

Reading Explorer 5 Unit 7 Lesson B

DIRECTIONS: Choose the best answer for each question.

Human Bionics

[A] Amanda Kitts is mobbed by four- and five-year-olds as she enters the classroom. "Hey, kids, how're my babies today?" she says, patting shoulders and ruffling¹ hair. Slender and energetic, she has operated this Knoxville, Tennessee, daycare center and two others for almost 20 years. She crouches down to talk to a small girl, putting her hands on her knees.

[B] "The robot arm!" several kids cry. "You remember this, huh?" says Kitts, holding out her left arm. As she turns her hand palm up, there is a soft whirring sound. If you weren't paying close attention, you'd miss it. She bends her elbow, accompanied by more whirring.

[C] "Make it do something silly!" one girl says. "Silly? Remember how I can shake your hand?" Kitts says, extending her arm and rotating her wrist. A boy reaches out, hesitantly, to touch her fingers. What he brushes against is flesh-colored plastic, fingers curved slightly inward. Underneath are three motors, a metal framework, and a network of sophisticated electronics. The assembly is topped by a white plastic cup midway up Kitts's biceps, encircling a stump² that is almost all that remains from the arm she lost in a car accident in 2006.

[D] Almost all, but not quite. Within her brain, below the level of consciousness, lives an intact image of that arm, a phantom. When Kitts thinks about flexing³ her elbow, the phantom moves. Impulses racing down from her brain are picked up by electrode sensors in the white cup and converted into signals that turn motors, and the artificial elbow bends.

[E] "I don't really think about it. I just move it," says Kitts, who uses both this standard model and a more experimental arm with even more control. "After my accident, I felt lost. These days I'm just excited all the time, because they keep on improving the arm. One day I'll be able to feel things with it and clap my hands together in time to the songs my kids are singing."

[F] Kitts is one of "tomorrow's people," a group whose missing or ruined body parts are being replaced by devices embedded in their nervous systems that respond to commands from their brains. The machines they use are called neural prostheses or - using a term made popular by science fiction writers - bionics.

[G] The kind of prosthesis that Amanda Kitts uses is controlled by her brain. A technique called targeted muscle reinnervation uses nerves remaining after an amputation⁴ to control an artificial limb. It was first tried in a patient in 2002. Four years later, Tommy Kitts, Amanda's husband, read about the research, which took place at the Rehabilitation Institute of Chicago (RIC). His wife lay in the hospital at the time; the truck that had crushed her car had also crushed her arm, from just above the elbow down.

[H] "I was angry, sad, depressed; I just couldn't accept it," she says. But the news Tommy brought her about the Chicago arm gave her some reassurance, and some hope. "It seemed like the best option out there, a lot better than motors and switches," Tommy says. "Amanda actually got excited about it." Soon they were on a plane to Illinois.

[I] Todd Kuiken, a licensed medical practitioner and biomedical engineer at RIC, was the person responsible for what the institute had begun calling the "bionic arm." He knew that nerves in an amputee's stump could still carry signals from the brain, and he knew that a computer in a prosthesis could direct electric motors to move the limb. However, making the connection was far from straightforward. Nerves conduct electricity, but they can't be spliced together with a computer cable. (Nerve fibers and metal wires are not mutually compatible, and an open wound where a wire enters the body would be a dangerous avenue for infections.)

[J] Kuiken needed an amplifier to boost the signals from the nerves, avoiding the need for a direct contact between nerve and wire. He found one in muscles. When muscles tense, they give off an electrical burst strong enough to be detected by an electrode placed on the skin. He developed a technique to reroute severed nerves from their old, damaged spots to other muscles that could give their signals the proper boost.

[K] In October 2006, Kitts consented to have Kuiken try out his new technique on her. The first step was to salvage major nerves that once went all the way down her arm. "These are the same nerves that work the arm and hand, but we had to create four different muscle areas to lead them to," Kuiken says. The nerves started in Kitts's brain - in the motor cortex, which holds a rough map of the body - but they terminated at the end of her stump. In an intricate operation, a surgeon rerouted those nerves to different regions of Kitts's upper-arm muscles. For months the nerves grew, millimeter by millimeter, moving deeper into their newly assigned homes.

[L] "At three months, I started feeling little tingles and twitches," says Kitts, "and by four months, I could actually feel different parts of my hand when I touched my upper arm. I could touch it in different places and feel different fingers." What she was feeling were parts of the phantom arm that were mapped into her brain, now reconnected to flesh. When Kitts thought about moving those phantom fingers, her real upper-arm muscles contracted.

[M] A month later, she was fitted with her first bionic arm, which had electrodes in the cup around the stump to pick up the signals from the muscles. Now the challenge was to convert those signals into commands to adjust the elbow and hand. A storm of electrical noise was coming from the small region on Kitts's arm. Somewhere in there was the signal that meant "straighten the elbow" or "turn the wrist." A microprocessor inserted in the prosthesis had to be programmed to differentiate the right signal and send it to the right motor.

[N] Kitts practiced using her arm one floor below Kuiken's office in an apartment set up by occupational therapists. The apartment had a kitchen with a stove, silverware in a drawer, a bed, a closet with hangers, a bathroom, and stairs - things people use every day without a second thought but that pose huge obstacles to someone missing a limb.

[O] Watching Kitts make a peanut butter sandwich in the kitchen is a startling experience. With her sleeve rolled back to reveal the plastic cup, her motion is fluid. Her live arm holds a slice of bread, her artificial fingers close on a knife, the elbow flexes, and she swipes peanut butter back and forth. "It wasn't easy at first," she says. "I would try to move it, and it wouldn't always go where I wanted." But she worked at it, and the more she used the arm, the more lifelike the motions felt.

[P] What Kitts would really like now is sensation. That would be a big help in many actions, including one of her favorites - gulping coffee. "The problem with a paper coffee cup is that my hand will close until it gets a solid grip. But with a paper cup, you never get a solid grip," she says. "That happened at Starbucks once. It kept squeezing until the cup went 'pop.'"

[Q] There are valid reasons for supposing that one day she'll get that sensation, says Kuiken. In partnership with bioengineers at the Johns Hopkins University Applied Physics Laboratory, RIC has been developing a new prototype⁵ for Kitts and other patients that not only has more flexibility - more motors and joints - but also has pressure-sensing pads on the fingertips. The pads are connected to small rods that poke into Kitts's stump. The harder the pressure, the stronger the sensation in her phantom fingers.

[R] "I can feel how hard I'm grabbing," she says. She can also differentiate between rubbing something rough, like sandpaper, and smooth, like glass, by how fast the rods vibrate. "I go up to Chicago to experiment with it, and I love it," she says. "I want them to give it to me already so I can take it home. But it's a lot more complicated than my take-home arm, so they don't have it completely reliable yet."

[S] Today, Kitts has a new, more elastic cup atop her arm that better aligns electrodes with nerves that control the arm. "It means I can do a lot more with the arm," she says. "A new one up in Chicago lets me do lots of different hand grasps - I want that. I want to pick up pennies and hammers and toys with my kids." These are reasonable hopes for a substitute body part, Kuiken says. "We are giving people tools, and they are better than what previously existed. But they are still crude, like a hammer, compared with the complexity of the human body."

[T] The work of neural prostheses is extremely delicate, a series of trials filled with many errors. As scientists have learned that it's possible to link machine and mind, they have also learned how difficult it is to maintain that bond. Still, bionics represents a major leap forward, enabling researchers to give people back much more of what they've lost than was ever possible before

[U] "That's really what this work is about: restoration," says Joseph Pancrazio, program director for neural engineering at the National Institute of Neurological Disorders and Stroke. "When a person with a spinal cord injury can be in a restaurant, feeding himself, and no one else notices, that is my definition of success."

¹ If you **ruffle** someone's hair, you lightly rub it.

² A **stump** is the base portion of a body part that remains after the rest has been amputated.

³ When you **flex** something, usually a muscle, you bend it.

⁴ An **amputation** occurs when a body part is removed, usually for medical reasons.

⁵ A **prototype** is an early model of a product that is tested so that the design can be changed if necessary.

- _____ 1. What is the purpose of paragraph D?
- to describe why Kitts flexes her new prosthetic arm often
 - to prepare the reader for paragraph I by discussing the bionic arm
 - to provide an example of the brain not adjusting to the loss of an arm
 - to explain how Kitts controls her prosthetic arm
- _____ 2. Which best describes Kitts's attitude in paragraph E?
- optimistic
 - depressed
 - angry
 - curious
- _____ 3. In paragraph H, what does Tommy Kitts mean when he says, *"a lot better than motors and switches"*?
- A large battery is necessary to run the motors.
 - He knows that motors can wear out or break down.
 - His wife's new arm is controlled by her brain, not motors.
 - Only the latest prosthetic arms have motors and switches.

- _____ 4. Which of these was the first step in the process of Kitts using her new arm?
- a. fitting and programming the new arm
 - b. allowing healing for four months
 - c. surgically rerouting nerves
 - d. therapy to practice using the arm

- _____ 5. In paragraph M, what does a *storm of electric noise* refer to?
- a. a severe thunder and lightning storm
 - b. a noisy environment at the Rehabilitation Institute
 - c. electrical noises from the streets of Chicago
 - d. the noise of many nerve signals from Kitts's arm

- _____ 6. The following sentence would be best placed at the end of which paragraph?

Her hard work and practice have paid off because her movements seem fluid and natural.

- a. Paragraph B
 - b. Paragraph N
 - c. Paragraph O
 - d. Paragraph U
- _____ 7. What is the main idea of paragraph Q?
- a. Kuiken is collaborating with colleagues at Johns Hopkins University.
 - b. Bioengineers are designing more sensitive and flexible arms.
 - c. A new hand will have pressure-sensitive fingers.
 - d. Only prototypes of the arm are available to date.
- _____ 8. What is NOT mentioned as something that Amanda Kitts hopes to do in the future?
- a. clap her hands to children's songs
 - b. pick up toys and pennies
 - c. hold a paper coffee cup without spilling
 - d. build a playroom with a hammer and saw
- _____ 9. Which of the following statements is a fact, not an opinion?
- a. Kitts is slender and energetic.
 - b. Kitts's arm is the best available prosthetic option.
 - c. Kitts nerves were rerouted to different regions of her muscles.
 - d. Kitts's substitute body part is crude compared to the human body.
- _____ 10. Which of the following statements is an opinion, not a fact?
- a. Holding a paper cup with her current artificial arm is difficult for Kitts because she can't get a solid grip.
 - b. When pressure-sensing pads are connected to Kitts's stump, the harder the pressure, the stronger the sensation she feels in her phantom fingers.
 - c. RCI has been developing a new prototype for patients that has more flexibility and pressure-sensing fingertips.
 - d. There are valid reasons for supposing that Kitts will one day get sensation in her artificial arm.

DIRECTIONS: Choose the best answer for each question.

The Downside of Upright

Our aching backs may be trying to tell us something: It's part of the price we pay for walking on two legs.

[A] We humans are odd creatures: tailless bipeds with curved spines, long limbs, arched feet, agile hands, and enormous brains. Our bodies are a mosaic of features shaped by natural selection over vast periods of time - exquisitely capable yet deeply flawed. We can stand, walk, and run with grace and endurance, but we suffer aching feet and knee injuries; we can twist and torque our spines, and yet most of us are plagued by back trouble at some point in our lives. Scientists have long pondered how our bodies came to be the way they are. Now, using new methods from a variety of disciplines, they are discovering that many of the flaws in our "design" have a common theme: They arise primarily from evolutionary compromises that occurred when our ancestors stood upright - the first step in the long path to becoming human.

Yesterday's Model

[B] Humans come from a long line of ancestors, reptile to mammal to ape, whose skeletons were built to carry their weight on all fours. Our ape ancestors probably evolved around 20 million years ago from small primates that carried themselves horizontally. Over the next several million years, some apes grew larger and began to use their arms to hold overhead branches. Then, six or seven million years ago, our ancestors stood up and began to move about on their hind legs.

[C] It was a radical shift. "Bipedalism is a unique and bizarre form of locomotion," says Craig Stanford, an anthropologist at the University of Southern California. "Of more than 250 species of primates, only one goes around on two legs." Stanford and many other scientists consider bipedalism the key defining feature of being human.

[D] Evolutionary biologists agree that shifts in behavior often drive changes in anatomy. Standing upright launched a series of anatomical alterations. The method of upright walking is so different from walking on all fours that bones from the neck down had to change. To support the body's weight and absorb the forces of upright locomotion, joints in limbs and the spine enlarged, and the foot evolved an arch. The pelvis evolved from the ape's long, thin paddle into a wide, flat saddle shape, which thrust the weight of the trunk down through the legs and allowed for the attachment of large muscles.

Upright Citizens

[E] At his laboratory in the anthropology department at Harvard University, Dan Lieberman uses biomechanical studies to see how we use our body parts in various aspects of movement. These experiments on walking and running illuminate just how astonishing a feat of balance, coordination, and efficiency is upright locomotion. The legs on a walking human body act not unlike inverted pendulums. Using a stiff leg as a point of support, the body swings up and over it in an arc, so that the potential energy gained in the rise roughly equals the kinetic energy generated in the descent. By this trick the body stores and recovers so much of the energy used with each stride that it reduces its own workload by as much as 65 percent.

[F] "Compare this with the chimp," Lieberman says. "Chimps pay a hefty price in energy for being built the way they are. They can't extend their knees and lock their legs straight, as humans can. Instead, they have to use muscle power to support their body weight when they're walking upright, and they waste energy rocking back and forth."

[G] Chimps are our closest living evolutionary relatives and, as such, are well suited to teach us about ourselves. Almost every bone in a chimp's body correlates with a bone in a human body. Whatever skeletal distinctions exist are primarily related to the human pattern of walking upright. Two-legged walking in a chimp is an occasional, transitory behavior. In humans, it is a way of life, one that carries with it several benefits, including freed hands. But upright posture and locomotion come with a number of uniquely human maladies.

Aching Back

[H] Back pain is one of the most common health complaints. That most of us will experience back pain at some point in our lives raises the question of the spine's design.

[I] "The problem is that the vertebral column was originally designed to act as an arch," explains Carol Ward, an anthropologist and anatomist at the University of Missouri in Columbia. "When we became upright, it had to function as a weight-bearing column." To support our head and balance our weight directly over our hip joints and lower limbs, the spine evolved a series of S curves - a deep forward curve, or lordosis, in the lower back, and a backward curve, or kyphosis, in the upper back.

[J] "This system of S curves is energetically efficient and effective for maintaining our balance and for bipedal locomotion," Ward says. "But the lower region of the column suffers from the excessive pressure and oblique force exerted on its curved structure by our upright posture."

[K] Lean back, arching your spine. You're the only mammal in the world capable of this sort of backbend. Feel a cringing tightness in your lower back? That's the vertical joints between your vertebrae pressing against one another as their compressive load increases. The curvature in your lower spine requires that its building blocks take the shape of a wedge, with the thick part in the front and the thin part in the back.

[L] But in the lower back region, where the load is heaviest and the wedging most dramatic, strains such as heavy lifting or hyperextension can cause your lowest vertebrae to slip or squish together. When the vertebrae are pressured in this way, the disks between them may herniate, or bulge out, impinging on spinal nerves and causing pain. Or the pressure may pinch the delicate structures at the back of the vertebrae, causing a fracture called spondylolysis.

[M] Considering the pressures of natural selection, why are such seriously debilitating diseases still prevalent? Latimer believes the answer lies in the importance of lordosis for upright walking: "Selection for bipedality must have been so strong in our early ancestors that a permanent lordosis developed despite the risk it carries for spondylolysis and other back disorders."

Unlikely Feat

[N] And where does the buck finally stop? What finally bears the full weight of our upright body? Two ridiculously tiny platforms. "The human foot has rightfully been called the most characteristic peculiarity in the human body," says Will Harcourt-Smith, a paleontologist at the American Museum of Natural History. "For one thing, it has no thumblike opposable toe. We're the only primate to give up the foot as a grasping organ."

[O] This was a huge sacrifice. The chimp's foot is a brilliantly useful and versatile feature, essential to tree climbing and capable of as much motion and manipulation as its hand. The human foot is designed to do just two things, propel the body forward and absorb the shock of doing so. Bipedality may have freed the hands, but it also yoked the feet.

[P] Harcourt-Smith studies foot bones of early humans with the new technique of geometric morphometrics - measuring objects in three dimensions. In all the fossil feet Harcourt-Smith studies, some type of basic human pattern is clearly present: a big toe aligned with the long axis of the foot, or a well-developed longitudinal arch, or in some cases a humanlike ankle joint - all ingenious adaptations but fraught with potential problems.

[Q] "Because the foot is so specialized in its design," Harcourt-Smith says, "it has a very narrow window for working correctly." In people with a reduced arch, fatigue fractures often develop. In those with a pronounced arch, the ligaments that support the arch sometimes become inflamed. When the carrying angle of the leg forces the big toe out of alignment, bunions may form - more of a problem for women than men because of their wider hips.

What Do We Stand For?

[R] We humans gave up stability and speed. We gave up the foot as a grasping tool. We gained spongy bones and fragile joints and vulnerable spines. Given the trade-offs - the aches and pains, and severe drawbacks associated with bipedalism - why get upright in the first place?

[S] Theories about why we got upright have run the gamut from freeing the arms of our ancestors to carry babies and food to reaching hitherto inaccessible fruits. "But," says Mike Sockol of the University of California, Davis, "one factor had to play a part in every scenario: the amount of energy required to move from point to point. If you can save energy while gathering your food supply, that energy can go into growth and reproduction."

[T] Studies suggest that at the time our ancestors first stood upright, perhaps six to eight million years ago, their food supplies were becoming more widely dispersed. "If our ape ancestors had to roam farther to find adequate food, and doing so on two legs saved energy, then those individuals who moved across the ground more economically gained an advantage."

[U] Scientists are the first to admit that much work needs to be done before we fully understand the origins of bipedalism. But whatever drove human ancestors to get upright in the first place, the habit stuck. They eventually evolved the ability to walk and run long distances. They created and manipulated a diverse array of tools. These were essential steps in evolving a big brain and a human intelligence, one that could make poetry and music and mathematics, develop sophisticated technology, and consider the roots of its own quirky and imperfect upright being.

- _____ 11. What is the main idea of this article?
- a. Scientists have recently discovered many flaws in our bodies' "design."
 - b. Walking on all fours gives chimps many advantages over humans.
 - c. Standing upright has both advantages and disadvantages for humans.
 - d. The change to an upright posture led to major changes in human behavior.
- _____ 12. The word *pondered* in paragraph A is closest in meaning to which of the following?
- a. wondered
 - b. decided
 - c. confirmed
 - d. argued

- _____ 13. What does the author imply in paragraph C?
- Walking on two legs is strange.
 - Stanford's theories about bipedalism are unique.
 - There are more types of primates than was once thought.
 - Besides humans, only one type of primate is bipedal.
- _____ 14. The author states in paragraph D that *shifts in behavior often drive changes in anatomy*. Which of the following is an example of this principle?
- Bees have learned that flowers of a certain color are richer in pollen and visit those flowers first.
 - When penguins could no longer fly and began to swim, their wings became like the flippers of sea mammals.
 - Dolphins have found that working together to herd fish into shallow water allows them to catch more fish.
 - Horses have legs that are good for running, but can't be used to scratch their backs.
- _____ 15. Which of the following is NOT one of the changes that took place in human ancestors when they began walking on two feet?
- Their pelvises grew wider and flatter.
 - Their arms became shorter and their legs longer.
 - Their feet developed an arch.
 - The joints of their limbs and spine grew larger.
- _____ 16. What does the author say about chimps in paragraph G?
- It's unusual to see them walk on four legs.
 - Walking upright can cause them pain.
 - Their skeletal structure is identical to humans'.
 - They don't generally walk on two feet.
- _____ 17. According to the article, most back problems occur because of _____.
- the inability of humans to fully arch their spine
 - weakness in the design of the upper spine
 - the pressure placed on the lower curve of the spine
 - slippage of the top vertebrae in the spinal column
- _____ 18. In paragraph T, what does the phrase *doing so* refer to?
- saving energy by moving less
 - moving on four legs
 - consuming more food
 - traveling a greater distance
- _____ 19. Which of the following statements is an opinion on chimps, not a fact?
- Chimps can't extend their knees or lock their legs straight.
 - Chimps are our closest living evolutionary relatives.
 - Chimps are well suited to teach us about ourselves.
 - Almost every bone in a chimp's body correlates with a bone in a human body.
- _____ 20. Which of the following statements is an opinion on human feet, not a fact?
- They bear the full weight of our upright body.
 - They are the most characteristic peculiarity in the human body.
 - They do not possess thumblike opposable toes.
 - The ligaments that support the arch sometimes become inflamed.

DIRECTIONS: Complete the sentences. Choose the correct word.

- a. assigned
- b. compatible
- c. crude
- d. embedded
- e. intricate
- f. licensed
- g. salvage
- h. sensation
- i. valid
- j. vibrate

- ____ 21. The archeologists found the fossils ____ in a layer of dried mud.
- ____ 22. The historians want to ____ the decaying house because of its unique architecture.
- ____ 23. The embroidery pattern on the silk was ____ and detailed.
- ____ 24. The topic of butterfly migration was ____ as homework for the biology class.
- ____ 25. Some people like the ____ of falling because it gives them an adrenaline rush.
- ____ 26. Given the airline strike, not being able to get a flight home is a(n) ____ concern.
- ____ 27. He puts his phone on ____ mode when he goes for his classes.
- ____ 28. I think you should go to a(n) ____ professional rather than relying on home remedies.
- ____ 29. I can't use the new software because it is not ____ with my old computer.
- ____ 30. Although the tribes who live in the mountains do beautiful weaving, their pottery is ____ and simple.

Reading Explorer 5 Unit 7 Lesson B

Answer Section

1. ANS: D PTS: 1 REF: Pages 150-152
OBJ: Purpose TOP: Human Body
2. ANS: A PTS: 1 REF: Pages 150-152
OBJ: Inference TOP: Human Body
3. ANS: C PTS: 1 REF: Pages 150-152
OBJ: Paraphrase TOP: Human Body
4. ANS: C PTS: 1 REF: Pages 150-152
OBJ: Sequence TOP: Human Body
5. ANS: D PTS: 1 REF: Pages 150-152
OBJ: Figurative Language TOP: Human Body
6. ANS: C PTS: 1 REF: Pages 150-152
OBJ: Cohesion TOP: Human Body
7. ANS: B PTS: 1 REF: Pages 150-152
OBJ: Main Idea TOP: Human Body
8. ANS: D PTS: 1 REF: Pages 150-152
OBJ: Negative Detail TOP: Human Body
9. ANS: C PTS: 1 REF: Page 155 OBJ: Distinguishing Fact from
Opinion
TOP: Human Body
10. ANS: D PTS: 1 REF: Page 155 OBJ: Distinguishing Fact from
Opinion
TOP: Human Body
11. ANS: C PTS: 1 REF: Unit 7 OBJ: Main Idea
TOP: Human Body
12. ANS: A PTS: 1 REF: Unit 7 OBJ: Unfamiliar Vocabulary
TOP: Human Body
13. ANS: A PTS: 1 REF: Unit 7 OBJ: Inference
TOP: Human Body
14. ANS: B PTS: 1 REF: Unit 7 OBJ: Application
TOP: Human Body
15. ANS: B PTS: 1 REF: Unit 7 OBJ: Negative Detail
TOP: Human Body
16. ANS: D PTS: 1 REF: Unit 7 OBJ: Supporting Detail
TOP: Human Body
17. ANS: C PTS: 1 REF: Unit 7 OBJ: Supporting Detail
TOP: Human Body
18. ANS: D PTS: 1 REF: Unit 7 OBJ: Reference
TOP: Human Body
19. ANS: C PTS: 1 REF: Page 155 OBJ: Distinguishing Fact from
Opinion
TOP: Human Body
20. ANS: B PTS: 1 REF: Page 155 OBJ: Distinguishing Fact from
Opinion
TOP: Human Body

21.	ANS: D TOP: Human Body	PTS: 1	REF: Page 156	OBJ: Vocabulary
22.	ANS: G TOP: Human Body	PTS: 1	REF: Page 156	OBJ: Vocabulary
23.	ANS: E TOP: Human Body	PTS: 1	REF: Page 156	OBJ: Vocabulary
24.	ANS: A TOP: Human Body	PTS: 1	REF: Page 156	OBJ: Vocabulary
25.	ANS: H TOP: Human Body	PTS: 1	REF: Page 156	OBJ: Vocabulary
26.	ANS: I TOP: Human Body	PTS: 1	REF: Page 156	OBJ: Vocabulary
27.	ANS: J TOP: Human Body	PTS: 1	REF: Page 156	OBJ: Vocabulary
28.	ANS: F TOP: Human Body	PTS: 1	REF: Page 156	OBJ: Vocabulary
29.	ANS: B TOP: Human Body	PTS: 1	REF: Page 156	OBJ: Vocabulary
30.	ANS: C TOP: Human Body	PTS: 1	REF: Page 156	OBJ: Vocabulary