

OBJECTIVES:

- ~ Describe the composition of ocean water.
- ~ Identify the sources of salts in ocean water and the factors that affect salinity.
- ~ Explain how ocean currents develop and the factors that affect them.
- ~ Describe the effects of ocean currents on the global distribution of heat.
- ~ Discuss upwelling and its effect on fish populations and the fishing industry.
- ~ Explain how deep ocean currents form and how they are connected to climate and climate change.
- ~ Identify the parts of a wave and how they are formed.
- ~ Describe erosional and depositional features of shorelines.
- ~ List the structures that help protect the shoreline.
- ~ Define tides and explain the forces responsible for their formation and impact.
- ~ Differentiate between spring and neap tides.
- ~ Describe the properties of each of the different life zones in the ocean.
- ~ Define plankton, nekton, and benthos. Classify organisms as plankton, nekton, or benthos.

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1. Approximately what percentage of Earth’s surface is covered by oceans?
 2. Which ocean is the largest?
 3. What is the most abundant salt in ocean water?
 4. What processes are responsible for a decrease in the salinity of ocean water? Increase salinity?
 5. What is the layer of water in which there is a rapid change of temperature with depth in the ocean called?
 6. What are organisms that drift with ocean currents called?
 7. Which term describes the upper part of the ocean into which sunlight penetrates?
 8. In what life zone of the ocean are phytoplankton usually found?
 9. What is the use of light energy by organisms to convert water and carbon dioxide into organic molecules called?
 10. What is primary productivity?
 11. During which season does primary productivity reach its peak in polar oceans? In temperate oceans? Why are the seasons the same or different?
 12. What are the two limiting factors to primary productivity in temperate oceans?
 13. Is there a thermocline present in high-latitude ocean waters? Why or why not?
 14. What is salinity? What units are used to express the salinity of ocean water?
 15. Explain the relationship between latitude and surface temperature of the ocean.
 16. What are two factors that affect the density of ocean water? Does one affect density more than the other? If so, which one?
 17. What are the three main layers (zones) of the open ocean?

18. What is the difference between plankton and nekton?
19. Why is the neritic zone rich in life and biodiversity?
20. Why do many fish in the abyssal zone locate food through chemical sensing?
21. What factors influence a region's photosynthetic productivity?
22. What limits primary productivity in tropical oceans? Why?
23. How do surface currents develop?
24. What is the Coriolis effect? How does it influence the direction of surface currents flowing in the ocean?
25. How do ocean currents affect climate?
26. Why is upwelling important?
27. How are density currents formed?
28. The average surface temperature of water off the coast of Ecuador (west coast of South America) is 21°C. The average surface temperature of water off the coast of Brazil (east coast of South America) at the same latitude is about 27°C. Explain why there is such a difference in water temperature between these areas at the same latitude.
29. From where do ocean waves obtain their energy?
30. What three quantities are used to describe a wave?
31. Which celestial bodies influence Earth tides?
32. What force is responsible for tides?
33. What are the three types of tidal patterns? Briefly describe each.
34. How are sediments along the shoreline moved?
35. By which processes do shoreline features form?
36. Name and briefly describe three examples of shoreline features formed by erosion.
37. Name and briefly describe three examples of shoreline features formed by deposition.
38. What structures can be built to protect a shoreline?