

Study the definitions of the words. Then do the exercises that follow.

ballast
bal' əst

n. Heavy material used to make a ship steady or control the rising and falling of a vessel like a balloon.
The hot-air balloon rose when the water used as **ballast** was released.

buoyant
boi' ənt

adj. 1. Able to float.
The life jackets are **buoyant** enough to support a 200-pound person.
2. Cheerful and carefree.
The students were in a **buoyant** mood on the last day of school.

buoyancy *n.* The ability to float.
The **buoyancy** of helium balloons causes them to rise rapidly.



Tell your partner about something that makes you feel buoyant.

clamber
klam' bər

v. To climb awkwardly.
My dad **clambered** onto the roof to get the kite.

detach
dē tach'

v. To separate from.
I **detached** the flower from the bush and gave it to my best friend.

detached *adj.* 1. Not connected.
The house comes with a **detached** garage.

2. Lacking concern; not taking sides.
I tried to stay **detached** from my friends' quarrel.



Detach a piece of paper from a notebook and give it to your partner.

eerie
ir' ē

adj. Causing uneasiness; strange or mysterious.
The **eerie** sound you heard was just an owl hooting.

fathom
fath' əm

n. A length of six feet, used in measuring the depth of water.
The wreck of the Spanish ship lay in thirty **fathoms** of water.

v. To figure out; to understand.
We could not **fathom** how the magician made the goldfish disappear.



Tell your partner about something that is true but that you still can't fathom, like how there are more than one hundred billion stars in our galaxy.

pique
pēk

v. To arouse or excite.

Pandora's curiosity was **piqued** by the mysterious box that she was not supposed to open.

n. A feeling of resentment caused by being ignored, insulted, etc.

Ramon did not let his **pique** at being benched for most of the game affect his enthusiasm during the fourth quarter.



Share with your partner your pique about something that happened this week.

probe
prōb

v. 1. To poke or prod.

I **probed** the snow with my ski pole to determine how deep it was.

2. To examine closely.

The *Opportunity* spacecraft, launched in 2003 to **probe** the surface of Mars, was still operating thirteen years later.

n. 1. A long, slender instrument used to examine a wound or part of the body. The doctor used a **probe** to look for fragments of glass in the wound.

2. A thorough investigation.

The principal's **probe** into the incident led to three students going to detention for a week.

realize
rē' ə līz

v. 1. To be aware of.

I didn't **realize** how astute you were until you came up with that brilliant idea.

2. To bring into being; to make happen.

I **realized** a lifelong dream by going skydiving.



Talk to your partner about a dream you hope to realize.

rupture
rup' chər

v. To split or break.

The diggers **ruptured** the water pipe, flooding the basement.

n. 1. A breaking or tearing apart by force.

The earthquake caused a **rupture** in the highway that took three months to repair.

2. The breaking of a friendly relationship.

The **rupture** between Cuba and the United States began in 1961 and was not repaired until 2015.

sphere
sfir

n. 1. An object with all points on its surface equally distant from its center; a ball or globe.

Earth is not quite a **sphere**, because it is flattened at the poles.

2. An area of power, influence, or activity.

The 1823 Monroe Doctrine extended the United States' **sphere** of influence throughout the Americas.

spherical *adj.* Of or relating to the shape of a sphere.

The **spherical** lamp threw light in all directions.



Determine with your partner what is included in the sphere of sports activities in the school.

submerge
sub mərj'

v. 1. To go underwater.

From the shore, we could see the dolphins jump and then **submerge**.

2. To put underwater or cover with water.

The tide **submerges** the rocks when it is high.

tedious
tē' dē əs

adj. Seeming to go on for a long time; boring.

The lecture was so **tedious** that I nearly fell asleep.

tedium *n.* Boredom.

We tried to relieve the **tedium** of our long drive by telling jokes.



Tell your partner about the time of your day that has the most tedium.

ultimate
ul' tə mət

adj. 1. Final.

Anwar's **ultimate** goal is to be chief of surgery at a hospital.

2. The greatest possible; maximum.

The producer has **ultimate** control over the movie.

n. Something that is the greatest; the maximum.

For his birthday, he received the **ultimate** in video games.

unscathed
un skāthd'

adj. Completely unharmed.

Because of its sturdy construction, the house survived the hurricane **unscathed**.

11A

Finding Meanings

Choose two phrases to form a sentence that correctly uses a word from Word List 11. Then write the sentence.

1. (a) be baffled by it.
(b) To realize a dream is to

- (c) make it happen.
(d) To fathom a dream is to

2. (a) material used to make a ship steady.
(b) a feeling of gloom.

- (c) Buoyancy is
(d) Ballast is

3. (a) A sphere is
(b) a measurement of depth.

- (c) A fathom is
(d) something forgotten.

4. (a) To probe a person's interest
(b) is to satisfy it.

- (c) is to arouse it.
(d) To pique a person's interest

5. (a) A sphere is
(b) A rupture is

- (c) a breaking apart by force.
(d) an inquiry into the cause of something.

6. (a) it is separated from the rest.
(b) If something is detached,

- (c) If something is eerie,
(d) it is added to something else.

7. (a) a feeling of resentment.
(b) Pique is

- (c) Buoyancy is
(d) fear of the unknown.

8. (a) is to be unharmed.
(b) To be tedious

- (c) is to show a lack of interest.
(d) To be unscathed

9. (a) To clamber is to
(b) remove oneself.
- (c) To probe is to
(d) examine closely.
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-

10. (a) An ultimate task is one that
(b) is very boring.
- (c) is impossible to do.
(d) A tedious task is one that
-
-

11B

Just the Right Word

Replace each phrase in bold with a single word (or form of the word) from the word list.

1. The **unnatural and strange** silence that filled the deserted house was suddenly shattered.
2. The police could not **figure out exactly** how the painting had been stolen from the museum.
3. When I moved to Alaska, I didn't **have any idea** how much I would miss my friends.
4. This damaged life jacket may have lost some of its **ability to keep a person afloat**.
5. The principal will head the **thorough inquiry** into the causes of student unrest.
6. I've ridden many roller coasters, but the Corkscrew Cannonball is without a doubt the **one that is greater than all the rest**.
7. While I was telling her my troubles, my friend seemed curiously **uninvolved in what I was saying**.
8. Nuclear submarines can **go underwater** for several weeks.
9. I **climbed with difficulty** over the rocks to get to the beach.
10. A banker by profession, she was also involved in politics, diplomacy, and other **areas of activity**.

ballast
buoyant
clamber
detach
eerie
fathom
pique
probe
realize
rupture
sphere
submerge
tedious
ultimate
unscathed

Applying Meanings

Circle the letter or letters next to each correct answer. There may be more than one correct answer.

- Which of the following would make a good **ballast**?
(a) iron bars (c) sand
(b) helium gas (d) straw
- Which of the following could be **fathomed**?
(a) a purpose (c) a motive
(b) a puzzle (d) a mystery
- For which of the following might a **probe** be used?
(a) brain surgery (c) a picnic
(b) a soccer game (d) a flat tire
- Which of the following can be **submerged**?
(a) waves (c) a submarine
(b) the sun (d) an anchor
- Which of the following can be **buoyant**?
(a) a person's spirits (c) an anchor
(b) a life jacket (d) a brick
- Which of the following might **rupture**?
(a) a friendship (c) a gas tank
(b) a balloon (d) an epidemic
- Which of the following is **spherical**?
(a) a pingpong ball (c) a rainbow
(b) a hockey puck (d) a globe
- Which of the following can one **detach**?
(a) the ink from a pen (c) a postage stamp from an envelope
(b) the toothpaste from the tube (d) a page from a notebook

11D

Word Study: Analogies

Complete the analogies by selecting the pair of words whose relationship most resembles the relationship of the pair in capital letters. Circle the letter next to the pair you choose.

1. CIRCLE : SPHERE ::
 - (a) link : chain
 - (b) length : breadth
 - (c) triangle : rectangle
 - (d) square : cube

2. FATHOM : DEPTH ::
 - (a) ocean : water
 - (b) ounce : weight
 - (c) mystery : understanding
 - (d) inch : foot

3. TEDIOUS : EXCITEMENT ::
 - (a) ruthless : mercy
 - (b) irate : anger
 - (c) dumbfounded : surprise
 - (d) warm : heat

4. STRINGS : PLUCK ::
 - (a) clothes : wear
 - (b) drum : beat
 - (c) candle : glow
 - (d) water : flow

5. DELECTABLE : DELICIOUS ::
 - (a) melodious : music
 - (b) dilapidated : building
 - (c) generous : benefactor
 - (d) derogatory : insulting

6. FLOWER : GARLAND ::
 - (a) soil : garden
 - (b) actor : agent
 - (c) seed : plant
 - (d) link : chain

7. FLOAT : BUOYANT ::
 - (a) juggle : nimble
 - (b) sink : aquatic
 - (c) flourish : active
 - (d) probe : eerie

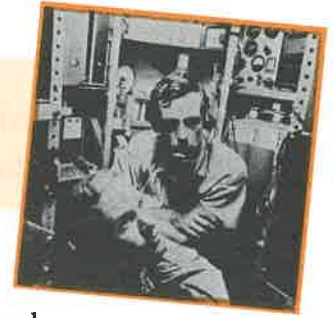
8. HOARD : HORDE ::
 - (a) peek : pique
 - (b) burn : fire
 - (c) lend : bend
 - (d) slice : knife

9. AQUATIC : WATER ::
 - (a) delicate : delicacy
 - (b) solar : sun
 - (c) full : moon
 - (d) spherical : earth

10. SMOLDER : BLAZE ::
 - (a) dampen : submerge
 - (b) clamber : awkward
 - (c) deny : assert
 - (d) avoid : avert

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Read the passage.



Exploring Earth's Last Frontier

By the middle of the twentieth century, the earth's continents had been explored from pole to pole. But even though water covers three-quarters of the earth's surface, much of the deep ocean floor remained a mystery. Auguste Piccard, a Belgian scientist whose curiosity was **piqued** by the unknown, changed that. In 1932, he had broken the world's altitude record by going ten miles up in a balloon. He next planned to design and build a vessel to explore the deepest parts of the ocean.

On October 26, 1948, Piccard made his first dive off the coast of Africa in a bathyscaphe, a large, hollow, **spherical** vessel made of thick steel. The word comes from two Greek words: *bathys*, "deep," and *scaphe*, "a light boat." The bathyscaphe could descend into the inky blackness of the ocean depths. With its powerful searchlights, it could **probe** the ocean floor. Those inside were able to look out through windows made of thick layers of acrylic plastic. **Buoyancy** was provided by huge tanks containing gasoline, which is lighter than seawater. The vessel hung beneath these tanks. Iron weights fixed to the outside of the hull by magnets were used as **ballast**, causing the bathyscaphe to descend.

The first test dive was made in water where the seabed lay just twelve **fathoms** below the surface. Piccard and the other crew member were bolted inside the bathyscaphe, which was then swung over the side of the support ship and **submerged**. As the vessel sank below the surface, it filled with an **eerie** blue light created by sunlight passing through the water. It took just a few minutes for the two pioneers of underwater exploration to reach the ocean floor. Shortly afterward, Piccard **detached** the iron weights; the bathyscaphe rose to the surface.

Several hours passed while the gasoline tanks were emptied; this had to be completed before the two men were able to **clamber** out of their cramped quarters. Despite the **tedious** wait, Piccard was a happy man. His mind was already on his **ultimate** dream, to explore the very deepest part of the ocean. He was asked later if he had been afraid during the descent. He replied that he had total confidence in the design and the construction of the vessel he had invented, and, therefore, he had no reason to be afraid.

Twelve years later, Piccard's son Jacques **realized** his father's dream. He and a United States naval officer descended seven miles in a newer, larger,

and stronger bathyscaphe to explore the deepest part of the Pacific Ocean. They knew that if there were a single defect in the metal, the enormous pressure would cause cracks to develop. That would **rupture** the vessel and crush them both. There was no way for them to escape if anything went wrong. Thankfully, the two crew members emerged **unscathed** after their great adventure. Jacques Piccard's father, who at the age of seventy-six was considered too old to make the descent himself, was waiting on the recovery vessel and was the first to greet them.

▶ **Answer each of the following questions with a sentence. If a question does not contain a vocabulary word from the lesson's word list, use one in your answer. Use each word only once.**

1. What is the meaning of **probe** as it is used in the passage?

2. Did the bathyscaphe stay underwater long on its first dive?

3. What caused the first bathyscaphe to sink to the bottom of the sea?

4. Why did Piccard **detach** the iron weights?

5. What strange experience did the men in the first bathyscaphe have as they dived?

6. Why was it necessary to empty the gasoline from the tanks after Auguste Piccard's dive?

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7. What is the depth of water that is equal to seventy-two feet?

8. How would you describe the period of time between Auguste Piccard's arrival at the surface and his emergence from the vessel?

9. Why was it vital that the hull of Jacques Piccard's vessel have no defects?

10. What is the meaning of **realized** as it is used in the passage?

11. What was the condition of the two men who exited their bathyscaphe after exploring the deepest part of the Pacific Ocean?

12. In what way did Piccard's son Jacques resemble his father?

13. What is the meaning of **ultimate** as it is used in the passage?

14. Why would the bathyscaphe have looked the same from any direction?

15. Why were the large tanks filled with gasoline?

Fun & Fascinating FACTS

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- The fact that the same word can be used as a unit of measurement and as a synonym for *understand* might at first seem strange. With the word **fathom**, however, the connection is easy to see. Sailors wanting to know the depth of the water would drop a weighted line, marked off in *fathoms*, or six-foot lengths, over the side of the boat. When the weight reached the bottom, the length of line indicated how deep the sea was at that point. Sailors would say that they had “*fathomed*” its depth. By extension, a person who was able to “get to the bottom of” something unknown or puzzling was said to have *fathomed* the mystery.

The word itself has an interesting history; it comes from the Old English *faethm*, the distance from fingertip to fingertip of a tall person’s outstretched arms. In many cases, this is about six feet.

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- The word **sphere** comes from the Greek word for a ball, which is *sphaira*. By combining *sphere* with the Greek word *hemi* (“half”), we get *hemisphere*, which is *half* of a *sphere*. Earth is divided into a northern *hemisphere* (everywhere north of the equator) and a southern *hemisphere* (everywhere south of the equator). Earth can also be divided into an eastern *hemisphere* and a western *hemisphere*.

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