TST PREP

Practice Test #12

FOR THE TOEFL® READING SECTION

Practice Test #12

For the TOEFL®
Reading Section

The TOEFL Reading Section:
Directions

This section measures your ability to understand academic passages in English.

There are three passages in this section. You have 60 minutes to complete the entire section. You may read the passages and answer the questions in any order you choose, but plan to spend about 20 minutes on each passage and the accompanying questions.

Most questions are worth 1 point, but the last question for each passage is worth more than 1 point. The directions for the last question indicate how many points you may receive.

At the end of this practice test, you will find an answer key, information to help you determine your score, and explanations of the answers.

Turn the page to begin the reading section.

Altruistic Behavior

Behaviors that lower the fitness of the individual but increase the fitness of another individual are termed altruistic. Examples of such behaviors are seen widely across the animal kingdom. Social insects such as worker bees have no ability to reproduce, yet they maintain the queen so she can populate the hive with her offspring. Meerkats keep a member of the group standing guard to warn the rest of the colony about intruders, even though the guarding meerkat is putting itself at risk. Wolves and wild dogs bring meat to pack members not present during a hunt. Although on the surface, these behaviors appear to be altruistic, it may not be so simple.

There has been much discussion over why altruistic behaviors exist. Do these behaviors lead to overall evolutionary advantages for their species? Do they help the altruistic individual pass on its own genes? One explanation for altruistic-type behaviors is found in the genetics of natural selection. In the 1976 book, *The Selfish Gene*, scientist Richard Dawkins attempted to explain many seemingly altruistic behaviors from the viewpoint of the gene itself. Although a gene obviously cannot be selfish in the human sense, it may appear that way if the sacrifice of an individual benefits related individuals that share genes that are identical by descent (present in relatives because of common ancestors). Mammal parents make this sacrifice to take care of their offspring. Emperor penguins migrate miles in harsh conditions to bring food back for their young. Selfish gene theory has been controversial over the years and is still discussed among scientists in related fields.

Even less-related individuals with less genetic identity than those shared by parent and offspring benefit from seemingly altruistic behavior. The activities of social insects such as bees, wasps, ants, and termites are good examples. Sterile workers in these societies take care of the queen because they are closely related to it, and as the queen has offspring, she is passing on genes from the workers indirectly. Thus, it is of fitness benefit for the worker to maintain the queen without having any direct chance of passing on its genes due to its sterility. This phenomenon can explain many superficially altruistic behaviors seen in animals. However, these behaviors may not be truly defined as altruism in these cases because the actor is actually increasing its own fitness either directly (through its own offspring) or indirectly (through the inclusive fitness it gains through relatives that share genes with it).

Unrelated individuals may also act altruistically to each other, and this seems to defy the “selfish gene” explanation. An example of this has been observed in many monkey species where a monkey will present its back to an unrelated monkey to have that individual pick the parasites from its fur. After a certain amount of time, the roles are reversed and the first monkey now grooms the second monkey. Thus, there is reciprocity in the behavior. Both benefit from the interaction and their fitness is raised more than if neither cooperated nor if one cooperated and the other did not cooperate. This behavior is still not necessarily altruistic, as the “giving” behavior of the actor is based on the expectation that it will be the “receiver” of the behavior in the future, termed reciprocal altruism. Reciprocal altruism requires that individuals repeatedly encounter each other, often the result of living in the same social group and that cheaters (those that never “give back”) are punished.

Evolutionary game theory, a modification of classical game theory in mathematics, has shown that many of these so-called "altruistic behaviors" are not altruistic at all. The definition of "pure" altruism, based on human behavior, is an action that benefits another without any direct benefit to oneself. Most of the behaviors previously described do not seem to satisfy this definition, and game theorists are good at finding "selfish" components in them. Others have argued that the terms "selfish" and "altruistic" should be dropped completely when discussing animal behavior, as they describe human behavior and may not be directly applicable to instinctual animal activity. What is clear, though, is that heritable behaviors that improve the chances of passing on one's genes or a portion of one's genes are favored by natural selection and will be retained in future generations as long as those behaviors convey a fitness advantage.

Source: OpenStax (2019). *Behavioral biology: Proximate and ultimate causes of behavior.*

Reading Paragraph 1

Behaviors that lower the fitness of the individual but increase the fitness of another individual are termed altruistic. Examples of such behaviors are seen widely across the animal kingdom. Social insects such as worker bees have no ability to reproduce, yet they maintain the queen so she can populate the hive with her offspring. Meerkats keep a member of the group standing guard to warn the rest of the colony about intruders, even though the guarding meerkat is putting itself at risk. Wolves and wild dogs bring meat to pack members not present during a hunt. Although on the surface, these behaviors appear to be altruistic, it may not be so simple.

1. According to paragraph 1, which of the following is true?

a. Altruistic actions in nature decrease one's ability to survive while improving the fitness of others
b. Worker bees are social insects that guard the colony and produce offspring with their queen
c. Meerkats work in groups to defend and warn their community against intruders
d. Wild dogs bringing meat back from a hunt is a well-understood altruistic behavior

Reading Paragraph 2

There has been much discussion over why altruistic behaviors exist. Do these behaviors lead to overall evolutionary advantages for their species? Do they help the altruistic individual pass on its own genes? One explanation for altruistic-type behaviors is found in the genetics of natural selection. In the 1976 book, *The Selfish Gene*, scientist Richard Dawkins attempted to explain many seemingly altruistic behaviors from the viewpoint of the gene itself. Although a gene obviously cannot be selfish in the human sense, it may appear that way if the sacrifice of an individual benefits related individuals that share genes that are identical by descent (present in relatives because of common ancestors). Mammal parents make this sacrifice to take care of their offspring. Emperor penguins migrate miles in harsh conditions to bring food back for their young. Selfish gene theory has been controversial over the years and is still discussed among scientists in related fields.

2. The book *The Selfish Gene* deals with

- **a.** The debate about why organisms behave altruistically
- **b.** The popular theories scientists have on altruistic behaviors
- **c.** The author's explanation of altruistic behaviors
- **d.** Altruistic behaviors in humans with genes of identical descent

3. Why does the author say, "*Emperor penguins migrate miles in harsh conditions to bring food back for their young*"?

- **a.** To explain why emperor penguins travel so far for food
- **b.** To show that emperor penguins are birds that sacrifice the most for their young
- **c.** To provide an example of altruistic behavior
- **d.** To highlight how some altruistic behaviors fit the model of selfish gene theory

Reading Paragraph 3

Even less-related individuals with less genetic identity than those shared by parent and offspring benefit from seemingly altruistic behavior. The activities of social insects such as bees, wasps, ants, and termites are good examples. Sterile workers in these societies take care of the queen because they are closely related to it, and as the queen has offspring, she is passing on genes from the workers indirectly. Thus, it is of fitness benefit for the worker to maintain the queen without having any direct chance of passing on its genes due to its sterility. This phenomenon can explain many superficially altruistic behaviors seen in animals. However, these behaviors may not be truly defined as altruism in these cases because the actor is actually increasing its own fitness either directly (through its own offspring) or indirectly (through the inclusive fitness it gains through relatives that share genes with it).

4. The word superficially in paragraph 3 is closest in meaning to

- **a.** Apparent
- **b.** Artificially
- **c.** Creatively
- **d.** Beneficial

Reading Paragraph 4

Unrelated individuals may also act altruistically to each other, and this seems to defy the "selfish gene" explanation. An example of this has been observed in many monkey species where a monkey will present its back to an unrelated monkey to have that individual pick the parasites from its fur. After a certain amount of time, the roles are reversed and the first monkey now grooms the second monkey. Thus, there is reciprocity in the behavior. Both benefit from the interaction and their fitness is raised more than if neither cooperated nor if one cooperated and the other did not cooperate. This behavior is still not necessarily altruistic, as the "giving" behavior of the actor is based on the expectation that it will be the "receiver" of the behavior in the future, termed reciprocal altruism. Reciprocal altruism requires that individuals repeatedly encounter each other, often the result of living in the same social group and that cheaters (those that never "give back") are punished.

5. All of the following are true EXCEPT

- **a.** Some species of monkeys behave altruistically to others they are not related to
- **b.** When monkeys practice reciprocal altruism both participants gain
- **c.** Reciprocal altruism cannot really be considered altruism
- **d.** Reciprocal altruism occurs mostly in monkeys of the same species

Reading Paragraph 5

Evolutionary game theory, a modification of classical game theory in mathematics, has shown that many of these so-called "altruistic behaviors" are not altruistic at all. The definition of "pure" altruism, based on human behavior, is an action that benefits another without any direct benefit to oneself. Most of the behaviors previously described do not seem to satisfy this definition, and game theorists are good at finding "selfish" components in them. Others have argued that the terms "selfish" and "altruistic" should be dropped completely when discussing animal behavior, as they describe human behavior and may not be directly applicable to instinctual animal activity. What is clear, though, is that heritable behaviors that improve the chances of passing on one's genes or a portion of one's genes are favored by natural selection and will be retained in future generations as long as those behaviors convey a fitness advantage.

6. What have game theorists discovered about altruistic behavior in animals?

- **a.** Most do not qualify as truly altruistic because they involve selfish aspects
- **b.** The majority of animals engage in altruistic behavior
- **c.** Evolutionary game theory contradicts classic game theory in math
- **d.** The true definition of altruism is an action that does not benefit oneself in any way

7. What can be inferred from the information in paragraph five?

- **a.** Most animals are selfish beings by nature
- **b.** There is more than one definition of altruism in the animal kingdom
- **c.** People argue about selfish and altruistic behaviors in animals frequently
- **d.** It is instinctual for animals to behave in ways that preserve their genes

8. Which of the following best expresses the essential information in the highlighted sentence in paragraph 5? Incorrect choices change the meaning in important ways or leave out essential information.

- **a.** Animals will always continue to engage in behaviors that preserve their genetics
- **b.** Actions that preserve one's genes and remain advantageous to its fitness will continue in future generations
- **c.** Natural selection is marked by animals who act in ways that increase the chance of passing on their genes
- **d.** Behaviors that are advantageous to one generation will be passed on to the next

9. Look at the four squares (A, B, C, D) that indicate where the following sentence could be added to the passage.

Altruistic behaviors are not exclusively witnessed in humans.

Where would the sentence best fit?

A Behaviors that lower the fitness of the individual but increase the fitness of another individual are termed altruistic. **B** Examples of such behaviors are seen widely across the animal kingdom. **C** Social insects such as worker bees have no ability to reproduce, yet they maintain the queen so she can populate the hive with her offspring. **D** Meerkats keep a member of the group standing guard to warn the rest of the colony about intruders, even though the guarding meerkat is putting itself at risk.

10. DIRECTIONS: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. <u>This question is worth 2 points</u>.

Some animals behave in ways that seem altruistic, and while there are several explanations for this, there is also an argument that animal behavior is not and cannot be deemed altruistic.

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a. There are a variety of examples of altruistic behavior in the animal kingdom
b. Richard Dawkins was a genetics scientist who wrote a book in 1976 called *The Selfish Gene*
c. A strong explanation for altruistic behaviors is the instinctual desire to pass on one's genes
d. All species of monkeys engage in what is called reciprocal altruism
e. Some argue that it is best not to apply the terms that describe human behavior to animal behavior
f. Emperor penguins travel great distances just to get food for their offspring

Spanish Exploration of the Americas

The Spanish established the first European settlements in the Americas beginning in the Caribbean, and by 1600, extending throughout Central and South America. Thousands of Spaniards flocked to the Americas seeking wealth and status. The most famous of these Spanish adventurers is also the most controversial, Christopher Columbus, who, though Italian himself, explored on behalf of the Spanish monarchs.

The history of Spanish exploration begins with the history of Spain itself. During the fifteenth century, Spain hoped to gain advantage over its rival, Portugal. The marriage of Ferdinand of Aragon and Isabella of Castile in 1469 unified Catholic Spain and began the process of building a nation that could compete for worldwide power. Since the 700s, much of Spain had been under Islamic rule, and King Ferdinand II and Queen Isabella I were determined to defeat the Muslims in Granada, the last Islamic stronghold in Spain. In 1492, they completed the centuries-long Christian conquest of the Spanish territory. This marked another step forward in the process of making Spain a European power, and Ferdinand and Isabella were now ready to look further afield.

Their goals were to expand Catholicism and to gain a commercial advantage over Portugal. To those ends, Ferdinand and Isabella sponsored extensive Atlantic exploration. Spain's most famous explorer, Christopher Columbus, was actually from Italy. He believed that using calculations based on other mariners' journeys, he could chart a westward route to India, which could be used to expand European trade and spread Christianity. Starting in 1485, he approached Portuguese, English, and Spanish monarchs, asking for ships and funding to explore this westward route. All those he petitioned—including Ferdinand and Isabella at first—rebuffed him; their nautical experts all concurred that Columbus' estimates of the width of the Atlantic Ocean were far too low. However, after three years of pleas, and, more importantly, the completion of the war with the Muslims, Ferdinand and Isabella agreed to finance Columbus' expedition in 1492, supplying him with three ships. The Spanish monarchs knew that Portuguese mariners had reached the southern tip of Africa and sailed the Indian Ocean. They understood that the Portuguese would soon reach Asia, and in this competitive race to reach the Far East, the Spanish rulers decided to act.

Columbus held erroneous views that shaped his thinking about what he would encounter as he sailed west. He believed the earth to be much smaller than its actual size, and since he did not know of the existence of the Americas, he fully expected to land in Asia. On October 12, 1492, however, he made landfall on an island in the Bahamas, south of the present-day state of Florida. He then sailed to an island he named Hispaniola (present-day Dominican Republic and Haiti). Believing he had landed in the East Indies, Columbus called the native Taínos people he found there "Indios", giving rise to the term "Indian" for any native people of the New World. Upon Columbus' return to Spain, the Spanish crown bestowed on him the title of Admiral of the Ocean Sea and named him governor of the lands he had discovered. Up until the end of his life, Columbus held to his claim that the lands he had traveled to were part of the Asian continent, even though there was a mounting amount of evidence that contradicted his belief.

Many other Europeans followed in Columbus' footsteps, drawn by dreams of winning wealth by sailing west. Another Italian, Amerigo Vespucci, sailing for the Portuguese crown, explored the South American coastline between 1499 and 1502. Unlike Columbus, he realized that the Americas were not part of Asia but lands unknown to Europeans. Vespucci's widely published accounts of his voyages fueled speculation and intense interest in the New World among Europeans. Among those who read Vespucci's reports was the German mapmaker Martin Waldseemuller. Using the explorer's first name as a label for the new landmass, Waldseemuller attached "America" to his map of the New World in 1507, and the name stuck.

Source: Corbett *et al.*, (2014).

Reading Paragraph 1

The Spanish established the first European settlements in the Americas beginning in the Caribbean, and by 1600, extending throughout Central and South America. Thousands of Spaniards flocked to the Americas seeking wealth and status. The most famous of these Spanish adventurers is also the most controversial, Christopher Columbus, who, though Italian himself, explored on behalf of the Spanish monarchs.

1. The phrase flocked to in paragraph 1 is closest in meaning to

- **a.** Moved to
- **b.** Searched for
- **c.** Managed to
- **d.** Desired to

Reading Paragraph 2

The history of Spanish exploration begins with the history of Spain itself. During the fifteenth century, Spain hoped to gain advantage over its rival, Portugal. The marriage of Ferdinand of Aragon and Isabella of Castile in 1469 unified Catholic Spain and began the process of building a nation that could compete for worldwide power. Since the 700s, much of Spain had been under Islamic rule, and King Ferdinand II and Queen Isabella I were determined to defeat the Muslims in Granada, the last Islamic stronghold in Spain. In 1492, they completed the centuries-long Christian conquest of the Spanish territory. This marked another step forward in the process of making Spain a European power, and Ferdinand and Isabella were now ready to look further afield.

2. Which of the following is true?

a. Spain was looking to defeat its rival, Portugal, during the 1500s
b. Ferdinand of Aragon and Isabella of Castile united Spain through marriage
c. In 1492, the Spanish territory had been defeated by Muslim conquest
d. Spain became a major European power once they took over Portugal

Reading Paragraph 3

Their goals were to expand Catholicism and to gain a commercial advantage over Portugal. To those ends, Ferdinand and Isabella sponsored extensive Atlantic exploration. Spain's most famous explorer, Christopher Columbus, was actually from Italy. He believed that using calculations based on other mariners' journeys, he could chart a westward route to India, which could be used to expand European trade and spread Christianity. Starting in 1485, he approached Portuguese, English, and Spanish monarchs, asking for ships and funding to explore this westward route. All those he petitioned—including Ferdinand and Isabella at first—rebuffed him; their nautical experts all concurred that Columbus' estimates of the width of the Atlantic Ocean were far too low. However, after three years of pleas, and, more importantly, the completion of the war with the Muslims, Ferdinand and Isabella agreed to finance Columbus' expedition in 1492, supplying him with three ships. The Spanish monarchs knew that Portuguese mariners had reached the southern tip of Africa and sailed the Indian Ocean. They understood that the Portuguese would soon reach Asia, and in this competitive race to reach the Far East, the Spanish rulers decided to act.

3. Which of the following best expresses the essential information in the highlighted sentence in paragraph 3? Incorrect choices change the meaning in important ways or leave out essential information.

- **a.** Columbus thought he could sail to India to increase European trade and spread Christianity
- **b.** After landing in India, Columbus planned on exploring India using other explorers' charts
- **c.** Columbus had calculated a route to India based on other mariners' calculations
- **d.** Columbus felt his expedition would open new trade routes

4. According to paragraph 3, why did the Spanish monarchs decide to fund Christopher Columbus' expedition?

- **a.** They were certain that the calculations for his expedition were correct
- **b.** So they could be credited with discovering India and sailing the Indian Ocean
- **c.** They wanted to reach India and the Far East before Portugal
- **d.** They realized the trade routes they could open up

Reading Paragraph 4

Columbus held erroneous views that shaped his thinking about what he would encounter as he sailed west. He believed the earth to be much smaller than its actual size, and since he did not know of the existence of the Americas, he fully expected to land in Asia. On October 12, 1492, however, he made landfall on an island in the Bahamas, south of the present-day state of Florida. He then sailed to an island he named Hispaniola (present-day Dominican Republic and Haiti). Believing he had landed in the East Indies, Columbus called the native Taínos people he found there "Indios", giving rise to the term "Indian" for any native people of the New World. Upon Columbus' return to Spain, the Spanish crown bestowed on him the title of Admiral of the Ocean Sea and named him governor of the lands he had discovered. Up until the end of his life, Columbus held to his claim that the lands he had traveled to were part of the Asian continent, even though there was a mounting amount of evidence that contradicted his belief.

5. The phrase erroneous views in paragraph 4 is closest in meaning to

- **a.** Unclear visions
- **b.** False conceptions
- **c.** Exciting possibilities
- **d.** Proven ideas

6. Why does the author say, "*giving rise to the term 'Indian' for any native people of the New World*"?

- **a.** To explain how and why people from the Americas came to be called Indians
- **b.** Because Columbus called the native Taínos people Indios, which means Indian
- **c.** To show that Columbus had thought he found India
- **d.** To explain why he was given the title of Admiral of the Ocean Sea when he went back to Spain

7. What can be inferred about Columbus based on the information from the paragraph?

- **a.** He was an amateur sailor who needed more experience
- **b.** He likely betrayed the monarchs of Spain because he was bribed by Portugal
- **c.** He ignored or denied the evidence suggesting he did not make it to Asia
- **d.** He lied about his discoveries because he sought glory and fame

Reading Paragraph 5

Many other Europeans followed in Columbus' footsteps, drawn by dreams of winning wealth by sailing west. Another Italian, Amerigo Vespucci, sailing for the Portuguese crown, explored the South American coastline between 1499 and 1502. Unlike Columbus, he realized that the Americas were not part of Asia but lands unknown to Europeans. Vespucci's widely published accounts of his voyages fueled speculation and intense interest in the New World among Europeans. Among those who read Vespucci's reports was the German mapmaker Martin Waldseemuller. Using the explorer's first name as a label for the new landmass, Waldseemuller attached "America" to his map of the New World in 1507, and the name stuck.

8. According to the paragraph, which of the following is true?

- **a.** Few tried to accomplish what Christopher Columbus had done
- **b.** Another Spanish explorer, Amerigo Vespucci, sailed the South American coastline
- **c.** Vespucci made the same mistake as Columbus and believed the Americas were part of Asia
- **d.** The Americas landmass was named after Amerigo Vespucci

9. Look at the four squares (A, B, C, D) that indicate where the following sentence could be added to the passage.

Though it was not Asia, he still recognized the opportunities and wanted to share what he had learned about this new land.

Where would the sentence best fit?

Many other Europeans followed in Columbus' footsteps, drawn by dreams of winning wealth by sailing west. **A** Another Italian, Amerigo Vespucci, sailing for the Portuguese crown, explored the South American coastline between 1499 and 1502. **B** Unlike Columbus, he realized that the Americas were not part of Asia but lands unknown to Europeans. **C** Vespucci's widely published accounts of his voyages fueled speculation and intense interest in the New World among Europeans. **D**

10. DIRECTIONS: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.

Though unbeknownst to him, Christopher Columbus discovered the Americas after being funded by the Spanish monarchs to sail to India, spread Christianity, and increase trade.

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a. Christopher Columbus was commissioned by Spain but was actually of Italian origin
b. Neighboring Portugal had already sailed the Indian Ocean but had not reached India
c. Spain was under Islamic rule for hundreds of years until the monarchs Isabella and Ferdinand defeated the Muslims in Granada
d. After initially being turned down, Columbus was supported by the Spanish to sail to India
e. Columbus made landfall first in the Caribbean, but he believed he had reached India
f. After Columbus, Europeans flocked to the Americas in search of opportunity

The Composition of Meteors

Meteors are tiny solid particles that enter Earth's atmosphere from interplanetary space. Since the particles move at speeds of many kilometers per second, friction with the air vaporizes them at altitudes between 80 and 130 kilometers. The resulting flashes of light fade out within a few seconds. These "shooting stars" got their name because at night their luminous vapors look like stars moving rapidly across the sky. Some meteorites do end up landing on Earth's surface. It was not until the time when meteorites were measured and their compositions analyzed in detail that scientists appreciated their true significance. The meteorites include the oldest and most primitive materials available for direct study in the laboratory.

The average age for the most primitive meteorites, calculated using the most accurate values now available for radioactive half-lives, is 4.5 billion years. This value is taken to represent the age of the solar system—the time since the first solids condensed and began to form into larger bodies.

Meteorites are often classified between primitive and differentiated meteorites. The differentiated meteorites are fragments of larger parent bodies that were molten before they broke up, allowing the denser materials (such as metals) to sink to their centers. Like many rocks on Earth, they have been subject to a degree of chemical reshuffling, with the different materials sorted according to density. Differentiated meteorites include the irons, which come from the metal cores of their parent bodies; stony-irons, which probably originate in regions between a metal core and a stony mantle; and some stones that are composed of mantle or crust material from their differentiated parent bodies.

For information on the earliest history of the solar system, we turn to the primitive meteorites—those made of materials that have not been subject to great heat or pressure since their formation. We can look at the spectrum of sunlight reflected from asteroids and compare their compositions with those of primitive meteorites. Such analysis indicates that their parent bodies are almost certainly asteroids. Since asteroids are believed to be fragments left over from the formation process of the solar system, it makes sense that they should be the parent bodies of the primitive meteorites.

The great majority of the meteorites that reach Earth are primitive stones. Many of them are composed of light-colored gray silicates with some metallic grains mixed in. Among the most useful of these meteorites have been the Allende meteorite that fell in Mexico, the Murchison meteorite that fell in Australia, and the Tagish Lake meteorite that landed in a winter snowdrift on Tagish Lake, Canada, in 2000.

The Murchison meteorite is known for the variety of organic chemicals it has yielded. Most of the carbon compounds in carbonaceous meteorites are complex, tar-like substances that defy exact analysis. Murchison also contains 16 amino acids (the building blocks of proteins), 11 of which are rare on Earth. The most remarkable thing about these organic molecules is that they include equal numbers with right-handed and left-handed molecular symmetry. Amino acids can have either kind of symmetry, but all life on Earth has evolved using only the left-handed versions to make proteins. The presence of both kinds of amino acids clearly demonstrates that the ones in the meteorites had an extraterrestrial origin.

These naturally occurring amino acids and other complex organic molecules in Murchison—formed without the benefit of the sheltering environment of planet Earth—show that a great deal of interesting chemistry must have taken place when the solar system was forming. If so, then perhaps some of the molecular building blocks of life on Earth were first delivered by primitive meteorites and comets. This is an interesting idea because our planet was probably much too hot for any organic materials to survive its earliest history. But after Earth's surface cooled the asteroid and comet fragments that pelted it could have refreshed its supply of organic materials.

Source: Fraknoi, A., Morrison, D., & Wolff, S. C. (2016).

Reading Paragraph 1

Meteors are tiny solid particles that enter Earth's atmosphere from interplanetary space. Since the particles move at speeds of many kilometers per second, friction with the air vaporizes them at altitudes between 80 and 130 kilometers. The resulting flashes of light fade out within a few seconds. These "shooting stars" got their name because at night their luminous vapors look like stars moving rapidly across the sky. Some meteorites do end up landing on Earth's surface. It was not until the time when meteorites were measured and their compositions analyzed in detail that scientists appreciated their true significance. The meteorites include the oldest and most primitive materials available for direct study in the laboratory.

1. The word luminous in paragraph 1 is closest in meaning to

- **a.** Beautiful
- **b.** Sweeping
- **c.** Glowing
- **d.** Dark

2. According to paragraph 1, which of the following is true?

- **a.** Most meteorites fall to Earth's surface after they are vaporized
- **b.** Large particles that come together from interplanetary space form what is called a meteor
- **c.** Meteors are vaporized due to friction at heights of about 100 kilometers
- **d.** Flashes of light seen in the sky at night are falling stars, which we refer to as shooting stars

Reading Paragraph 2

The average age for the most primitive meteorites, calculated using the most accurate values now available for radioactive half-lives, is 4.5 billion years. This value is taken to represent the age of the solar system—the time since the first solids condensed and began to form into larger bodies.

3. What can be inferred from the information in paragraph two?

- **a.** Most meteorites are primitive meteorites
- **b.** The solar system is roughly 4.5 billion years old
- **c.** Astronomers prefer to study primitive meteorites since they are older
- **d.** Scientists have utilized new technology to assess the age of primitive meteorites

Reading Paragraph 3

Meteorites are often classified between primitive and differentiated meteorites. The differentiated meteorites are fragments of larger parent bodies that were molten before they broke up, allowing the denser materials (such as metals) to sink to their centers. Like many rocks on Earth, they have been subject to a degree of chemical reshuffling, with the different materials sorted according to density. Differentiated meteorites include the irons, which come from the metal cores of their parent bodies; stony-irons, which probably originate in regions between a metal core and a stony mantle; and some stones that are composed of mantle or crust material from their differentiated parent bodies.

4. All of the following are true EXCEPT

- **a.** Differentiated meteorites come from larger objects which were made of molten originally
- **b.** There are only two classes of meteorites: primitive and differentiated
- **c.** Meteorites composed of molten metals tend to have heavier materials in its center
- **d.** Among the differentiated meteorites are the irons and stony-irons

Reading Paragraph 4

For information on the earliest history of the solar system, we turn to the primitive meteorites—those made of materials that have not been subject to great heat or pressure since their formation. We can look at the spectrum of sunlight reflected from asteroids and compare their compositions with those of primitive meteorites. Such analysis indicates that their parent bodies are almost certainly asteroids. Since asteroids are believed to be fragments left over from the formation process of the solar system, it makes sense that they should be the parent bodies of the primitive meteorites.

5. According to paragraph 4, how can we learn about the solar system's earliest history?

- **a.** By looking at the composition of differentiated meteorites
- **b.** From looking at images of primitive meteorites when they are attached to parent asteroids
- **c.** By studying asteroids and the parent bodies of both differentiated and primitive meteorites
- **d.** By comparing the makeup of primitive meteorites to that of asteroids seen through the reflection of sunlight

Reading Paragraph 5

The great majority of the meteorites that reach Earth are primitive stones. Many of them are composed of light-colored gray silicates with some metallic grains mixed in. Among the most useful of these meteorites have been the Allende meteorite that fell in Mexico, the Murchison meteorite that fell in Australia, and the Tagish Lake meteorite that landed in a winter snowdrift on Tagish Lake, Canada, in 2000.

6. Why does the author say that the Allende, the Murchison, and the Tagish Lake meteorites were "*among the most useful*"?

- **a.** To explain that these meteorites provide scientists with the most information
- **b.** To suggest that these meteorites were the most intact of all that have fallen to Earth
- **c.** To point out the countries that recovered the most information
- **d.** To show that there have not been many useful fallen meteorites since 2000

Reading Paragraph 6

The Murchison meteorite is known for the variety of organic chemicals it has yielded. Most of the carbon compounds in carbonaceous meteorites are complex, tar-like substances that defy exact analysis. Murchison also contains 16 amino acids (the building blocks of proteins), 11 of which are rare on Earth. The most remarkable thing about these organic molecules is that they include equal numbers with right-handed and left-handed molecular symmetry. Amino acids can have either kind of symmetry, but all life on Earth has evolved using only the left-handed versions to make proteins. The presence of both kinds of amino acids clearly demonstrates that the ones in the meteorites had an extraterrestrial origin.

7. According to paragraph 6, what is so notable about the Murchison meteorite?

- **a.** It was made entirely of carbon compounds that could not be analyzed
- **b.** It had within it sixteen amino acids which are rare to find on Earth
- **c.** It was of extraterrestrial origin and contained an unmatched symmetry
- **d.** It contained eleven rare amino acids that included a unique molecular symmetry

Reading Paragraph 7

These naturally occurring amino acids and other complex organic molecules in Murchison—formed without the benefit of the sheltering environment of planet Earth—show that a great deal of interesting chemistry must have taken place when the solar system was forming. If so, then perhaps some of the molecular building blocks of life on Earth were first delivered by primitive meteorites and comets. This is an interesting idea because our planet was probably much too hot for any organic materials to survive its earliest history. But after Earth's surface cooled the asteroid and comet fragments that pelted it could have refreshed its supply of organic materials.

8. Which of the following best expresses the essential information in the highlighted sentence in paragraph 7? Incorrect choices change the meaning in important ways or leave out essential information.

- **a.** The amino acids and organic molecules found in the Murchison meteorite occur naturally
- **b.** The amino acids and organic molecules in the Murchison meteorite tell us a lot about the chemistry of the formation of the solar system
- **c.** The Murchison meteorite was formed in space so the chemical processes were different
- **d.** The amino acids and organic molecules contained within the Murchison meteorite would be different had they been formed on Earth

9. Look at the four squares (A, B, C, D) that indicate where the following sentence could be added to the passage.

Some have been more helpful than others in providing information about the solar system.

Where would the sentence best fit?

A The great majority of the meteorites that reach Earth are primitive stones. **B** Many of them are composed of light-colored gray silicates with some metallic grains mixed in. **C** Among the most useful of these meteorites have been the Allende meteorite that fell in Mexico, the Murchison meteorite that fell in Australia, and the Tagish Lake meteorite that landed in a winter snowdrift on Tagish Lake, Canada, in 2000. **D**

10. DIRECTIONS: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. <u>This question is worth 2 points</u>.

Scientists have found that meteors and their chemical composition reveal a great deal regarding our solar system.

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-
-

a. Meteorites that have fallen to Earth have helped us gain a better understanding of the universe
b. Primitive meteorites and their chemical makeup have provided an approximate age of the solar system at 4.5 billion years
c. Meteorites that are vaporized by friction are referred to as “shooting stars”
d. The two most common classes of meteorites are differentiated and primitive meteorites
e. Scientists learned a lot about the chemistry of the formation of the solar system by studying the composition of fallen meteors
f. The majority of meteorites that have landed on Earth are classified as differentiated meteorites

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Practice Test #12

For the TOEFL® Reading Section

Answer Key

The Grading Rubric

Use the chart below to determine your score in the reading section.

There are only 30 questions in this reading section, but the highest raw score is 33. The last question of each passage, either in the form of a summary or organization question, is worth two to three points since each requires more than one answer.

Summary questions are worth two points. If all three choices are correct, award yourself two points. If two choices are correct and one is incorrect, award yourself one point. If two or more choices are incorrect, you earn zero points for the given question.

Organization questions are worth three points. If all five choices are correct, award yourself three points. If four choices are correct and one is incorrect, award yourself two points. If three choices are correct and two are incorrect, award yourself one point. If three or more choices are incorrect, you earn zero points for the given question.

Raw Points	Score Estimate	Raw Points	Score Estimate	Raw Points	Score Estimate
33	30	22	20	11	10
32	29	21	19	10	9
31	28	20	18	9	8
30	27	19	17	8	7
29	26	18	16	7	6
28	25	17	15	6	5
27	25	16	15	5	5
26	24	15	14	4	4
25	23	14	13	3	3
24	22	13	12	2	2
23	21	12	11	1	1

Altruistic Behavior: Answer Key

Source: OpenStax (2019). *Behavioral biology: Proximate and ultimate causes of behavior.*

1. A (factual information)

A is correct because the paragraph says that "*Behaviors that lower the fitness of the individual but increase the fitness of another individual are termed altruistic",* and "*fitness*" here refers to the ability to survive and reproduce. Therefore, option **A** is true. Option **B** is incorrect because the paragraph says *"Social insects such as worker bees have no ability to reproduce",* and does not say that they guard the colony. Option **C** is wrong because the paragraph says that "*Meerkats keep a member of the group standing guard to warn the rest of the colony about intruders,…*" not that they work in groups. Option **D** is wrong because the last sentence says *"Although on the surface, these behaviors appear to be altruistic, it may not be so simple".*

2. C (factual information)

C is correct because the paragraph says, "*In the 1976 book, The Selfish Gene, scientist Richard Dawkins attempted to explain many seemingly altruistic behaviors…*". Options **A** and **B** are incorrect because, although the paragraph explains there is a debate and more than one theory, this book only deals with Richard Dawkins' explanation. **D** is incorrect because it mixes details.

3. D (rhetorical purpose)

D is correct because the paragraph raises the question that behaviors deemed altruistic might be for the preservation of genes rather than being true sacrifices made altruistically; the selfish gene theory is described. Option **A** is incorrect because neither the paragraph nor the passage are about emperor penguins specifically. Option **B** is wrong because this is never mentioned nor is it true based on the rest of the information in the paragraph and passage. Option **C** is wrong because, although this might seem like altruistic behavior, it is not the reason that the author provided for this specific example.

4. A (vocabulary)

A is correct because "*superficially*" is closest in meaning to "*apparent*" in this situation. In this sentence, "*superficially*" is an adjective describing altruistic behaviors, so **D** ("*beneficial*") can be eliminated since it has a similar meaning to altruistic. Even though they both end in "*-ly*", **B** ("*artificially*") and **C** ("*creatively*") can also be eliminated because there is nothing in the context to suggest that these altruistic behaviors are creative or artificial.

5. D (negative factual information)

D is correct because the paragraph says, "*An example of this has been observed in many monkey species where a monkey will present its back to an unrelated monkey to have that individual pick the parasites from its fur",* whether or not this is only monkeys within the same species is never mentioned. Options **A** to **C** are incorrect because they are true statements found in the paragraph. **B** is a true statement because reciprocal altruism is when both sides give and both sides receive or gain. **C** is also true because the paragraph says, *"This behavior is still not necessarily altruism...".*

6. A (factual information)

A is correct because the paragraph says that "*Most of the behaviors previously described do not seem to satisfy this definition, and game theorists find 'selfish' components in them".* Option **B** is incorrect because the paragraph does not say this. Option **C** is incorrect because the paragraph states that evolutionary game theory is a "*modification of classical game theory in mathematics*" and it does not answer the question as something that game theorists "*found*". Option **D** is wrong because game theorists did not discover the true definition, according to the paragraph.

7. D (inference)

D is the correct answer because based on the information from the paragraph, it is perhaps best not to apply the terms "*selfish*" or "*altruistic*" to "*instinctual animal activity*", so it is logical to infer that these behaviors, which lead to the continuation of their genes, are instinctual. The end of the paragraph also supports this inference by stating that *"...heritable behaviors that improve the chances of passing on one's genes or a portion of one's genes are favored by natural selection...".* Option **A** is incorrect because there is nothing in the paragraph to suggest this. **B** and **C** are incorrect because these are statements not inferences from the information in the paragraph.

8. B (sentence simplification)

B is correct because it correctly summarizes the main point of the sentence. Option **A** is wrong because the sentence does not say that animals will "*always continue to engage*" in these behaviors, it includes specific conditions such as "*as long as those behaviors convey a fitness advantage".* Options **C** and **D** are incorrect because, while parts of them are true, they do not paraphrase the main point of the sentence.

9. B (insert text)

B is correct because the sentence best fits here. "*Altruistic behaviors*" refers back to *"behaviors...termed altruistic"* in the previous sentence. The following sentence lists some examples of "*such behaviors*" seen in "*the animal kingdom",* not in humans. The sentence does not fit or flow well in any other position as the rest of the paragraph discusses specific examples.

10. A, C, E (prose summary)

A, **C**, and **E** are correct because these choices are critical to the main discussion of the passage. They require elaboration and are explained at length throughout the passage. Options **B** and **F** are wrong because they are minor details mentioned in the passage but not critical to the main point. Option **D** is wrong because the passage does not say that "*all*" species of monkeys engage in this type of behavior.

Spanish Exploration of the Americas: Answer Key

Source: Corbett *et al.*, (2014).

1. A (vocabulary)

A is correct because "*flocked to*" is closest in meaning to "*moved to*" in this situation. From the context, it is clear that "*flocked to*" is a verb and it connects "*...thousands of Spaniards...*" to "*...the Americas...*". Since "*the Americas*" is a geographic location, **C** ("*managed to*") and **D** ("*desired to*") can be eliminated because they do not make sense. **B** ("*searched for*") could fit, but it is not a synonym of "*flocked to*".

2. B (factual information)

B is correct because the paragraph says "*The marriage of Ferdinand of Aragon and Isabella of Castile in 1469 unified Catholic Spain....*" Option **A** is incorrect because the original sentence is "*During the fifteenth century, Spain hoped to gain advantage over its rival, Portugal*"; the 15th-century equates to the 1400s, not the 1500s like the option says. Option **C** is incorrect because it says that "*they completed the centuries-long Christian conquest of the Spanish territory",* not the Muslim conquest. Option **D** is wrong because the paragraph never mentions whether Spain took over Portugal or what effect that had.

3. A (sentence simplification)

A is correct because it summarizes the main point of the sentence. Option **B** is incorrect because the statement does not say anything about him exploring India or *"using other explorers' charts".* Option **C** is wrong because it leaves out an important point, the purpose of his trip to India. Option **D**, while true, is only part of what the sentence says and lacks major details such as his plan to sail there and spread Christianity.

4. C (factual information)

C is correct because the final sentence of the paragraph says, *"The Spanish monarchs knew that Portuguese mariners had...sailed the Indian Ocean"* and that *"They understood that the Portuguese would soon reach Asia and, in this competitive race to reach the Far East, the Spanish rulers decided to act".* Option **A** is wrong because, at first, people doubted his calculations, according to the paragraph. **B** is not correct because the

paragraph does not say they wanted credit. Option **D** might be true but this is not mentioned in the paragraph, thus it is an incorrect choice.

5. B (vocabulary)

B is correct because "*erroneous views*" means incorrect or "*false*" opinions or conceptions. Option **A** is incorrect because, in this context, "*visions*" is incorrect and is not synonymous with "*views*". Options **C** and **D** can be eliminated because it is clear that "*exciting possibilities*" does not work nor does "*proven ideas*" based on the next sentence which explains the false ideas he had about *"what he would encounter".*

6. A (rhetorical purpose)

A is correct because the phrase "*giving rise to*" means that it started or was the reason that native people of the New World came to be called "*Indians*". Native people in America continue to be called Indians, all due to Columbus' misunderstanding that the author describes. Option **B**, while true, does not state the true purpose of this phrase. Option **C** is incorrect, which can be determined by reading the sentence prior. Option **D** is incorrect because he was not given this title because he referred to native people of the New World as Indians.

7. C (inference)

C is correct because the end of the paragraph explains that he continued to believe *"until the end of his life"* that he traveled to the Asian continent despite the growing evidence that suggested otherwise. If there was *"a mounting amount of evidence",* there was more and more proof that he did not travel to Asia, so if he continued to believe this until he died, then it is fair to infer that he either ignored or denied this evidence. He was clearly an experienced sailor, but he lacked geographic knowledge, so option **A** is incorrect. There is nothing to suggest that he "*betrayed*" the Spanish monarchs nor that he lied about his discoveries, though he was incorrect about some due to his lack of knowledge, so options **B** and **D** are also wrong.

8. D (factual information)

D is correct because the final sentence of the paragraph says, "*Using the explorer's first name as a label for the new landmass, Waldseemuller attached 'America' to his map of the New World in 1507 and the name stuck*". Options **A** to **C** are incorrect because they are not true. Option **A** uses the modifier "*few*" while the original statement is that "*many*" tried to follow *"in Columbus' footsteps".* Option **B** is wrong because Amerigo Vespucci was Italian, as was Columbus, hence why the paragraph says *"Another Italian".* Option **C** is wrong because it is the opposite of what the paragraph describes; Vespucci did not make this mistake.

9. C (insert text)

C is correct. Based on the phrase, "*though it was not Asia*", we can conclude that the missing sentence must follow the one that explains that Vespucci *"realized that the Americas were not part of Asia".* The missing sentence contrasts with the previous sentence, making it the most logical and fitting place for it. Based on the information in the missing sentence, it does not fit in any other place, for no other part of the paragraph is related to the content of this sentence.

10. D, E, F (prose summary)

D, **E**, and **F** are correct because these choices are directly related to the summary sentence and to the main discussion of the passage. They are elaborated on throughout and consist of the main ideas discussed in the passage. Options **A** to **C** are merely facts and details that add bits of information to the overall discussion. Standing alone, these statements do not relate to the summary sentence nor do they make up the main point of the passage.

The Composition of Meteors: Answer Key

Fraknoi, A., Morrison, D., & Wolff, S. C. (2016).

1. C (vocabulary)

C is correct because "*luminous*" is closest in meaning to "*glowing*" in this case, as it refers to a light or something that is bright or shining. Option **D** ("*dark*") is the opposite of **C** and can be eliminated based on the fact that the surrounding sentences in the paragraph talk about *"flashes of light"* and stars. Options **A** ("*beautiful*") and **B** ("*sweeping*") can be eliminated because they are not adjectives typically used to describe light or vapors of stars.

2. C (factual information)

C is correct because it is true; the original sentence says, *"Since the particles move at speeds of many kilometers per second, friction with the air vaporizes them at altitudes between 80 and 130 kilometers".* Option **A** is wrong because it has the modifier "*most*" which is not used in the original statement, *"Some meteorites do end up landing on Earth's surface".* Again in option **B**, the modifier "*large*" makes the statement false and, therefore, incorrect. Option **D** is incorrect because the paragraph does not say that flashes of light in the sky are stars, but are rather meteorites called "*shooting stars*".

3. D (inference)

D is correct because the paragraph says that calculations were made "*using the most accurate values now available for radioactive half-lives,...*". which implies they are related to technology. **A** is incorrect because this is never implied. **B** is incorrect because 4.5 billion years is the age of most primitive meteorites. **C** is incorrect because astronomers are never mentioned in the text.

4. B (negative factual information)

B is correct because it is not true. The paragraph tells us *"Meteorites are often classified between primitive and differentiated meteorites;"* it does not say that there are "*only*" two classes of meteorites. Option **A**, option **C**, and option **D** are incorrect because they are stated in the paragraph. **A** and **C** are true because the paragraph says, "*The differentiated meteorites are fragments of larger parent bodies that were molten before they broke up, allowing the denser materials (such as metals) to sink to their centers*". **D** is also true because it says, "*Differentiated meteorites include the irons, which come from the metal cores of their parent bodies; stony-irons".*

5. D (factual information)

D is correct because the paragraph says, *"For information on the earliest history of the solar system, we turn to the primitive meteorites",* and, "*We can look at the spectrum of sunlight reflected from asteroids and compare their compositions with those of primitive meteorites".* Option **A** can be eliminated because differentiated meteorites are not mentioned in this paragraph. Option **B** is wrong because there is no mention of "*images*" of anything in paragraph four. Option **C** is incorrect; the paragraph does not say we can study asteroids, nor does it say that they are the "*parent bodies of both*" types of meteorites.

6. A (rhetorical purpose)

A is correct because the fact that the author says these were *"among the most useful*" means they were "*helpful*" for acquiring knowledge about meteorites. Option **B** can be eliminated because nothing in this sentence, let alone the paragraph, suggests that these meteorites were the most intact of all. Option **C** is wrong because neither the sentence nor the paragraph says anything about how the countries recovered the most information. Option **D** is incorrect because it is never mentioned or implied.

7. D (factual information)

D is correct because the paragraph says that this meteorite has eleven amino acids that are rare on Earth, and *"The most remarkable thing about these organic molecules is that they include equal numbers with right-handed and left-handed molecular symmetry".* Option **A** is wrong because the paragraph does not say that it was made entirely of carbon compounds, it says *"Most of the carbon compounds in carbonaceous meteorites are complex…".* Option **B** can be eliminated because the original statement says, "*Murchison also contains 16 amino acids (the building blocks of proteins), 11 of which are rare on Earth",* therefore not all 16 are rare on Earth. Option **C** is incorrect because the paragraph does not say that this is notable about the Murchison meteorite.

8. B (sentence simplification)

B is correct because this choice paraphrases the original sentence properly, including the main point, and it does not alter the meaning in important ways. On the other hand, option **A** only includes a detail mentioned in the sentence, so it can be eliminated. Options **C** and option **D** are wrong because they contain information that is not in the original sentence.

9. C (insert text)

C is correct because the missing sentence best fits here. The pronoun referent "*some*" refers back to "*meteorites that reach Earth",* and the rest of this sentence introduces the sentence that comes next; the phrase "*some have been more helpful than others…*" sets up the next sentence which starts with *"Among the most useful of these meteorites…".* Therefore, it does not make sense any earlier or later in the paragraph.

10. A, B, E (prose summary)

A, **B**, and **E** are correct because these options are directly related to the given summary statement and make up some of the most important points in the passage. They are elaborated on and discussed in detail. Options **C**, **D**, and **F** are incorrect. Options **C** and **D** are minor details that are not related to the summary sentence. Option **F** can be eliminated because it is wrong; most are primitive, not differentiated.

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