

TOEFL Prep

Reading Session 2



Reading Session 2

Reading Section Directions

The Reading section measures your ability to read and understand passages in English. You will read two passages and answer questions about them.

For most questions, you will choose the one best answer of four possible answers. These questions are worth one point each. The last question in each set is worth more than one point. The directions for this question indicate how many points you can receive. Some passages have one or more words in bold type. For these bolded words, you will see a definition or explanation in a glossary at the end of the passage.

Answer all questions about a passage on the basis of what is stated or implied in that passage.

You have 36 minutes to read the passages and answer all of the questions. Allow approximately 18 minutes to work on each passage.



Reading Session 2

PASSAGE 1

AGGRESSION

When one animal attacks another, it engages in the most obvious example of aggressive behaviour. Psychologists have adopted several approaches to understanding aggressive behaviour in people.

The Biological Approach. Numerous biological structures and chemicals appear to be involved in aggression. One is the hypothalamus, a region of the brain. In response to certain stimuli, many animals show instinctive aggressive reactions. The hypothalamus appears to be involved in this inborn reaction pattern: electrical stimulation of part of the hypothalamus triggers stereotypical aggressive behaviours in many animals. In people, however, whose brains are more complex, other brain structures apparently moderate possible instincts.



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An offshoot of the biological approach called sociobiology suggests that aggression is natural and even desirable for people. Sociobiology views much social behavior, including aggressive behavior, as genetically determined. Consider Darwin's theory of evolution. Darwin held that many more individuals are produced than can find food and survive into adulthood. A struggle for survival follows. Those individuals who possess characteristics that provide them with an advantage in the struggle for existence are more likely to survive and contribute their genes to the next generation. In many species, such characteristics include aggressiveness. Because aggressive individuals are more likely to survive and reproduce, whatever genes are linked to aggressive behavior are more likely to be transmitted to subsequent generations. The sociobiological view has been attacked on numerous grounds. One is that people's capacity to outwit other species, not their aggressiveness, appears to be the dominant factor in human survival. Another is that there is too much variation among people to believe that they are dominated by, or at the mercy of, aggressive impulses.



Reading Session 2

The Psychodynamic Approach. Theorists adopting the psychodynamic approach hold that inner conflicts are crucial for understanding human behavior, including aggression. Sigmund Freud, for example, believed that aggressive impulses are inevitable reactions to the frustrations of daily life. Children normally desire to vent aggressive impulses on other people, including their parents, because even the most attentive parents cannot gratify all of their demands immediately. Yet children also fearing their parents' punishment and the loss of parental love, come to repress most aggressive impulses. The Freudian perspective, in a sense, sees us as "steam engines." By holding in rather than venting "steam," we set the stage for future explosions. Pent-up aggressive impulses demand outlets. They may be expressed toward parents in indirect ways such as destroying furniture, or they may be expressed toward strangers later in life.



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According to psychodynamic theory, the best ways to prevent harmful aggression may be to encourage less harmful aggression. In the steam-engine analogy, verbal aggression may vent some of the aggressive steam. So might cheering on one's favorite sports team. Psychoanalysts, therapists adopting a psychodynamic approach, refer to the venting of aggressive impulses as "catharsis."* Catharsis is theorized to be a safety valve. But research findings on the usefulness of catharsis are mixed. Some studies suggest that catharsis leads to reductions in tension and a lowered likelihood of future aggression. Other studies, however, suggest that letting some steam escape actually encourages more aggression later on.

The Cognitive Approach. Cognitive psychologists assert that our behavior is influenced by our values, by the ways in which we interpret our situations, and by choice. For example, people who believe that aggression is necessary and justified - as during wartime - are likely to act aggressively, whereas people who believe that a particular war or act of aggression is unjust, or who think that aggression is never justified, are less likely to behave aggressively.



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One cognitive theory suggests that aggravating and painful events trigger unpleasant feelings. These feelings, in turn, can lead to aggressive action, but not automatically. Cognitive factors intervene. People decide whether they will act aggressively or not on the basis of factors such as their experiences with aggression and their interpretation of other people's motives. Supporting evidence comes from research showing that aggressive people often distort other people's motives. For example, they assume that other people mean them harm when they do not.

***Catharsis:** In psychodynamic theory, the purging of strong emotions or the relieving of tensions



Reading Session 2

The Biological Approach. Numerous biological structures and chemicals appear to be involved in aggression. One is the hypothalamus, a region of the brain. In response to certain stimuli, many animals show instinctive aggressive reactions. The hypothalamus appears to be involved in this inborn reaction pattern: electrical stimulation of part of the hypothalamus triggers stereotypical aggressive behaviours in many animals. In people, however, whose brains are more complex, other brain structures apparently moderate possible instincts.

1. According to paragraph 2, what evidence indicates that aggression in animals is related to the hypothalamus?
 - A. Some aggressive animal species have a highly developed hypothalamus.
 - B. Electrical stimulation of the hypothalamus delays animals' inborn reaction patterns.
 - C. Animals behaving aggressively show increased activity in the hypothalamus.
 - D. Animals who lack a hypothalamus display few aggressive tendencies.



Reading Session 2

An offshoot of the biological approach called sociobiology suggests that aggression is natural and even desirable for people. Sociobiology views much social behavior, including aggressive behavior, as genetically determined. Consider Darwin's theory of evolution. Darwin held that many more individuals are produced than can find food and survive into adulthood. A struggle for survival follows. Those individuals who possess characteristics that provide them with an advantage in the struggle for existence are more likely to survive and contribute their genes to the next generation. In many species, such characteristics include aggressiveness. Because aggressive individuals are more likely to survive and reproduce, whatever genes are linked to aggressive behavior are more likely to be transmitted to subsequent generations. The sociobiological view has been attacked on numerous grounds.

One is that people's capacity to outwit other species, not their aggressiveness, appears to be the dominant factor in human survival. Another is that there is too much variation among people to believe that they are dominated by, or at the mercy of, aggressive impulses.

2. According to Darwin's theory of evolution, members of a species are forced to struggle for survival because
 - A. not all individuals are skilled in finding food
 - B. individuals try to defend their young against attackers
 - C. many more individuals are born than can survive until the age of reproduction
 - D. individuals with certain genes are more likely to reach adulthood



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The Psychodynamic Approach. Theorists adopting the psychodynamic approach hold that inner conflicts are crucial for understanding human behavior, including aggression. Sigmund Freud, for example, believed that aggressive impulses are **inevitable** reactions to the frustrations of daily life. Children normally desire to vent aggressive impulses on other people, including their parents, because even the most attentive parents cannot gratify all of their demands immediately. Yet children also fearing their parents' punishment and the loss of parental love, come to repress most aggressive impulses. The Freudian perspective, in a sense, sees us as "steam engines." By holding in rather than venting "steam," we set the stage for future explosions. Pent-up aggressive impulses demand outlets. They may be expressed toward parents in indirect ways such as destroying furniture, or they may be expressed toward strangers later in life.

3. The word **inevitable** in paragraph 4 is closest in meaning to
- A. unavoidable
 - B. regrettable
 - C. controllable
 - D. unsuitable



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4. The word **They** in in paragraph 4 refers to
- A. future explosions
 - B. pent-up aggressive impulses
 - C. outlets
 - D. indirect ways



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5. According to paragraph 4, Freud believed that children experience conflict between a desire to vent aggression on their parents and
- A. a frustration that their parents do not give them everything they want
 - B. a fear that their parents will punish them and stop loving them
 - C. a desire to take care of their parents
 - D. a desire to vent aggression on other family members



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6. Freud describes people as **steam engines** in order to make the point that people
 - A. deliberately build up their aggression to make themselves stronger
 - B. usually release aggression in explosive ways
 - C. must vent their aggression to prevent it from building up
 - D. typically lose their aggression if they do not express it



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The Cognitive Approach. Cognitive psychologists assert that our behavior is influenced by our values, by the ways in which we interpret our situations, and by choice. For **example, people who believe that aggression is necessary and justified - as during wartime - are likely to act aggressively, whereas people who believe that a particular war or act of aggression is unjust, or who think that aggression is never justified, are less likely to behave aggressively.**

7. Which of the sentences below best expresses the essential information in the highlighted sentence in paragraph 6?

Incorrect answer choices change the meaning in important ways or leave out essential information.

- A. People who believe that they are fighting a just war act aggressively, while those who believe that they are fighting an unjust war do not.
- B. People who believe that aggression is necessary and justified are more likely to act aggressively than those who believe differently.
- C. People who normally do not believe that aggression is necessary and justified may act aggressively during wartime.
- D. People who believe that aggression is necessary and justified do not necessarily act aggressively during wartime.



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One cognitive theory suggests that aggravating and painful events trigger unpleasant feelings. These feelings, in turn, can lead to aggressive action, but not automatically. Cognitive factors intervene. People decide whether they will act aggressively or not on the basis of factors such as their experiences with aggression and their interpretation of other people's motives.

Supporting evidence comes from research showing that aggressive people often distort other people's motives. For example, they assume that other people mean them harm when they do not.

**Catharsis: In psychodynamic theory, the purging of strong emotions or the relieving of tensions*

8. According to the cognitive approach described in paragraphs 6 and 7, all of the following may influence the decision whether to act aggressively **EXCEPT** a person's
- A. moral values
 - B. previous experiences with aggression
 - C. instinct to avoid aggression
 - D. beliefs about other people's intentions



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9. Look at the four squares [] that indicate where the following sentence can be added to the passage.

According to Freud, however, impulses that have been repressed continue to exist and demand expression.

Where would the sentence best fit?



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Choose the letter of the square that shows where the sentence should be added.

According to Freud, however, impulses that have been repressed continue to exist and demand expression.

The Psychodynamic Approach. Theorists adopting the psychodynamic approach hold that inner conflicts are crucial for understanding human behavior, including aggression. Sigmund Freud, for example, believed that aggressive impulses are inevitable reactions to the frustrations of daily life. Children normally desire to vent aggressive impulses on other people, including their parents, because even the most attentive parents cannot gratify all of their demands immediately. [A] Yet children, also fearing their parents' punishment and the loss of parental love, come to repress most aggressive impulses. [B] The Freudian perspective, in a sense, sees us as "steam engines." [C] By holding in rather than venting "steam," we set the stage for future explosions. [D] Pent-up aggressive impulses demand outlets. They may be expressed toward parents in indirect ways such as destroying furniture, or they may be expressed toward strangers later in life.



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10. Directions: Complete the table below by matching five of the six answer choices with the approach to aggression that they exemplify. This question is worth 3 points.

Approach to Understanding Aggression Associated Claims

Biological Approach

Psychodynamic Approach

Cognitive Approach

Answer Choices

- A. Aggressive impulses toward people are sometimes expressed in indirect ways.
- B. Aggressiveness is often useful for individuals in the struggle for survival.
- C. Aggressive behavior may involve a misunderstanding of other people's intentions.
- D. The need to express aggressive impulses declines with age.
- E. Acting aggressively is the result of a choice influenced by a person's values and beliefs.
- F. Repressing aggressive impulses can result in aggressive behavior.



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PASSAGE 2

ARTISANS AND INDUSTRIALIZATION

Before 1815, manufacturing in the United States had been done in homes or shops by skilled artisans. As master craftworkers, they imparted the knowledge of their trades to apprentices and journeymen. In addition, women often worked in their homes part-time, making finished articles from raw material supplied by merchant capitalists. After 1815, this older form of manufacturing began to give way to factories with machinery tended by unskilled or semi-skilled laborers. Cheap transportation networks, the rise of cities, and the availability of capital and credit, all stimulated the shift to factory production.

The creation of a labour force that was accustomed to working in factories did not occur easily. Before the rise of the factory, artisans had worked within the home. Apprentices were considered part of the family, and masters were responsible not only for teaching their apprentices a trade but also for providing them some education and for supervising their moral behavior. Journeymen knew that if they perfected their skill, they could become respected master artisans with their own shops. Also, skilled artisans did not work by the clock, at a steady pace, but rather in bursts of intense labour alternating with more leisurely time.



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The factory changed that. Goods produced by factories were not as finished or elegant as those done by hand, and pride in craftsmanship gave way to the pressure to increase rates of productivity. The new methods of doing business involved a new and stricter sense of time. Factory life necessitated a more regimented schedule, where work began at the sound of a bell and workers kept machines going at a constant pace. At the same time, workers were required to discard old habits, for industrialism demanded a worker who was alert, dependable, and self-disciplined. Absenteeism and lateness hurt productivity and, since work was specialized, disrupted the regular factory routine. Industrialization not only produced a fundamental change in the way work was organized; it transformed the very nature of work.

The first generation to experience these changes did not adopt the new attitudes easily. The factory clock became the symbol of the new work rules. One mill worker who finally quit complained revealingly about "obedience to the ding-dong of the bell - just as though we are so many living machines." With the loss of personal freedom also came the loss of standing in the community. Unlike artisan workshops in which apprentices worked closely with the masters supervising them, factories sharply separated workers from management. Few workers rose through the ranks to supervisory positions, and even fewer could achieve the artisan's dream of setting up one's own business. Even well-paid workers sensed their decline in status.



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In this newly emerging economic order, workers sometimes organized to protect their rights and traditional ways of life. Craft Workers such as carpenters, painters, and tailors formed unions, and in 1834 individual unions came together in the National Trades' Union. The labour movement gathered some momentum in the decade before the Panic of 1837, but in the depression that followed, labour's strength collapsed. During hard times, few workers were willing to strike or engage in collective action. And skilled craft workers, who spearheaded the union movement, did not feel a particularly strong bond with semi-skilled factory workers and unskilled laborers. More than a decade of agitation did finally bring a workday shortened to 10 hours to most industries by the 1850s, and the courts also recognized workers' right to strike, but these gains had little immediate impact.



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Workers were united in resenting the industrial system and their loss of status, but they were divided by ethnic and racial antagonisms, gender, conflicting religious perspectives, occupational differences, political party loyalties, and disagreements over tactics. For them, the factory and industrialism were not agents of opportunity but reminders of their loss of independence and a measure of control over their lives. As United States society became more specialized and differentiated, greater extremes of wealth began to appear. And as the new markets created fortunes for the few, the factory system lowered the wages of workers by dividing labor into smaller, less skilled tasks.

*strike: a stopping of work that is organized by workers



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Directions: Mark your answer by filling in the oval next to your choice.

11. Which of the following can be inferred from the passage about articles manufactured before 1815?
- A. They were primarily produced by women.
 - B. They were generally produced in shops rather than in homes.
 - C. They were produced with more concern for quality than for speed of production.
 - D. They were produced mostly in large cities with extensive transportation networks.



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The creation of a labour force that was accustomed to working in factories did not occur easily. Before the rise of the factory, artisans had worked within the home. **Apprentices were considered part of the family, and masters were responsible not only for teaching their apprentices a trade but also for providing them some education and for supervising their moral behavior.** Journeymen knew that if they perfected their skill, they could become respected master artisans with their own shops. Also, skilled artisans did not work by the clock, at a steady pace, but rather in bursts of intense labour alternating with more leisurely time.

12. Which of the sentences below best expresses the essential information in the highlighted sentence in paragraph 2?

Incorrect answer choices change the meaning in important ways or leave out essential information.

- A. Masters demanded moral behavior from apprentices but often treated them irresponsibly.
- B. The responsibilities of the master to the apprentice went beyond the teaching of a trade.
- C. Masters preferred to maintain the trade within the family by supervising and educating the younger family members.
- D. Masters who trained members of their own family as apprentices demanded excellence from them.



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The first generation to experience these changes did not adopt the new attitudes easily. The factory clock became the symbol of the new work rules. One mill worker who finally quit complained revealingly about "obedience to the ding-dong of the bell - just as though we are so many living machines." With the loss of personal freedom also came the loss of standing in the community. Unlike artisan workshops in which apprentices worked closely with the masters supervising them, factories sharply separated workers from management. Few workers rose through the ranks to supervisory positions, and even fewer could achieve the artisan's dream of setting up one's own business. Even well-paid workers sensed their decline in status.

13. In paragraph 4, the author includes the quotation from a mill worker in order to
- A. support the idea that it was difficult for workers to adjust to working in factories
 - B. to show that workers sometimes quit because of the loud noise made by factory machinery
 - C. argue that clocks did not have a useful function in factories
 - D. emphasize that factories were most successful when workers revealed their complaints



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14. All of the following are mentioned in paragraph 4 as consequences of the new system for workers **EXCEPT** a loss of
- A. freedom
 - B. Status in the community
 - C. opportunities for advancement
 - D. contact among workers who were not managers



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In this newly emerging economic order, workers sometimes organized to protect their rights and traditional ways of life. Craftworkers such as carpenters, painters, and tailors formed unions, and in 1834 individual unions came together in the National Trades' Union. The labour movement **gathered some momentum** in the decade before the Panic of 1837, but in the depression that followed, labour's strength collapsed. During hard times, few workers were willing to strike or engage in collective action. And skilled craftworkers, who spearheaded the union movement, did not feel a particularly strong bond with semi-skilled factory workers and unskilled laborers.

More than a decade of agitation did finally bring a workday shortened to 10 hours to most industries by the 1850s, and the courts also recognized workers' right to strike, but these gains had little immediate impact.

15. The phrase **gathered some momentum** in paragraph 5 is closest in meaning to
- A. made progress
 - B. became active
 - C. caused changes
 - D. combined forces



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16. The word **spearheaded** in paragraph 5 is closest in meaning to
- A. led
 - B. accepted
 - C. changed
 - D. resisted



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17. Which of the following statements about the labour movement of the 1800s is supported by paragraph 5?
- A. It was successful during times of economic crisis.
 - B. Its primary purpose was to benefit unskilled laborers
 - C. It was slow to improve conditions for workers.
 - D. It helped workers of all skill levels form a strong bond with each other.



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Workers were united in resenting the industrial system and their loss of status, but they were divided by ethnic and racial antagonisms, gender, conflicting religious perspectives, occupational differences, **political party loyalties, and disagreements over tactics**. For them, the factory and industrialism were not agents of opportunity but reminders of their loss of independence and a measure of control over their lives. As United States society became more specialized and differentiated, greater extremes of wealth began to appear. And as the new markets created fortunes for the few, the factory system lowered the wages of workers by dividing labour into smaller, less skilled tasks.

***strike**: a stopping of work that is organized by workers

18. In paragraph 6 the author identifies **political party loyalties, and disagreements over tactics** as two of several factors that
- A. encouraged workers to demand higher wages.
 - B. created divisions among workers.
 - C. caused work to become more specialized.
 - D. increased workers' resentment of the industrial system.



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19. Look at the four squares [] that indicate where the following sentence can be added to the passage.

This new form of manufacturing depended on the movement of goods to instant locations and a centralized source of laborers.

Where would the sentence best fit?

Choose the letter of the square that shows where the sentence should be added.

Before 1815, manufacturing in the United States had been done in homes or shops by skilled artisans. [A] As Master craft workers, they imparted the knowledge of their trades to apprentices and journeymen. [B] In addition, women often worked in their homes part-time, making finished articles from raw material supplied by merchant capitalists. [C] After 1815, this older form of manufacturing began to give way to factories with machinery tended by unskilled or semi-skilled laborers. [D] Cheap transportation networks, the rise of cities, and the availability of capital and credit, all stimulated the shift to factory production.



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20. Directions: Complete the table below by indicating which of the answer choices describe characteristics of the period before 1815, and which describe characteristics of the 1815-1850 period. This question is worth 3 points.

Before 1815

-
-

1815-1850

-
-
-

Answer Choices

- A. A united, highly successful labour movement took shape.
- B. Workers took pride in their workmanship.
- C. The income gap between the rich and the poor increased greatly.
- D. Transportation networks began to decline.
- E. Emphasis was placed on following schedules.
- F. Workers went through an extensive period of training.
- G. Few workers expected to own their own businesses.



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PASSAGE 3

SWIMMING MACHINES

Tunas, mackerels, and billfishes (marlins, sailfishes, and swordfish) swim continuously. Feeding, courtship, reproduction, and even "rest" are carried out while in constant motion. As a result, practically every aspect of the body form and function of these swimming "machines" is adapted to enhance their ability to swim.

Many of the adaptations of these fishes serve to reduce water resistance (drag). Interestingly enough, several of these hydrodynamic adaptations resemble features designed to improve the aerodynamics of high-speed aircraft. Though human engineers are new to the game, tunas and their relatives evolved their "high-tech" designs long ago.



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Tunas, mackerels, and billfishes have made streamlining into an art form. Their bodies are sleek and compact. The body shapes of tunas, in fact, are nearly ideal from an engineering point of view. Most species lack scales over most of the body, making it smooth and slippery. The eyes lie flush with the body and do not protrude at all. They are also covered with a slick, transparent lid that reduces drag. The fins are stiff, smooth, and narrow, qualities that also help cut drag. When not in use, the fins are tucked into special grooves or depressions so that they lie flush with the body and do not break up its smooth contours. Airplanes retract their landing gear while in flight for the same reason.

Tunas, mackerels, and billfishes have even more sophisticated adaptations than these to improve their hydrodynamics. The long bill of Marlins, Sailfishes, and Swordfish probably helps them slip through the water. Many supersonic aircraft have a similar needle at the nose.



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Most tunas and billfishes have a series of keels and finlets near the tail. Although most of their scales have been lost, tunas and mackerels retain a patch of coarse scales near the head called the corselet. The keels, finlets, and corselet help direct the flow of water over the body surface in such a way as to reduce resistance. Again, supersonic jets have similar features.

Because they are always swimming, tunas simply have to open their mouths and water is forced in and over their gills. Accordingly, they have lost most of the muscles that other fishes use to suck in water and push it past the gills. In fact, tunas must swim to breathe. They must also keep swimming to keep from sinking, since most have largely or completely lost the swim bladder, the gas-filled sac that helps most other fish remain buoyant.

One potential problem is that opening the mouth to breathe detracts from the streamlining of these fishes and tends to slow them down. Some species of tuna have specialized grooves in their tongue. It is thought that these grooves help to channel water through the mouth and out the gill slits, thereby reducing water resistance.



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There are adaptations that increase the amount of forward thrust as well as those that reduce drag. Again, these fishes are the envy of engineers. Their high, narrow tails with swept-back tips are almost perfectly adapted to provide propulsion with the least possible effort. Perhaps most important of all to these and other fast swimmers is their ability to sense and make use of swirls and eddies (circular currents) in the water. They can glide past eddies that would slow them down and then gain extra thrust by pushing off the eddies. Scientists and engineers are beginning to study this ability of fishes in the hope of designing more efficient propulsion systems for ships.

The muscles of these fishes and the mechanism that maintains a warm body temperature are also highly efficient. A bluefin tuna in water of 7°C (45°F) can maintain a core temperature of over 25°C (77°F). This warm body temperature may help not only the muscles to work better, but also the brain and the eyes. The billfishes have gone one step further. They have evolved special "heaters" of modified muscle tissue that warm the eyes and brain, maintaining peak performance of these critical organs.



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Directions: Mark your answer by filling in the oval next to your choice.

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Airplanes retract their landing gear while in flight for the same reason.

21. The word **they** in paragraph 3 refers to
- A. qualities
 - B. fins
 - C. grooves
 - D. depressions
22. In paragraph 3, why does the author mention that **Airplanes retract their landing gear while in flight**?
- A. To show that air resistance and water resistance work differently from each other
 - B. To argue that some fishes are better designed than airplanes are
 - C. To provide evidence that airplane engineers have studied the design of fish bodies and airplanes
 - D. To demonstrate a similarity in design between airplanes and certain fishes



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Tunas, mackerels, and billfishes have even more **sophisticated** adaptations than these to improve their hydrodynamics. The long bill of marlins, sailfishes, and swordfish probably helps them slip through the water. Many supersonic aircraft have a similar needle at the nose.

Most tunas and billfishes have a series of keels and finlets near the tail. Although most of their scales have been lost, tunas and mackerels retain a patch of coarse scales near the head called the corselet. The keels, finlets, and corselet help direct the flow of water over the body surface in such a way as to reduce resistance (see the figure). Again, supersonic jets have similar features.

23. The word **sophisticated** in paragraph 4 is closest in meaning to
- A. complex
 - B. amazing
 - C. creative
 - D. practical
24. According to paragraph 4, the long bills of marlins, sailfish, and swordfish probably help these fishes by
- A. increasing their ability to defend themselves
 - B. allowing them to change direction easily
 - C. increasing their ability to detect odors
 - D. reducing water resistance as they swim



Reading Session 2

Because they are always swimming, tunas simply have to open their mouths and water is forced in and over their gills. Accordingly, they have lost most of the muscles that other fishes use to suck in water and push it past the gills. In fact, tunas must swim to breathe. They must also keep swimming to keep from sinking, since most have largely or completely lost the swim bladder, the gas-filled sac that helps most other fish remain buoyant.

25. According to paragraph 6, which of the following is one of the reasons that tunas are in constant motion?
- A. They lack a swim bladder
 - B. They need to suck in more water than other fishes do
 - C. They have large muscles for breathing.
 - D. They cannot open their mouths unless they are in motion



Reading Session 2

Because they are always swimming, tunas simply have to open their mouths and water is forced in and over their gills. Accordingly, they have lost most of the muscles that other fishes use to suck in water and push it past the gills. In fact, tunas must swim to breathe. They must also keep swimming to keep from sinking, since most have largely or completely lost the swim bladder, the gas-filled sac that helps most other fish remain buoyant.

One potential problem is that opening the mouth to breathe detracts from the streamlining of these fishes and tends to slow them down. Some species of tuna have specialized grooves in their tongue. It is thought that these grooves help to channel water through the mouth and out the gill slits, thereby reducing water resistance.

26. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage?

Incorrect answer choices change the meaning in important ways or leave out essential information.

- A. These fishes often have a problem opening their mouths while swimming.
- B. The streamlining of these fishes prevents them from slowing down.
- C. The streamlining of these fishes tends to slow down their breathing.
- D. Opening the mouth to breathe can reduce the speed of these fishes.



Reading Session 2

There are adaptations that increase the amount of forward thrust as well as those that reduce drag. Again, these fishes are the envy of engineers. Their high, narrow tails with swept-back tips are almost perfectly adapted to provide propulsion with the least possible effort. Perhaps most important of all to these and other fast swimmers is their ability to sense and make use of swirls and eddies (circular currents) in the water. They can glide past eddies that would slow them down and then gain extra thrust by pushing off the eddies.

Scientists and engineers are beginning to study this ability of fishes in the hope of designing more efficient propulsion systems for ships.

27. According to paragraph 8, one of the adaptations of fast-swimming fishes that might be used to improve the performance of ships is these fishes' ability to
- A. swim directly through eddies
 - B. make efficient use of water current
 - C. cover great distances without stopping
 - D. gain speed by forcing water past their gills



Reading Session 2

The muscles of these fishes and the mechanism that maintains a warm body temperature are also highly efficient. A bluefin tuna in water of 7°C (45°F) can maintain a core temperature of over 25°C (77°F). This warm body temperature may help not only the muscles to work better, but also the brain and the eyes. The billfishes have gone one step further. They have evolved special "heaters" of modified muscle tissue that warm the eyes and brain, maintaining peak performance of these critical organs.

28. According to paragraph 9, which of the following is true of bluefin tunas?
- A. Their eyes and brain are more efficient than those of any other fish.
 - B. Their body temperature can change greatly depending on the water temperature.
 - C. They can swim in waters that are much colder than their own bodies.
 - D. They have special muscle tissue that warms their eyes and brain.



Reading Session 2

29. Look at the four squares [] that indicate where the following sentence can be added to the passage.

Consequently, tunas do not need to suck in water.

Where would the sentence best fit?

Choose the letter of the square that shows where the sentence should be added.

Again, supersonic jets have similar features.

[A] Because they are always swimming, tunas simply have to open their mouths and water is forced in and over their gills. [B] Accordingly, they have lost most of the muscles that other fishes use to suck in water and push it past the gills. [C] In fact, tunas must swim to breathe. [D] They must also keep swimming to keep from sinking, since most have largely or completely lost the swim bladder, the gas-filled sac that helps most other fish remain buoyant.



Reading Session 2

30. **Directions:** Complete the table below by indicating which features of fishes are associated in the passage with reducing water resistance and which are associated with increasing thrust. **This question is worth 3 points.**

Reducing water resistance

- 1.
- 2.
- 3.

Increasing thrust

- 1.
- 2.

Features of Fishes

- A. The absence of scales from most of the body
- B. The ability to take advantage of eddies
- C. The ability to feed and reproduce while swimming
- D. Eyes that do not protrude
- E. Fins that are stiff, narrow, and smooth
- F. The habit of swimming with the mouth open
- G. A high, narrow tail with swept-back tips





Thank you