
 - H. is characterized by musicians commonly playing the same melodies together.
 - J. is played on instruments such as the banjo and guitar.

Questions 27–30 ask about both passages.

27. It can be inferred that laments and high, lonesome sounds both reflect:
- A. the influence of Irish music.
 - B. the challenges of American life.
 - C. songs sung by Shania Twain.
 - D. hillbilly music.

28. As it is used in the introductory information, *quintessential* most nearly means:
- F. old-fashioned.
 - G. representative.
 - H. charming.
 - J. unconventional.
29. Passage A states that there were “talented and sophisticated” (lines 59–60) musicians playing bluegrass music. Which sentence in Passage B suggests this claim?
- A. “Central to bluegrass music are the themes of the working class—miners, railroad workers, farmers.”
 - B. “Partially because of its pace and complexity, bluegrass has often been recorded for movie soundtracks.”
 - C. “Lester Flatt, a bluegrass guitarist and mandolinist, and Earl Scruggs, known for his three-finger banjo picking style, are widely considered the foremost artists on their instruments.”
 - D. “A style of music closely related to country is the similarly indigenous music known as bluegrass . . .”
30. It can be inferred that both authors would agree that:
- F. country and bluegrass music are popular genres.
 - G. both genres—country and bluegrass—are showcased at the Grand Ole Opry.
 - H. music genres can evolve.
 - J. country and bluegrass music are gaining in acceptance.

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Passage IV

NATURAL SCIENCE: The following passage appeared in *Science* magazine as "Pluto: The Planet That Never Was" by Govert Schilling. (© *Science*, Inc., 1999)

Nearly 70 years ago, Pluto became the ninth member of the sun's family of planets, but now it's on the verge of being cast out of that exclusive clan. The International Astronomical Union (IAU) is collecting votes on how to reclassify the icy body: as the first (and largest) of the so-called trans-Neptunian objects, or as the 10,000th entry in the growing list of minor bodies orbiting the sun. In either case, Pluto may officially lose its planetary status, leaving the solar system with only eight planets.

Children's books and planetariums may not acknowledge the loss. And Brian Marsden of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts, who launched the discussion six years ago, says no one is trying to demote Pluto. "If anything, we're going to add to Pluto's status," he says, "by giving it the honor of a very special designation."

Cold comfort for Pluto, maybe, but its reclassification will at least end a long identity crisis, which began soon after its 1930 discovery at Lowell Observatory in Flagstaff, Arizona, by Clyde Tombaugh, who died in 1997. Pluto turned out to be much smaller than all the other planets (according to recent estimates, its diameter is only 2200 kilometers), and its orbit is strangely elongated. It didn't belong with either the Earth-like rocky planets or the gas giants.

A clue to its true nature came in 1992, when David Jewitt of the University of Hawaii, Honolulu, and Jane Luu, then at the University of California, Berkeley, discovered a small, icy object beyond the orbit of Neptune. Provisionally cataloged as 1992 QB₁, this ice dwarf measures a mere 200 kilometers in diameter. Since then many more trans-Neptunian objects (TNOs) have been detected, some of which move in very Pluto-like orbits around the sun.

These "supercomets" populate the Kuiper Belt, named after Dutch-American astronomer Gerard Kuiper, who predicted its existence in the early 1950s. "Pluto fits the picture [of the solar system] much better if it's viewed as a TNO," says Luu, who is now at Leiden University in the Netherlands.

At present, more than 70 TNOs are known, and apparently, Pluto is just the largest member of this new family, which explains why it was found more than 60 years before number two. If astronomers had known about the other TNOs back in the 1930s, Pluto would never have attained the status of a planet, Luu says: "Pluto was lucky."

A couple of months ago, the kinship between Pluto and the TNOs led Richard Binzel of the Massachusetts Institute of Technology to propose that Pluto be made the first entry in a new catalog of TNOs for which precise orbits have been determined. It would then enter the textbooks as something like TN-1 (or TN-0, as some astronomers have suggested).

Marsden agrees that Pluto is a TNO, but he doesn't like the idea of establishing a new catalog of solar system objects, arguing that astronomers already have a perfectly serviceable list of numbered minor bodies (mostly asteroids). "The question is: Do we want to recognize [trans-Neptunian objects] with a different designation?" he asks. He points out that the Centaurs—TNOs that have been nudged well inside Neptune's orbit—have been classified as asteroids and says he sees "no reason for introducing a new designation system for objects of which we have representations in the current [catalog of minor bodies]."

Instead of making Pluto the founding member of a new catalog, Marsden wants to add it to the existing list. "The current number is 9826," he says. "With the current detection rate, we should arrive at number 10,000 somewhere in January or February." He notes that asteroids 1000, 2000, 3000, and so on have all been honored by the IAU

with special names, including Leonardo and Isaac Newton. "What better way to honor Pluto than to give it this very special number?"

But the prospect of lumping Pluto with the solar system's riffraff outrages supporters of a new TNO category. "It's the most idiotic thing" she's ever heard, says Luu. "Pluto is certainly not an asteroid," she says.

To try to settle the issue, Mike A'Hearn of the University of Maryland, College Park, is collecting e-mail votes from 500 or so members of IAU divisions on the solar system, comets and asteroids, and other relevant topics. "I wanted to arrive at a consensus before Christmas [1998]," he says, "but it may take a while, since the community as a whole doesn't seem to have a consensus." Neither proposal has attracted a majority. Although many people opposed Marsden's proposal, a comparable number were unhappy with Binzel's idea, A'Hearn says, because Pluto would still be an anomaly, being much larger than the other trans-Neptunian objects. A'Hearn says that if no consensus can be reached, Pluto will probably not end up in any catalog at all, making it the ultimate outcast of the solar system.

However the debate settles out, Pluto's career as a planet seems to be ending, and even astronomers are wistful at the prospect. "No one likes to lose a planet," says Luu. A'Hearn agrees. "It will probably always be called the ninth planet" by the general public, he says.

31. According to the passage, regarding the view that Pluto should be categorized as an asteroid, Jane Luu expressed which of the following?
 - A. Shock
 - B. Excitement
 - C. Confusion
 - D. Forceful opposition
32. It can be inferred that Pluto's original designation as a planet would have never happened if scientists had:
 - F. understood its size from the beginning.
 - G. seen the icy core of Pluto sooner.
 - H. been able to detect the many smaller TNOs when Pluto was discovered.
 - J. understood the popular misconceptions about Pluto's planethood that would follow.
33. With which of the following statements would the author agree in regard to reclassifying Pluto?
 - A. It should be classified as a TNO.
 - B. It should be classified as an IAU.
 - C. It should remain a planet.
 - D. Its future classification is unclear.
34. According to the passage, large objects similar to the makeup and orbit of Pluto found nearer to the sun than Neptune are called:
 - F. Centaurs.
 - G. IAUs.
 - H. TNOs.
 - J. ice dwarves.

Reading Test

35. According to lines 66–73, the central issue in the debate over Pluto is:
- A. whether Pluto is more similar to the rocky planets or the gas giants.
 - B. the distance of Pluto from the sun.
 - C. whether or not the unique qualities of Pluto warrant the creation of a new classification category for all TNOs.
 - D. scientists' conception of Pluto versus the view of the general public.
36. As used in line 64, the term *serviceable* most nearly means:
- F. able to be fixed.
 - G. adequate.
 - H. beneficial.
 - J. durable.
37. One slightly less scientific concern expressed by most of the scientists in the passage is:
- A. the role of the IAU in making classification decisions.
 - B. respect for the views of the public.
 - C. who gets the credit for Pluto's reclassification.
 - D. the preservation of Pluto's fame and importance.
38. According to the passage, what is the major reason for lack of consensus regarding the status of Pluto?
- F. The general population resists the scientific community's belief that Pluto is not a planet.
 - G. Pluto seems very different than the other members of any classification.
 - H. Pluto's strange orbit makes it asteroid-like, but its surface more closely resembles a planet.
 - J. There have been numerous discoveries of other Pluto-like objects nearer to the sun than to Neptune.
39. Details in the passage suggest that Pluto is much different from other planets in:
- A. its distance from the sun and the shape of its orbit.
 - B. its size and the shape of its orbit.
 - C. the year of its discovery and its size.
 - D. its shape and surface composition.
40. Pluto's size accounts for:
- F. its classification as a TNO.
 - G. its dissimilarity to asteroids.
 - H. its early discovery relative to other TNOs.
 - J. its bizarre orbit.

READING TEST

35 Minutes—40 Questions

Directions: The Reading Test includes multiple passages. Each passage includes multiple questions. After reading each passage, choose the best answer and fill in the corresponding bubble on your answer sheet. You may review the passages as often as necessary.

Passage I

LITERARY NARRATIVE: This passage is adapted from the novel *My Doggie and I* by R.M. Ballantyne.

I possess a doggie—not a dog, observe, but a doggie. If he had been a dog I would not have presumed to intrude him on your notice. A dog is all very well in his way—one of the noblest of animals, I admit, and preeminently fitted to be the companion of man, for he has an affectionate nature, which man demands, and a forgiving disposition, which man needs—but a dog, with all his noble qualities, is not to be compared to a doggie.

Freely admit that you don't at once perceive the finer qualities, either mental or physical, of my doggie, partly owing to the circumstance that he is shapeless and hairy. The former quality is not attractive, while the latter tends to veil the amiable expression of his countenance and the luster of his speaking eyes. But as you come to know him he grows upon you; your feelings are touched, your affections stirred, and your love is finally evoked. As he resembles a doormat, or rather a scrap of a very ragged doormat, and has an amiable spirit, I have called him "Dumps." I should not be surprised if you did not perceive any connection here. You are not the first who has failed to see it; I never saw it myself.

When I first met Dumps, he was scurrying towards me along a sequestered country lane. It was in the Dog Days. Dust lay thick on the road; the creature's legs were remarkably short though active, and his hair being long he swept up the dust in clouds as he ran. He was yelping, and I

observed that one or two stones appeared to be racing with, or after, him. The voice of an angry man also seemed to chase him, but the owner of the voice was at the moment concealed by a turn in the lane, which was bordered by high stone walls.

Rabies, of course, flashed into my mind. I grasped my stick and drew close to the wall. The hairy whirlwind, if I may so call it, came wildly on, but instead of passing me, or snapping at my legs as I had expected, it stopped and crawled towards me in a piteous, supplicating manner that at once disarmed me. If the creature had lain still, I should have been unable to distinguish its head from its tail; but as one end of him whined, and the other wagged, I had no difficulty.

Stooping down with caution, I patted the end that whined, whereupon the end that wagged became violently demonstrative. Just then the owner of the voice came round the corner. He was a big, rough fellow, in ragged garments, and armed with a thick stick, which he seemed about to fling at the little dog, when I checked him with a shout—

"You'd better not, my man, unless you want your own head broken!"

You see, I am a pretty well-sized man myself, and, as I felt confidence in my strength, my stick, and the goodness of my cause, I was bold.

"What d'you mean by ill-treating the little dog?" I demanded sternly, as I stepped up to the man.

“A man may do as he likes with his own,
65 mayn’t he?” answered the man, with a sully
scowl.

“A ‘man’ may do nothing of the sort,” said I
indignantly, for cruelty to dumb animals always
has the effect of inclining me to fight, though I
70 am naturally of a peaceable disposition. “There
is an Act of Parliament,” I continued, “which
goes by the honored name of Martin; and if you
venture to infringe that Act I’ll have you taken up
and prosecuted.”

75 While I was speaking I observed a peculiar
leer on the man’s face, which I could not account
for. He appeared, however, to have been affected
by my threats, for he ceased to scowl, and as-
sumed a deferential air as he replied, “Well, sir, it
80 do seem rather hard that a man’s head should be
broken for kindness.”

“Kindness!” I exclaimed, in surprise.

“Ay, kindness, sir. That there animal loves me,
it do, like a brother, and the love is mutual. We’ve
85 lived together now—off an’ on—for the matter of
six months. Well, I get employment in a factory
about fifteen miles from here, in which no dogs
is allowed. Of course, I can’t give up that employ-
ment, sir, can I? Neither can my doggie give up
90 his master that he’s so fond of, so I’m obliged to
leave him in the charge of a friend, with strict
orders to keep him locked up till I’m fairly gone.
Well, off I goes, but he manages to escape and
runs after me. Now, what can a feller do but drive
95 him home with sticks an’ stones, though it do get
to my heart to do it? But if he goes to the factory,
he’s sure to be shot, or dragged, or drowned, or
something; so you see, sir, it’s out of pure kind-
ness I’m chasing him.”

100 I confess that I felt somewhat doubtful of the
truth of this story; but, in order to prevent any
expression of my face betraying me, I stooped
and patted the dog while the man spoke. It
received my attentions with evident delight. A
105 thought suddenly flashed on me:

“Will you sell your little dog?” I asked.

1. The narrator implies that his “doggie” differs from a “dog” in that his “doggie”:
 - A. may be less impressive at first sight.
 - B. is older than a puppy but not a dog.
 - C. is forgiving of humans, no matter what.
 - D. is a majestic creature, both handsome and good-natured.
2. According to paragraph 2, which of the following accurately describes Dumps?
 - F. His eyes are dull, and his body is shapeless.
 - G. Observers are quickly struck by his wise demeanor.
 - H. He has kind-looking eyes that are often hidden behind his hair.
 - J. His abundant hair gives him the appearance of a well-groomed carpet.
3. The description in paragraphs 3–4 suggests that Dumps was running:
 - A. at a leisurely pace, stopping to sniff the grass.
 - B. in a desperate manner, looking for help.
 - C. as though compelled by immobilizing terror.
 - D. to fetch a stick as part of his favorite game.
4. As it is used in line 54, *checked* most nearly means:
 - F. prevented.
 - G. square patterned.
 - H. verified.
 - J. assaulted.

GO ON TO THE NEXT PAGE

5. The author places the word *man* in quotes (line 67) in order to:
 - A. compare the narrator's recognition of the dog owner's large size to his own stature.
 - B. indicate that the narrator is ironically agreeing with the dog owner's assertion.
 - C. signal that the narrator is attempting to start a violent fight with the dog owner despite his typical peaceful nature.
 - D. imply that the narrator considers the dog owner inhumane regarding his treatment of animals.
6. According to lines 75–81, the dog's owner stops scowling at the narrator because:
 - F. after listening to the narrator, he decides that the dog is unlikely to bite the narrator.
 - G. he shifts his concern away from his dog's behavior to anxiety about being late for his job at the factory.
 - H. he is concerned about the narrator's mention of breaking the law and wants to make a better impression.
 - J. the narrator has stopped threatening to hit the dog with a stick and is offering to help.
7. Throughout the passage, the narrator's attitude toward the reader is best described as:
 - A. considerate and wanting the reader to think well of him.
 - B. argumentative about how pets are commonly perceived.
 - C. fearful that the reader will disagree with his unorthodox views.
 - D. deceptive in order to gain a favorable opinion from the reader.
8. Which choice best reflects the dog owner's explanation as to why chasing the dog with a stick is actually a demonstration of kindness?
 - F. The dog belongs to the owner, so the owner is entitled to treat the dog as he chooses.
 - G. The owner cannot take the dog to his factory job, but the dog escapes and runs after him so he must drive the dog back.
 - H. Dogs love running after thrown sticks, and this activity will provide the dog with exercise before the owner goes to work at the factory.
 - J. The men who work at the factory have a record of mistreating animals, especially dogs.
9. The narrator most likely doubts the dog owner's story (lines 100–105) because:
 - A. the owner is so eager to sell the dog that the narrator doubts he really cares for it.
 - B. the narrator cannot believe that a man with his temperament could hold down a job.
 - C. it seems unlikely that the dog would actually be harmed as the owner claims.
 - D. the owner seems to claim he loves the dog only after being threatened with legal prosecution.
10. The passage implies that the narrator wants to buy the dog primarily because:
 - F. he believes the dog will make the great companion he's been looking for.
 - G. he cares for animals and suspects that the dog's owner is treating it badly.
 - H. he fears the dog's owner and hopes to appease him by offering him money.
 - J. the dog's owner wishes that the dog didn't have to be alone while he's at work.