

13

Chapter Review

the **BIG** idea

The oceans are a connected system of water in motion.

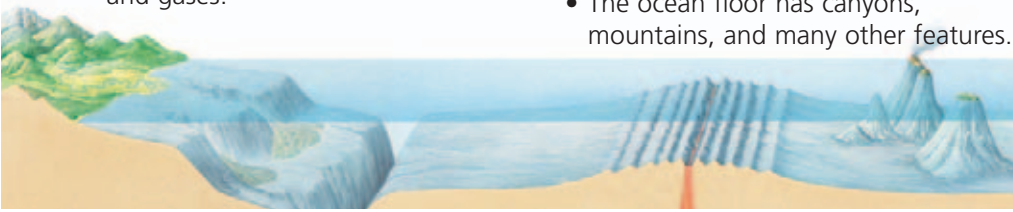


CONTENT REVIEW
CLASSZONE.COM

KEY CONCEPTS SUMMARY

1 The oceans are a connected system.

- Much of Earth is covered by ocean water, which contains dissolved salts and gases.
- Ocean temperatures decrease with depth.
- The ocean floor has canyons, mountains, and many other features.



VOCABULARY

salinity p. 428
density p. 428
continental shelf p. 432
sonar p. 434

2 Ocean water moves in currents.

- Surface currents are set in motion by winds and carry heat around the globe.
- Deep currents are caused by differences in water density. Dense water sinks at the poles and very slowly flows toward the equator.

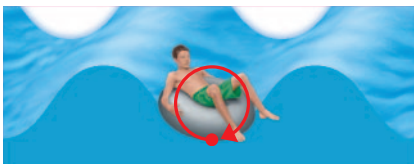


VOCABULARY

ocean current p. 436
upwelling p. 438
downwelling p. 438
El Niño p. 440

3 Waves move through oceans.

- Ocean waves transport energy, not water. When a wave passes, water particles end up in the same places they began.
- Longshore currents occur when waves hit shores at angles.
- Rip currents are narrow streams of water that break through sandbars.

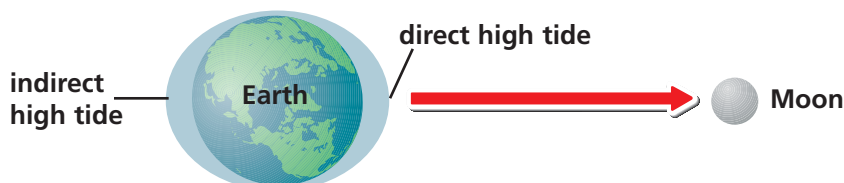


VOCABULARY

longshore current p. 444
rip current p. 444

4 Waters rise and fall in tides.

The Moon's gravity pulls Earth's waters into bulges and dips. As Earth rotates, its movement through these bulges and dips causes tides.

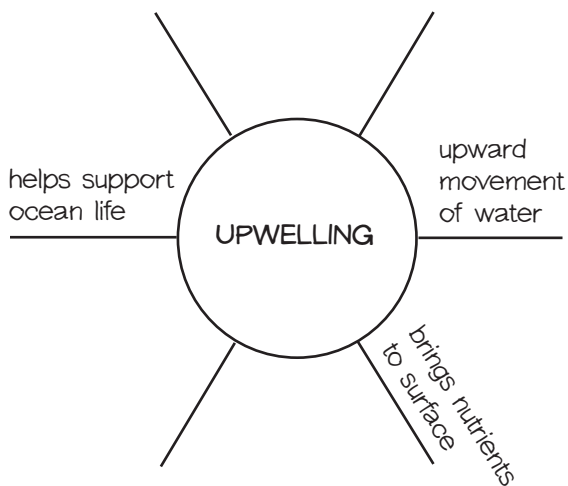


VOCABULARY

tide p. 448
tidal range p. 450
spring tide p. 451
neap tide p. 451

Reviewing Vocabulary

Make a description wheel like the one below for each of the following terms. Write the term in the circle. On the spokes, write words or phrases that describe the term.



1. El Niño
2. longshore current
3. rip current

Reviewing Key Concepts

Multiple Choice Choose the letter of the best answer.

4. Warm water stays at the ocean surface because
 - a. it is less dense than cold water
 - b. it is more dense than cold water
 - c. it is saltier than cold water
 - d. it has more carbon dioxide than cold water
5. Sonar measures ocean depth by means of

a. weighted lines	c. sound waves
b. light waves	d. magnets
6. Surface currents are caused by

a. waves	c. density
b. winds	d. heat

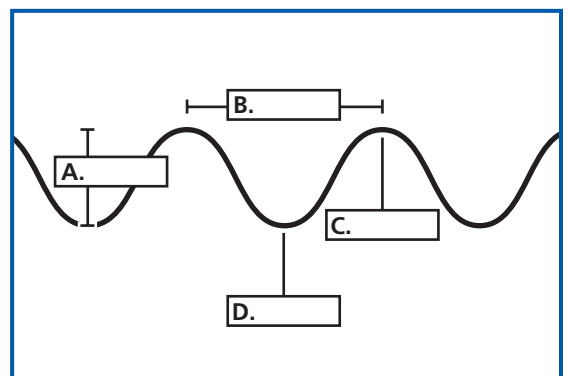
7. El Niño is caused by changes in

a. wave speed	c. salinity
b. currents	d. tides
8. Deep currents are caused by differences in

a. location	c. depth
b. wind speed	d. density
9. Tides are caused by the gravitational pull of
 - a. Earth and the Sun
 - b. the Sun and the Moon
 - c. Earth alone
 - d. Earth and the Moon
10. What does wave action involve?
 - a. the transfer of water molecules across the ocean surface
 - b. the transfer of energy across the ocean surface
 - c. oscillations generated by tides
 - d. rip currents

Short Answer Write a short answer to each question.

11. What is the connection between salinity and density?
12. Explain why Earth's oceans are actually parts of one connected body of water.
13. Describe the relationship between ocean temperature and depth.
14. What are the characteristics of a wave? Copy the drawing below onto your paper, and label each part.



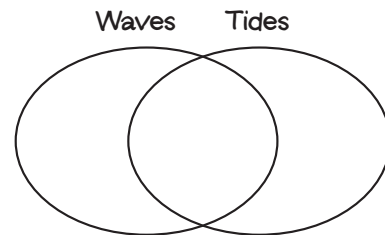
Thinking Critically

15. **SYNTHESIZE** One of these cups contains salt water, and the other contains fresh water. Without tasting the water, how could you figure out which sample is which? Describe two methods. You may specify tools or materials you would need to carry out the two methods. **Hint:** Think about the water cycle and density when considering the two methods.



16. **INFER** After the development of sonar, oceanographic researchers discovered much about the features of the ocean floor. How would the sonar readings of a research ship be affected as it passes above a mid-ocean ridge?
17. **COMPARE AND CONTRAST** How are space exploration and ocean exploration similar? How are they different?
18. **PROVIDE EXAMPLES** How could a change in the direction of a surface current in the ocean affect weather? Give examples of the weather in an area before and after the change.
19. **INFER** If global winds were to change, which ocean motions would be affected?
20. **APPLY** During a violent storm that causes huge waves to form on the ocean's surface, a submarine glides deep underwater, unaffected by the waves above. Explain why.

21. **COMPARE AND CONTRAST** Copy and fill in the Venn diagram below. In the overlapping section, list at least one characteristic that is shared by waves and tides. In the outer sections, list characteristics that are not shared. Then write a short summary of the information in the Venn diagram.



Summary:

22. **APPLY** Maria and her friends like to play soccer on a beach. Sometimes the water is very low at low tide, and there is plenty of room to play. At other times, the water does not get as low at low tide, and there is not enough room to play. What does Maria need to know about monthly tidal cycles so that she can plan to have the soccer games when there is plenty of room on the beach?

the BIG idea

23. **IDENTIFY CAUSE AND EFFECT** Look again at the photograph on pages 424–425. Now that you have finished the chapter, explain what is causing the waves in the photograph. Also explain what might cause the water level to rise and cover the area where the surfer is standing.
24. **SYNTHESIZE** One system can interact with another system. The oceans are a connected system of water in motion. The solar system is the Sun and its family of orbiting planets, moons, and other objects. Describe a connection between the solar system and the ocean system.

UNIT PROJECTS

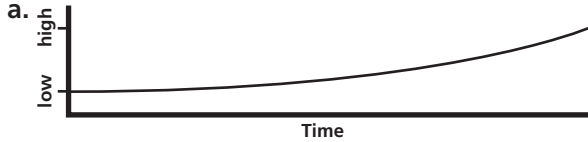
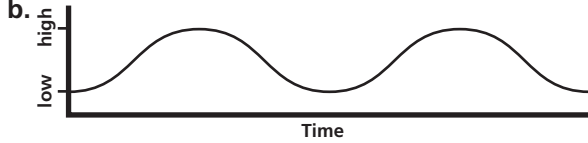
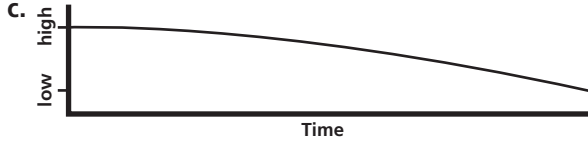
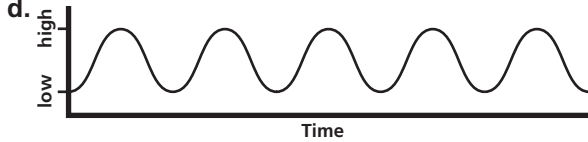
Check your schedule for your unit project. How are you doing? Be sure that you have placed data or notes from your research in your project folder.

Analyzing a Table

The table below shows the times of high and low tides at a location on the Atlantic Ocean coast. Use the table to answer the questions below.

	Low Tide	High Tide	Low Tide	High Tide
Monday	12:01 A.M.	5:33 A.M.	11:58 A.M.	5:59 P.M.
Tuesday	12:57 A.M.	6:33 A.M.	12:51 P.M.	6:54 P.M.
Wednesday	1:51 A.M.	7:30 A.M.	1:45 P.M.	7:48 P.M.
Thursday	2:43 A.M.	8:25 A.M.	2:38 P.M.	8:40 P.M.

- On which day was there a high tide at 7:48 P.M.?
 - Monday
 - Tuesday
 - Wednesday
 - Thursday
- Low tide is a good time to find shells along the beach. What time would be best for finding shells on Wednesday?
 - 8:00 A.M.
 - 10:00 A.M.
 - noon
 - 2:00 P.M.
- What was happening to the water level along the beach between 12:00 A.M. and 5:33 A.M. on Monday?
 - The water level was getting higher.
 - The water level was getting lower.
 - The water level was at its lowest.
 - The water level was at its highest.

- Which of the following graphs best represents the tides during one day?
 - 
 - 
 - 
 - 

Extended Response

Answer the two questions below in detail.

- How could you use a cork and a tank of water to demonstrate that waves transport energy, not water? You may include a diagram as part of your response if you wish.
- The beaker contains both salt water and fresh water. Why do the two liquids form layers? Use the words *salinity* and *density* in your response.

