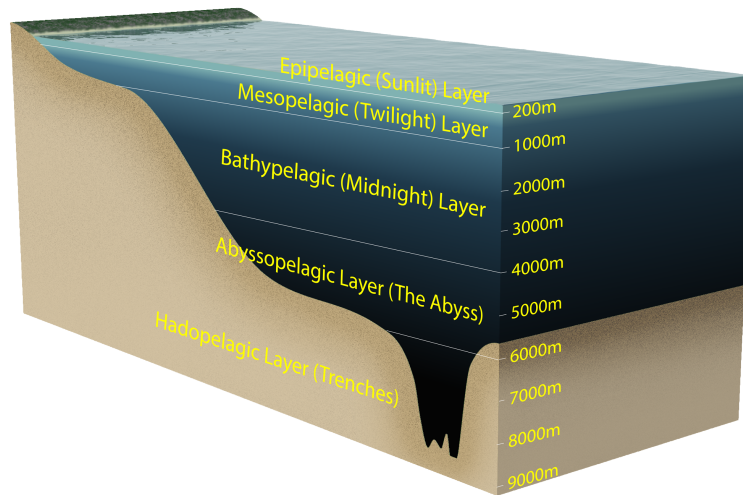


## Chapter 1 Main Ideas

- Describe and identify the zones of the ocean.
- Oceans benefit humanity in many ways.
- Plankton is the basis of the entire oceanic food chain.



## Facts to Know

- How much of our oxygen does plankton produce?
- Can you describe each layer of the ocean including depths, temperatures and animal adaptations?
- How are nutrients brought to the surface of the ocean?

## Things to Think About

- How are oceans important to humans?
- What are the differences between phytoplankton and zooplankton?
- What is the importance of plankton?

## Vocabulary Words

- Plankton, Phytoplankton, Photosynthesis, Carbon Dioxide, Sunlit Layer, Nutrients, Twilight Layer, Bioluminescent, Midnight Layer, Pressure, Abyss, Invertebrates, Trenches, Diatoms, Zooplankton, Baleen, Nekton, Oxygenates, Crustaceans

## Chapter 2 Main Ideas

- The open ocean hides much diversity in its waters.
- Polar oceans play an extremely important role in our climate.
- Plants and animals have had to adapt to the cold of polar oceans.



## Facts to Know

- What does the oceanic conveyor belt do and why is it important?
- Why is seawater hard to freeze?
- What are some of the largest mammals in the ocean?
- How big are the oceans, how much of earth's surface do they cover?
- Why can't plants in the open ocean attach themselves to the ocean floor?
- Why is krill so important to polar oceans?

## Things to Think About

- How have animals that live in the polar ocean adapted to the cold?
- How are polynyas important to polar oceans?
- How are polar oceans different from the other oceans?
- How do you think our climate would be affected if all the polar ice melted?

## Vocabulary Words

- Polynyas, Wintering Grounds, Circulation, Blubber, Vibrissae, Krill, Convection, Endemic

## Chapter 3 Main Ideas

- Although we can't see it, the deep sea is teeming with life.
- The deep sea is vast and mostly unexplored.
- The lack of light and water pressure has led to very unusual adaptations.



## Facts to Know

- What does the oceanic conveyor belt do and why is it important?
- What features can be found on the sea floor? What is special about them?
- How do fish use bioluminescence?
- What can sperm whales do that most other mammals can't?

## Things to Think About

- How have animals that live in the deep sea adapted to the pressure and darkness?
- How is whale fall important to the ocean's food chain?
- How are seamounts important to our oceans?
- How do the differences between hydrothermal vents and cold seeps affect the plant and animal life found near them?

## Vocabulary Words

- Seamount, Cold Seep, Hydrothermal Vent, Abyssal Plain, Chemosynthesis, Mid-Oceanic Ridge, Mollusk, Scavenger Phase, Enrichment-Opportunist Phase, Sulfophilic Stage, Endemic

## Chapter 4 Main Ideas

- Most of the life in the oceans is found in coastal waters.
- Coastal waters are extraordinarily important to humanity for a number of reasons.
- Life in the rocky intertidal is driven by the tides.



## Facts to Know

- How are kelp forests different from land based forests? What role do they play in the ocean?
- What parts of the ocean make up coastal waters? What makes each of them important?
- What are some common adaptations of plants and animals in coastal regions?

## Things to Think About

- Why do you think most ocean life is found around coastal waters?
- How are coral reefs important to humanity?
- Why are most of the world's largest cities located near estuaries?

## Vocabulary Words

- Rocky Intertidal, Cobble Beach, Kelp Forest, Estuary, Coral Reef, Upwelling, Holdfast, Stipe, Float, Osmoregulate, Salinity, Brackish

## Chapter 5 Main Ideas

- The threats to our ocean are human based.
- These threats can be reversed if we change our behaviors.
- All countries will have to work together to solve them.



## Facts to Know

- How much could sea levels rise in the next 100 years?
- What are some of the causes of ocean pollution?
- Why is noise pollution considered an ocean threat?
- What are some forms of destructive fishing?
- Where is the garbage patch located?

## Things to Think About

- What do you think are the biggest threats to our oceans?
- How would a rising ocean affect humanity?
- How do you think we might reverse ocean acidification?

## Vocabulary Words

- Mariculture, Bycatch, Garbage Patch, Ocean Acidification, Destructive Fishing