

Chapter 15 Ocean Water and Ocean Life

Section 15.1 The Composition of Seawater

24pts

This section describes substances found in seawater, the temperature profiles of oceans, and the density profiles of oceans.

Reading Strategy

Previewing Before you read, preview the figures in this section and add three more questions to the table. As you read, write the answers to your questions. For more information on this Reading Strategy, see the Reading and Study Skills in the Skills and Reference Handbook at the end of your textbook.

7 pts

Questions About Seawater	Answers
What processes affect seawater salinity?	a.
b.	c.
d.	e.
f.	g.

- Circle the letter of each sentence that is true about seawater.
  - Seawater contains dissolved substances that give it a salty taste.
  - Sodium chloride, other salts, metals, and gases are dissolved in seawater.
  - Every known naturally occurring element is found in at least trace amounts in seawater.
  - Seawater is suitable for drinking and irrigation of crops.

Salinity

- Is the following sentence true or false? The average salinity of seawater is 35 percent. \_\_\_\_\_
- Most of the salt in seawater is \_\_\_\_\_, or common table salt.
- What are two sources of dissolved substances in the ocean? \_\_\_\_\_  
\_\_\_\_\_
- How do elements from Earth's interior get into seawater?  
\_\_\_\_\_  
\_\_\_\_\_

2 pts

**Chapter 15 Ocean Water and Ocean Life**

**Ocean Water and Ocean Life**

4pts

6. What are four ways in which fresh water is naturally added to seawater, decreasing its salinity? \_\_\_\_\_

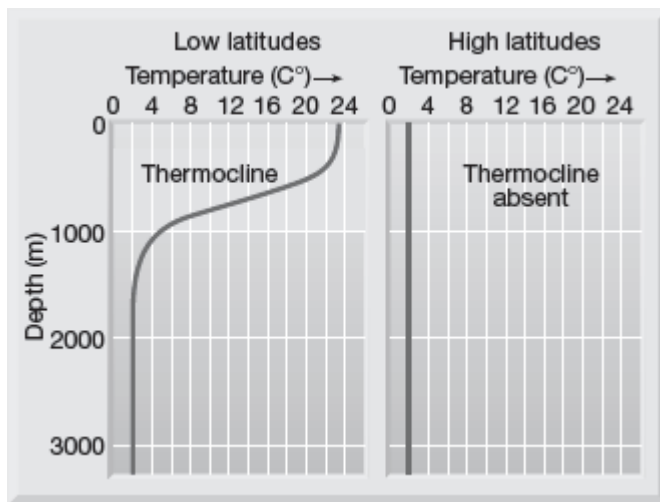
2 pts

7. What are two natural processes that increase the salinity of seawater? \_\_\_\_\_

**Ocean Temperature Variation**

8.  Is the following sentence true or false? The ocean's surface water temperature varies with the amount of solar radiation received, which is primarily a function of longitude. \_\_\_\_\_

9. Using the following graph, what temperature is seawater below 1500 m in the low latitudes? \_\_\_\_\_



10. What is the temperature profile of seawater in the high latitudes, according to the graph? \_\_\_\_\_

**Ocean Density Variation**

11.  Circle the letters of the two main factors that influence density of seawater.

- a. salinity
- b. temperature
- c. pycnocline
- d. thermocline

12. Circle the letter of the ocean layer where there is a rapid change of density with depth.

- a. surface zone
- b. thermocline
- c. pycnocline
- d. transition zone

**Ocean Layering**

13.  Is the following sentence true or false? Oceanographers generally recognize a three-layered structure in most parts of the open ocean: a shallow surface mixed zone, a transition zone, and a deep zone. \_\_\_\_\_

**Chapter 15 Ocean Water and Ocean Life**

**Section 15.2 The Diversity of Ocean Life**

24pts

*This section describes the diversity of organisms found in the ocean.*

**Reading Strategy**


**Building Vocabulary** As you read, add definitions and examples to complete the table below. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

8pts

Definitions	Examples
Plankton: organisms that drift with ocean currents	bacteria
Phytoplankton: a.	b.
Zooplankton: c.	d.
Nekton: e.	f.
Benthos: g.	h.

1. What organism directly or indirectly provides food for the majority of organisms? \_\_\_\_\_

**Classification of Marine Organisms**


2.  How are marine organisms classified? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

*Match each classification to its example.*

Classification	Example
_____ 3. plankton	a. adult sea star
_____ 4. nekton	b. diatom
_____ 5. benthos	c. salmon

**Marine Life Zones**

3pts

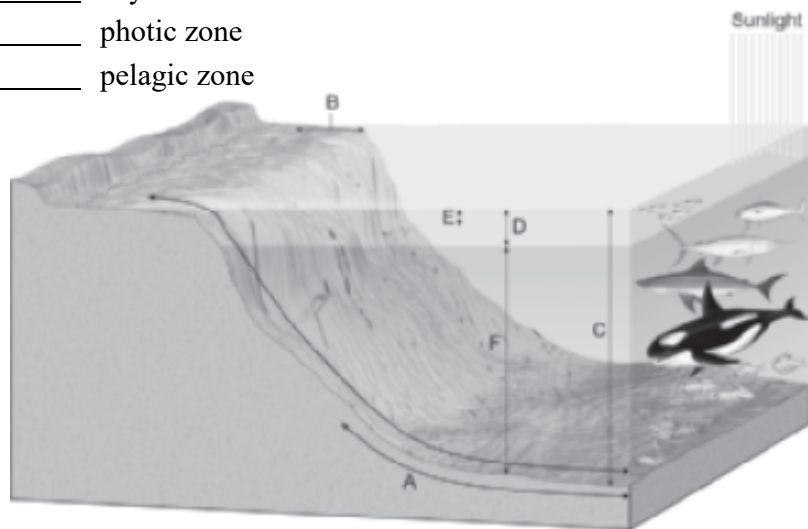
6.  What are the three factors used to divide the ocean into distinct marine life zones? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Chapter 15 Ocean Water and Ocean Life**

7. Circle the letter of each sentence that is true about life in the ocean.
- a. In the euphotic zone, phytoplankton use sunlight to produce food.
  - b. Phytoplankton is the basis of most oceanic food webs.
  - c. Photosynthesis occurs from the surface to deep into the abyssal zone of the ocean.
  - d. The neritic zone covers about 5 percent of the world’s ocean, but supports 90 percent of the world’s commercial fisheries.
8. Using the figure, select the letter that identifies each of the following marine life zones.

- \_\_\_\_\_ euphotic zone
- \_\_\_\_\_ neritic zone
- \_\_\_\_\_ aphotic zone
- \_\_\_\_\_ abyssal zone
- \_\_\_\_\_ photic zone
- \_\_\_\_\_ pelagic zone

6pts



**Hydrothermal Vents**

9. What is a hydrothermal vent? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
10. What is unusual about life and these hydrothermal vents?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Chapter 15 Ocean Water and Ocean Life**

**Section 15.3 Oceanic Productivity**

25pts

*This section explains the productivity of different regions of the ocean.*

**Reading Strategy**

**Identifying Main Ideas** As you read this section, write the main idea of each topic below. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

3pts

Topic	Main Idea
Productivity in polar oceans	a.
Productivity in tropical oceans	b.
Productivity in temperate oceans	c.

8pts

1. What are two examples of marine producers and six examples of marine consumers?

Producers: \_\_\_\_\_

\_\_\_\_\_

Consumers: \_\_\_\_\_

\_\_\_\_\_

**Primary Productivity**

*Match each description to its term.*

	Description	Term
_____	2. the use of light energy to convert water and carbon dioxide into energy-rich glucose molecules	a. primary productivity b. photosynthesis c. chemosynthesis
_____	3. the production of organic compounds from inorganic substances through photosynthesis or chemosynthesis	
_____	4. the process by which certain microorganisms create organic molecules from inorganic nutrients, using chemical energy	

**Chapter 15 Ocean Water and Ocean Life**

2pts

5. 🎧 What two factors influence a region's photosynthetic productivity? \_\_\_\_\_  
\_\_\_\_\_
6. 🎧 What limits photosynthetic productivity in polar areas?  
\_\_\_\_\_  
\_\_\_\_\_
7. 🎧 Is the following sentence true or false? Productivity in tropical regions is unlimited because of the abundance of nutrients.  
\_\_\_\_\_
8. What limits productivity in tropical oceans? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

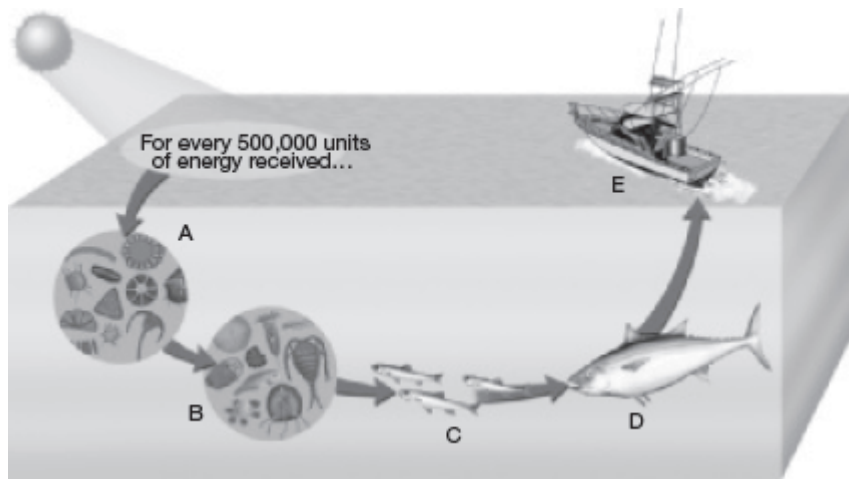
**Oceanic Feeding Relationships**

9. Approximately what percentage of light energy absorbed by algae is changed into food and made available to herbivores?  
\_\_\_\_\_

10. Using the figure, select the letter that identifies each of the following transfer efficiencies in the ecosystem shown.

5pts

- \_\_\_\_\_ 1 unit becomes tropic level 5 (human) biomass
- \_\_\_\_\_ 10,000 units of radiant energy are converted to tropic level 1 (phytoplankton) biomass
- \_\_\_\_\_ 100 units become tropic level 3 biomass
- \_\_\_\_\_ 1000 units become tropic level 2 (zooplankton) biomass
- \_\_\_\_\_ 10 units become tropic level 4 biomass



11. What percentage of energy is transferred from the sun to level 5?  
\_\_\_\_\_

**Chapter 15 Ocean Water and Ocean Life**

**WordWise**

16pts

Solve the clues to determine which vocabulary terms from Chapter 15 are hidden in the puzzle. Then find and circle the terms in the puzzle. The terms may occur vertically, horizontally, diagonally, or backward.

F P Z Y A R U M Q G E F D F G  
 O I Y T Z O V F Z N P S P V D  
 O E M C T R O P I C L E V E L  
 D T B R N K U L S S M V K L B  
 C E D Z G O C E A T U F I J Z  
 H X X B W O C L Q X Q Q C L O  
 A B K J M H I L I G J T Y W M  
 I Q E R P N C N I V X S I S S  
 N H E W I Y I T W N O Q R Q V  
 O H L T D S G S Q U E K J S X  
 T J Y A O O X U O N M D Y O E  
 K T A V E R O N O T K N A L P  
 E S L R P F L F Z S U F U M H  
 N S M Y M O X W G W J S H M U  
 B T P B J M N A S I P B Z R O

**Clues**

The total amount of solid material dissolved in water

The layer of ocean where there is a rapid change of temperature with depth

Organisms that drift with ocean currents

Animals capable of moving independently of the ocean currents, by swimming or other means of propulsion

A sequence of organisms through which energy is transferred

Feeding relationships in which organisms feed on a variety of organisms

A feeding stage

The layer of ocean water where there is a rapid change of density with depth

**Hidden Words**

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