Read the following passage, taking note of the boldface words and their contexts. These words are among those you will be studying in Unit 8. As you complete the exercises in this Unit, it may help to refer to the way the words are used below.

Aquatic Robotics

Two-thirds of Earth's surface is covered with water. Human beings have yet to infiltrate most of this unexplored and cryptic terrain. Instead, their most important proxies underwater are robots. The field of underwater robotics has grown rapidly in recent years. It is now an essential part of ocean exploration.

At the very foundation of robot design is the performance of tasks that are difficult, repetitive, or dangerous. These same words describe underwater exploration. For example, the important missions of marine research often require a descent to great depths. Vast areas of the ocean floor remain inaccessible to humans no matter what protective attire they wear or equipment they use. And no eager explorer, however fervent, would carry out a deep diving stint lasting months at a time.

Robotics engineers began to pick up on these challenges in the 1990s. They channeled their efforts into developing three divergent types of underwater robots. One type is a remotely controlled vehicle that is towed behind ships. Another type is really a miniature submarine that carries a human crew and is equipped with robot arms. A third type of robot is fully autonomous, carrying out a survey in an unflagging fashion that no human could hope to match.

The movement of the robot Ariel is based on how actual crabs move.

Undersea robots are designed to aid humans in a variety of endeavors. Some of these are ecological. For instance, an early objective of the Odyssey robot series that was developed at the Massachusetts Institute of Technology was to investigate the decreasing number of humpback whales on Stellwagen Bank, a large underwater plateau at the mouth of Massachusetts Bay. Another Odyssey mission took the robot to the bottom of the Labrador Sea between Newfoundland and Greenland. There, even the notoriously rough winter weather could not nullify the robot's mission to explore ocean oxygenation. In this process, surface waters in high latitudes near the poles become oxygen-rich but also cold and dense. The cold, dense water plummets to the bottom in plumes, where it provides energy for many kinds of life. Without Odyssey's assistance in such missions, human efforts would have been to no avail, given the conditions. The latest Odyssey robot can even hover in place, like a helicopter. It can be controlled remotely with a joystick.

Scientists are not the only ones using aquatic robots. Undersea robots are also important for military uses. The robot crab Ariel, for example, may be used to clear mines from minefields that abut the shore. No obstacle or crevice stops Ariel. Few humans would remain calm and stoical performing such a hazardous duty. Military robots are also used to find enemy submarines and to protect coastal areas.

At present, there is virtually no perceptible limit on the array of uses for underwater robotics. The British independent robot Autosub4, for example, has been used to explore herring behavior in the North Sea and to locate valuable metals at the bottom of a Scottish lake. Tethered underwater vehicles called ROVs have assisted marine archaeologists in locating and exploring shipwrecks, including that of the Titanic. And after the massive Gulf oil spill disaster in 2010, cleanup analyses and efforts relied heavily on ROVs. It is safe to proclaim that underwater exploration in the twenty-first century will increasingly be the domain of robots as they go where humans cannot hope to follow.
### Definitions

Note the spelling, pronunciation, part(s) of speech, and definition(s) of each of the following words. Then write the appropriate form of the word in the blank spaces in the illustrative sentence(s) following. Finally, study the lists of synonyms and antonyms.

1. **abut**
   - *(v.)* to join at one end or be next to; to support, prop up
   - Land that __________________________ a river or lake is considered a highly desirable location on which to build a summer home.
   - **SYNONYMS:** border on, bolster

2. **attire**
   - *(n.)* clothes, apparel, garb; *(v.)* to dress, adorn, or bedeck
   - The special __________________________ that firefighters wear helps to protect them from flames and smoke.
   - The children happily __________________________ their stuffed animals in holiday outfits and accessories.
   - **SYNONYM:** clothing

3. **avail**
   - *(v.)* to be of use or benefit to; to make use of; to take advantage of; to profit or benefit; *(n.)* use, benefit, or value
   - Be sure to __________________________ yourself of all the services that the school library has to offer.
   - I tried repeatedly to contact my neighbor by phone, but to absolutely no __________________________

4. **crony**
   - *(n.)* a very close friend, chum, buddy
   - We have been __________________________ ever since we met in the second grade.
   - **ANTONYMS:** adversary, rival

5. **cryptic**
   - *(adj.)* puzzling, mystifying, or enigmatic
   - The letter to the editor was so __________________________ that I couldn't be certain what the writer had actually intended to say.
   - **ANTONYMS:** crystal clear, unambiguous

6. **divergent**
   - *(adj.)* going in different directions; different from each other; departing from convention, deviant
   - Two people may be close friends despite their having very __________________________ interests and beliefs.
   - **SYNONYMS:** not in agreement, differing, unorthodox, unconventional
   - **ANTONYMS:** merging, intersecting, converging, orthodox, conventional

7. **enmity**
   - *(n.)* hatred, ill-will
   - Despite a long, close, and tense match, the defeated player felt no __________________________ toward the new champion.
   - **SYNONYMS:** hostility, animosity
   - **ANTONYMS:** friendship, amity

8. **fervent**
   - *(adj.)* very earnest, emotional, passionate; extremely hot
   - The president delivered a __________________________ plea for tolerance and unity.
   - **SYNONYMS:** enthusiastic, burning, blazing, scorching
   - **ANTONYMS:** blasé, apathetic, restrained, emotionless

9. **gaunt**
   - *(adj.)* thin and bony, starved looking; bare, barren
   - We left food and water for the __________________________ alley cat.
   - **SYNONYMS:** lean, lanky, all skin and bones
   - **ANTONYMS:** plump, stout, corpulent

10. **infiltrate**
    - *(v.)* to pass through or gain entrance to gradually or stealthily
    - Some of our men __________________________ the enemy's camp and captured their leader.
    - **SYNONYMS:** slip into, creep into, penetrate

11. **nullify**
    - *(v.)* to make of no value or consequence, cancel, wipe out
    - After seven days, you cannot __________________________ the contract without being charged a penalty.
    - **SYNONYMS:** invalidate, annul
    - **ANTONYMS:** confirm, endorse, ratify, sanction

12. **perceptible**
    - *(adj.)* capable of being grasped by the senses or mind
    - There was no __________________________ improvement in the patient's condition despite the doctors' best efforts to treat the infection.
    - **SYNONYMS:** noticeable, discernible, observable
    - **ANTONYMS:** invisible, unnoticeable, indiscernible

13. **plummet**
    - *(v.)* to plunge straight down; *(n.)* a weight fastened to a line
    - Gannets and other seabirds __________________________ headfirst into the ocean to catch small fish and squid.
    - Experts think the pierced round stones found at the site served as __________________________ to weight fishing nets.
    - **SYNONYM:** *(v.)* take a nosedive
    - **ANTONYMS:** *(v.)* soar, skyrocket
14. *proclaim* (pró klām') *(v.)* to declare publicly or officially

We proclaims loyalty to our country when we recite the Pledge of Allegiance.

**SYNONYMS:** announce, promulgate  
**ANTONYMS:** conceal, cover up

15. *proxy* (prak'se) *(n.)* an agent, substitute; a written permission allowing one person to act in another's place

The vice president may be called upon to be the president's proxy at the funeral of a foreign leader.

**SYNONYM:** deputy

16. *rankle* (raŋ' kal) *(v.)* to cause anger, irritation, or bitterness (with the suggestion that the pain grows worse with time)

Insults may rankle a person for many years.

**SYNONYMS:** irritate, vex, nettle, irk  
**ANTONYMS:** please, gratify

17. *scavenger* (skav' an jor) *(n.)* a person who collects or removes usable items from waste materials; an animal that feeds on refuse or dead bodies

A few scavengers such as catfish and other bottom feeders will help to keep a fish tank clean.

**SYNONYM:** rummager

18. *stint* *(stint)* *(v.)* to limit, be sparing or frugal; *(n.)* a limit or restriction; a fixed share of work or duty; a period of activity

Good hosts never stint on food and drink for the guests who attend their parties.  
A stint as the guest host of a popular talk show may be a big career break for a young comedian.

**SYNONYMS:** (v.) restrict, scrimp, economize  
**ANTONYMS:** (v.) splurge, squander, lavish

19. *stoical* *(stó' i kal)* *(adj.)* self-controlled, not showing feeling in response to pleasure or pain

The refugees' stoical acceptance of their plight was deeply moving.

**SYNONYMS:** unresponsive, impassive  
**ANTONYMS:** excitable, emotional, hotheaded

20. *unflagging* *(an flag' in)* *(adj.)* tireless, continuing with vigor

After the votes were counted, the candidates paid tribute to the unflagging loyalty of their supporters.

**SYNONYMS:** steady, undiminished, unremitting  
**ANTONYMS:** diminishing, drooping, sagging
16. After the big snowstorm, the trees seemed to be *attired, cronies* in white lace.

17. In spite of my efforts to keep them at bay, spring weeds always manage to *infiltrate, proclaim* my vegetable garden.

18. When the temperature suddenly *plummeted, nullified* to below freezing, the hikers made the wise decision to descend the mountain.

19. President Kennedy bore his pain in such a *perceptible, stoical* manner that few people realized how much he suffered from his World War II back injury.

20. I understand that pigeons are *plummets, scavengers* by nature, but I still don't like them pecking around our picnic table, looking for crumbs.

21. If we had a good civil service system in this town, the mayor wouldn't be able to put his *cronies, enmities* on the public payroll.

22. Before going to college, my brother did a *stint, proxy* as an apprentice radio operator on an oceangoing tanker.

23. For her *unflagging, divergent* devotion to every good cause in our community, we honor this wonderful woman.

24. It didn't take me long to master the *fervent, cryptic* greetings, signs, and handshakes that were part of the club's rituals.

25. The moon is sometimes faintly *proxy, perceptible* in the morning sky.

**Antonyms**

Choose the word from this Unit that is most nearly opposite in meaning to the *boldface* word or expression in the phrase. Write that word on the line. Use a dictionary if necessary.

1. a valued alliance
   - ____________________________

2. trying to *delight* the audience
   - ____________________________

3. keep your *enemies* close
   - ____________________________

4. the *prey* will become food
   - ____________________________

5. a healthy but *hefty* dachshund
   - ____________________________

**Completing the Sentence**

From the words in this Unit, choose the one that best completes each of the following sentences. Write the correct word form in the space provided.

1. Over a period of years, words and phrases used in the field of computer science _______________ everyday speech.
   - ____________________________

2. His failure to win the election _______________ in his mind until it caused a complete emotional breakdown.
   - ____________________________

3. In our community, people of many ethnic backgrounds work together without jealousy or _______________.
   - ____________________________

4. My father has three _______________ who go with him each year on a camping trip in the High Sierras.
   - ____________________________

5. All her efforts to get more business for her troubled company proved to be of no _______________, and the store had to close down.
   - ____________________________

6. To prepare for the job interview, she _______________ herself in a simple but elegant navy blue suit.
   - ____________________________

7. I didn't think she would have the nerve to ask me for a loan, but she did—and with no _______________ embarrassment.
   - ____________________________

8. The witnesses' statements are so _______________ that it's hard to know how the accident actually happened.
   - ____________________________

9. Each year the president _______________ the last Thursday in November as a day of national thanksgiving.
   - ____________________________

10. We decided not to buy the house, mainly because the property it sits on unfortunately _______________ the noisy main highway.
   - ____________________________
11. Shakespeare said that Cassius had a "lean and hungry look," but I would describe him with the single word ____________________.

12. The rise in the cost of living ________________ my efforts to save some money from my small salary.

13. Although the vulture has a decidedly poor reputation, it does a useful job as a(n) ________________, clearing away decaying matter.

14. Even after he retired and we expected him to slow down, his efforts in support of his beloved school remained ____________________.

15. Instead of giving us a clear and helpful answer, the speaker offered only the ________________ prophecy that "time will tell."

16. As a teenager, she developed a(n) ________________ interest in biology that led to a lifelong career.

17. We watched in dismay as our new model airplane suddenly went out of control and ________________ to the ground.

18. Their parents had ________________ for many years to save the money needed to send the children to college.

19. Since I will not be able to attend the meeting, I hereby appoint Ms. Brown to act as my ____________________.

20. He tried to appear ________________ when he heard the bad news, but I realized that he was deeply hurt.

**Vocabulary in Context**

**Literary Text**

The following excerpts are from *The Monster and Other Stories* and *The Red Badge of Courage* by Stephen Crane. Some of the words you have studied in this Unit appear in **boldface** type. Complete each statement below the excerpt by circling the letter of the correct answer.

1. He grinned fraternally when he saw Jimmie coming. These two were pals. In regard to almost everything in life they seemed to have minds precisely alike. Of course there were points of emphatic divergence. ("The Monster," from *The Monster and Other Stories*)

   A **divergence** is a
   
   a. conversation  
   b. euphemism  
   c. falsehood  
   d. disagreement

2. "Mr. Scully," called the Swede, "how much do I owe you?" It was seen that he was **attired** for departure, and that he had his valise in his hand. ("The Blue Hotel" from *The Monster and Other Stories*)

   To be **attired** is to be
   
   a. clothed  
   b. organized  
   c. unprepared  
   d. annoyed

3. The **gaunt**, careworn features and dusty figures were made plain by this quaint light at the dawning, but it dressed the skin of the men in corpse-like hues and made the tangled limbs appear pulseless and dead. (The Red Badge of Courage)

   A person described as **gaunt** appears
   
   a. tireless  
   b. fierce  
   c. withered  
   d. dangerous

4. The men, pitching forward insanely, had burst into cheerings, moblike and barbaric, but tuned in strange keys that can arouse the dullard and the **stoic**. (The Red Badge of Courage)

   One who is **stoic** is NOT
   
   a. tolerant  
   b. emotional  
   c. disciplined  
   d. patient

5. These parts of the opposing armies were two long waves that pitched upon each other madly at dictated points. To and fro they swelled. Sometimes, one side by its yells and cheers would **proclaim** decisive blows, but a moment later the other side would be all yells and cheers. (The Red Badge of Courage)

   To **proclaim** is to
   
   a. gesture  
   b. incorporate  
   c. publicize  
   d. conceal

**Writing: Words in Action**

1. Look back at "Aquatic Robotics" (pages 98–99). How do you think aquatic robots and deep sea exploration will change our lives? Will they lead to improvements? If so, what benefits might they yield? Write a newspaper editorial expressing your views on the potential of aquatic robots. Use at least two details from the passage and three Unit words to support your ideas.

2. In addition to exploring the deep seas, robots are also being used in the workplace. Instead of people performing specific tasks, robots do the work. Robots can be found in factories, offices, hospitals, and research facilities. What is your opinion about robots in the workplace? Are there some tasks that robots can do better or more safely than humans, or is robot labor just another money-saving device that will put people out of jobs? Write a brief essay in which you state your position on this topic and support it with information from the reading (refer to pages 98–99), your own observations, your knowledge, or your personal experience. Write at least three paragraphs, and use three or more words from this Unit.