The Ocean Book Study Guide Answer Key

INTRODUCTION

Short Answer

1. 71%; 97%
2. The oceans help to distribute heat and cold; without the oceans, climate variations would be much more severe.
3. Half of the world's supply of fresh oxygen is produced by marine micro-organisms, and many fish and other food products are harvested from the ocean.
4. Surf, tides, currents, geologic vents
5. Approximately one-third
6. transportation; 50
7. blue: water depth and atmospheric conditions
   yellow: phytoplankton
   green: phytoplankton and clay particles
   brown: clay and other sedimentary particles

Discussion Questions

1. The discussion should compare temperature fluctuations in various areas; drought; lack of oxygen; possible food shortages.

2. Discussion should elaborate that ecology is a concern because pollution destroys marine habitats; also, everyone needs the oxygen that fragile phytoplankton produce.
3. Discussion should conclude that there must be certain international agreements (and enforcements) to see that one country's fishing practices or pollution does not inhibit another country's marine resources.

Lesson 1

Short Answer

1. Although they overlap somewhat, the four differentiations include:

   Chemical oceanography focuses on the properties of seawater.

   Physical oceanography relates seawater to its physical characteristics such as temperature, motion and ability to transmit energy.

   Biological oceanography focuses on marine flora and fauna.

   Geological/geophysical oceanography concerns the larger geological features of the marine systems of the earth.
2. Shipping products between nations; navies for defense; engineering—construction of seagoing structures; communications—laying cables; iceberg location for safety; mineral and petroleum exploration; meteorology—weather patterns
3. The scientists found a variety of bizarre creatures that had never been seen before.
4. manganese nodules shaped like potatoes and the mid-oceanic ridge
5. a picture made by sound waves
6. Exploration used to be done by ship, but now satellites and deep sea robots are used.

Discussion Questions

1. People used to consider the ocean a good place to dump their garbage, but now we understand the dangers of pollution and the importance of taking care of the oceans.

2. The discussion leader should draw a connection between this discussion and Introduction, question 2, that a healthy ocean is a benefit for all people.

Activities

2. (Outline)
    - I. Branches of Oceanography
        - A. Chemical Oceanography
            1. Chemical composition of sea water
            2. Nature of dissolved gases and solids
            3. Chemical cycles
            4. Acidity of sea water
        - B. Physical Oceanography
            1. Temperature
            2. Density
            3. Waves
            4. Currents
            5. Tides
            6. Sea ice
            7. Air-sea interaction
            8. Ability to transmit sound and light
        - C. Biological Oceanography
            1. Animal and plant life
            2. Chemical and physical changes
            3. Food webs
            4. Interaction of life with its surroundings

D. Marine Geology and Geophysics
   1. Oceanic sediments and rocks
   2. Properties of magnetism, gravity, electricity, heat flow and seismic methods

Lesson 2

Short Answer

1. coast, continental margin, trenches, oceanic ridges, sea floor with hydrothermal vents
2. abyssal plain—basin on the bottom of the ocean which extends for miles
   beach—sloping coastland covered by sand between the sea and the coast
   brackish water—part freshwater, part saltwater; sometimes stationary
   coast—the region behind the shoreline; the geographic line where land ends and sea begins
   continental margin—the wide area between a continent's coast and the deep-sea floor—the bottom of the ocean, as opposed to its ridges
   estuary—an area at the mouth of a river, where fresh water mixes with salt water
   harbor—a naturally or artificially sheltered area of water with few or low waves
   hydrothermal vent—a chimney-shaped formation that releases jets of poisonous, dark, mineral-rich water from the ocean floor; a black smoker chimney
   inlet—any waterway going into land from a larger, open body of water; harbors, bays, lagoons, and fjords are inlets
   lagoon—a shallow body of still ocean water, mostly separated from the ocean by a sand bar, coral reef or barrier island

oceanic ridges—underwater mountain ranges
salinity—a measure of the total amount of dissolved solids or minerals in water
salt marsh—a swampy coastal area with plants washed by low waves from the sea, otherwise known as wetlands
seamount—geologic formation which protrudes from the seafloor
shoreline—the high-water mark of the tide; the constantly shifting dividing line between land and sea
subduction—the geologic process whereby a heavier oceanic plate slides under another, lighter crustal plate
trench—a deep area of the ocean, some have steep valleys

3. The shaping influences are wave action, currents, tides, actions of oysters, mussels, other sea creatures and various types of vegetation.
4. A lagoon is a shallow body of brackish or ocean water separated from the ocean by a sandy ridge. Fjords may be hundreds of feet deep. The sides of a fjord are U-shaped and steep.
5. The continental margin includes the continental shelf, or submerged land adjacent to the continent; the continental slope, or the true edge of the continent; the continental rise, the distance between the slope and the plain; and abyssal plain, the greater depth of the ocean.
6. sea floor or deep ocean
7. Oceanic ridges are underwater mountain ranges, some higher than Mount Everest; trenches descend deep into the sea floor, deeper than the tallest mountains. Trenches are located at the base of continental slopes, whereas oceanic ridges form a chain of mountain ranges which protrude from the sea floor.
8. "Hydro" indicates water, and "thermal" pertains to heat; hydrothermal vents are spouts of water heated by

underground pockets of molten rock.

9. It's three times as hot. Water boils at 212˚F. Water spewing from a thermal vent can reach 666˚F.
10. There are high numbers of individuals that have a large body size, such as 10–13 foot-long tubeworms, giant white clams, translucent jellyfish, and blind crabs and shrimp.

Discussion Questions

1. Seamounts are mountains on the seafloor that have pointed peaks and are at least 3,280 feet high. Guyots are flat-topped seamounts with peaks close to the surface which have had their peaks eroded by wave action.
2. Creation scientists believe that trenches, the deepest areas of the oceans, are what's left from subduction activity of crustal movement at the time of the Genesis Flood. (See Genesis 8:2.)
3. In Iceland, a new island with new shorelines appeared in the early 1960's, but with the appearance of having been formed long before. The conditions of hydrothermal vents are actually hazardous to life, yet a few creatures do live in their proximity.
4. Harsh weather conditions, such as hurricanes and floods can drastically alter the shoreline so citizens should be prevented from building on property too close to the shifting beach.

Lesson 3

1. Oxygen, hydrogen, chlorine, sodium, magnesium, sulfur, calcium, potassium, bromine, carbon
2. 35/1000 = 3.5%
3. God may have formed seawater with salt in it from the beginning. Other salts are deposited through erosion.

4. Humans do not possess a "salt gland." To process the salt in ingested seawater, people must drink three times as much water as an amount of salt water for their kidneys to do the same job as a seafaring animal's salt gland. Without a supply of freshwater, the human body will die of dehydration.
5. The water near the mouth of (especially) large rivers is diluted with fresh water.
6. An iceberg is a mountain-sized chunk of frozen freshwater floating freely in seawater; most icebergs are broken pieces of compressed snow, ice sheets or glaciers.
7. 10%; 90%
8. Arctic; Antarctic
9. The RMS *Titanic* sank after it struck an iceberg which tore open its hull and left 1,500 people in frigid waters.

Discussion Questions

1. commodity—a resource that is sold or traded
   dehydration—the process of removing water; drying out
   desalination plant—machinery designed to remove salt from seawater to prepare it for human consumption
   pinnacle iceberg—an iceberg that sticks up, like a mountain shape; pinnacle icebergs are "born" in the Arctic
   salinity—the measure of the amount of dissolved salt in seawater
   tabular iceberg—an iceberg that is long and flat, like a table; these icebergs are formed in Antarctica
2. Because the Titanic was traveling at a high rate of speed at night, navigators were unable to discern the projected underwater bulk of the fateful iceberg in time for the massive ship to take elusive measures to avoid a collision.
3. "You are the salt of the earth" refers to both a Christian's importance as a commodity and as a way to prevent the

rottenness of depraved man from spreading. Just as salt that is no longer salty is worthless, so is a Christian who mars his testimony with sin and excuses.

Activities

2. "Salary" became the term we use for the fixed amount of money paid to a person on a regular basis for services. Indeed, a lazy man is "not worth his salt."
3. While most of the ice cube will be below the surface, we would not expect the ratio to be the same because the ice cube and water have no salt and are therefore different in basic constitution.

Lesson 4

Terms to Know and Spell

tide—the periodic rise and fall of the level of water relative to the beach

wave—movement of surface water, noticed mostly at the beach

current—massive movement of water beneath the surface

landmass—a large body of land, such as a continent

gravitational pull—the force of magnetic attraction between two large bodies

centripetal acceleration—the speed at which one body revolves around another

oscillate—to move back and forth with a steady rhythm

revolve/revolution—to move around a central point; one complete circle of movement

diurnal/semidiurnal—daily; twice daily

neap tide—lower high and higher low tides because of quadrature

spring tide—higher high and lower low tides because of syzygy

tsunami—a gigantic, devastating wave caused by landslides, earthquakes, volcanic activity, or hurricanes

Coriolis effect—the combination of the atmospheric marine conditions based on the rotation of the earth and the heating and cooling conditions based upon latitude or distance from the equator

gyre—large continuous circulatory currents in the Atlantic and Pacific Oceans

riptide—a dangerous surface current that carries large amounts of water back to sea

surf—surface water that crashes onto shore in rhythmic fashion

syzygy—occurs when the sun, moon, and earth all line up, resulting in very high or very low spring tides

quadrature—when the positions of the sun, moon, and earth form a ninety-degree angle

neap—the lowest low and the highest high tides

undertow—a type of current that occurs after a breaker crashes on a beach

nutrient upswelling—a curious movement of water that carries nutritious deep water toward the surface for marine animals to consume

Short Answer

1. tide
2. The shape of the coastline, the composition of the continental shelf, the height of the tide, the gravitational forces (which may be affected by the season), pleasant or adverse local weather conditions
3. the distance between them
4. Sir Isaac Newton (a noted creation scientist)
5. spring

6. neap; quadrature; high; highest low
7. semi-diurnal
8. winds moving just the top layer of water
9. the steepness of the coast, the height of the tide, and amount of wind present relative to any storm activity
10. tsunami; underwater geological activity, such as an earthquake, landslide or volcanic eruption
11. Red symbolizes warm water currents, and blue stands for cold water currents. The direction of the arrow indicates how the current travels.
12. The Gulf Stream is a warm water current east of the United States. The Humboldt is a cold-water current off the west coast of South America.

Discussion Questions

1. It is safer to launch or dock a ship at high tide, especially if the bay is shallow; many a ship has run aground at low tide. Unusually high or low tides can occur monthly or seasonally.
2. A double-minded man is compared to the instability of waves which move to and fro constantly. A doubter will always be subject to changing nature of circumstances or opinions; a man of faith will trust in God's unchanging truths.
3. Have students study the map on page 28 while someone reads aloud from the end of page 27 through the first paragraph on page 29 to help them better understand the movement of the world's ocean currents. Notice how currents circulate clockwise in the Northern Hemisphere and counter-clockwise in the Southern Hemisphere.

Lesson 5

Terms to Know and Spell

Coriolis effect—the movement of atmospheric winds due to the rotation of the earth

density—regarding marine water, colder water is more salty and dense because some water has already evaporated

depression—an area of low atmospheric pressure

El Niño—a warm-water current that appears at Christmastime

eye of a hurricane—the relatively windless center of the vortex, approximately ten miles wide

hurricane—a severe storm characterized by very strong winds and heavy rainfall

hypothermia—a condition experienced when the body gets too cold

La Niña—a cold-water condition that may interfere with the role of plankton in the food chain

meteorology; meteorological—the science of weather; having to do with weather

storm surge—the high waves and pronounced surf that accompanies a heavy storm

thermocline—an area of seawater where the temperature decreases sharply in comparison to its depth

tropical storm—a storm that has resulted from a tropical depression, yet is not strong enough to be called a hurricane.

Fill in the Blanks

1. Florida
2. El Niño
3. Warm water temperatures, dead fish, starving sea birds and mammals, heavy rains in some areas, drought in

others

4. La Niña
5. 1,000
6. east; western
7. depression
8. tropical storm
9. wind speed
10. cyclone
11. typhoon
12. counterclockwise; clockwise
13. No large land mass interferes with the circulating winds.
14. 2; 3
15. slowly
16. thermocline

Discussion Questions

1. Example: Because Christopher Columbus sailed from the Iberian Peninsula, he was able to travel on the Gulf Stream which, when compounded by a storm, propelled his ships at an amazing pace. Later, until travelers understood the propulsion of the Gulf Stream, voyages from Great Britain to the Americas took much longer than the return trip.
2. Answers will vary. El Niño tends to bring extra rain to the western coast of North America, while eastern Asia suffers heat and drought. La Niña mostly affects South America.
3. The high-speed winds in a hurricane are circular in nature. At the same time, the vortex can travel in another direction. To simulate this, fill a pan or sink with water and stir up a vortex with a straw or spoon handle. Then try moving the vortex to a different location in the pan

without dissipating it.

4. Discussions will vary.

Lesson 6

Terms to Know and Spell

shellfish—clams, oysters, scallops; also some crustaceans, such as crabs, lobsters

trawling—a fishing technique which drags lines or nets to the side or stern of a ship

purse seining—a fishing technique which uses a type of large net that spreads out and then closes around all marine life and deposits them on the ship

dredging—a fishing technique which harvests bottom dwellers

overfishing—harvesting more fish than can reproduce for population maintenance

bykill—other creatures that are inadvertently caught with the intended prey

Fill in the Blanks or Short Answer

1. 600
2. Small: anchovies, sardines, herring
   Medium: mackerel, salmon, perch, flounder
   Large: halibut, tuna, shark
   Shellfish: crab, lobster, scallops, clams, oysters
3. They are used for bait, pet food, fertilizer and glue. Sometimes they are simply dumped overboard and wasted.
4. Ships are now equipped with power tools to deal with heavy cargo. Electronic detection devices help to locate schools of fish. Some vessels can process and can or freeze their catch while still at sea.
5. Overfishing means that a type of fish has been harvested

beyond its ability to reproduce enough to keep its population steady and not enough fish remain to breed new stock.

6. An aquaculture farm is an area near shore where marine animals are grown under protected conditions for the purpose of human consumption.
7. algae, oysters, salmon
8. waves, tides, currents, salinity, thermal gradients
9. The plants would need to be located in the tropics where storms are frequent; they require large amounts of both hot and cold water; they could endanger marine life.
10. magnesium, bromine, salt, zinc, iron, copper, diamonds, gravel, sand, oil, natural gas

Discussion Questions

1. The discussion should consider that living resources have their bounds, and that overfishing can affect other populations as well as local economies. Some fishing restrictions should be incorporated, but how they would be regulated is difficult to determine. God puts a priority on the needs of human life, but He also mandates a proper stewardship of Earth's resources.
2. Since the fishing industry has a natural tendency toward profit rather than population control, it seems that the only way to prevent overfishing is to institute governmental regulations, such as provisional licensing, weight restrictions and fines for disobedience.
3. Offshore drilling brings a boon to the local economy, with jobs and money aplenty. However, both construction and production disturb the marine environment which can bring pollution to local shores. Many US states have a proximity limit on offshore drilling enterprises. Do other countries as well?

Lesson 7

Terms to Know and Spell

algae—various kinds of oceanic plants; includes yellow, red, brown, and green

aquatic mammals—warm-blooded, air-breathing sea creatures; include whales, dolphins, seals, sea lions, sea otters, walruses and more

benthic zone—the floor of the oceanic horizontal zone that supports bottom-dwelling life forms; includes the intertidal zone, too

bioluminescence—a living organism's ability to produce its own light, usually via electricity

bony fish—sea creatures, other than mammals, that have a structure made of bone; largest class of fish

cartilaginous fish—fish that have a structure of cartilage rather than bones; includes sharks, rays

cephalopod—"head-foot" creatures, such as the octopus and squid

crustacean—marine arthropods commonly called shellfish; includes krill, barnacles, shrimp, crayfish, lobster, crab, daphnia

gastropod—"stomach foot" creatures, such as sea snails and other univalves

horizontal zone—marine area which extends from the shoreline low-tide mark to the open sea; includes the neritic and oceanic zones

intertidal zone—the shoreline area between the low- and high-tide water marks

kelp—a type of algae, commonly called seaweed

midnight zone—coldest, deepest (vertical) area, greater than 3,000 feet in depth, where no light penetrates from the surface; contains few nutrients

mollusk—univalve and bivalve creatures, as well as cephalopods and gastropods; includes cockles, scallops, mussels, oysters, octopuses

neritic zone—horizontal area from low-tide mark to edge of the continental shelf

oceanic zone—horizontal area from edge of continental shelf throughout the open sea

pelagic zone—area which includes all oceanic water but not including the sea floor

phytoplankton—plantlike plankton which carry on photosynthesis

plankton—tiny organisms that inhabit the sunlit zone and function as a food source for other marine life

red tide—an abnormal growth of red-brown dinoflagellates that can cause some fish to die

sunlit zone—(vertical) area from 0–600 feet in depth, where the most sunlight penetrates and photosynthesis occurs; contains greatest variety of life forms

twilight zone—vertical area from 600–3,000 feet in depth

vertical zone—area where marine life exists, from the surface to the sea floor; includes the sunlit, twilight and midnight zones

zooplankton—animal plankton which may include protozoa, diatoms, copepods, sea jellies, mollusks

Short Answer

1. Light penetration enables photosynthesis and results in an abundance of food for both plant eaters and carnivores.
2. Plankton are tiny plant and animal organisms that inhabit the ocean. Phytoplankton produce oxygen through photosynthesis. Zooplankton and phytoplankton are the base of oceanic food chains.
3. Phytoplankton are plants that undergo photosynthesis.

Zooplankton are animals that do not produce their own food.

4. A kelp forest is a proliferation of giant brown algae that can grow up to 200 feet in length.
5. Yellow algae are mostly diatoms, the base of the marine food chain. Red algae grow in coral reefs and are used to produce scientific agar and chemical or food additives. Brown algae include several kinds of seaweed, grass and kelp. Green algae, such as plankton and sea lettuce, may grow near shore.
6. antennae
7. There are three main classifications of fish: jawless, cartilaginous and bony.
8. Chordates are fish with bones, specifically backbones.
9. Unlike other fish, jawless fish lack paired pectoral or pelvic fins. Most cartilaginous fish are shark or rays. Other fish are bony fish.
10. Barnacles produce a cementing substance and attach themselves to boat hulls, where they live by gleaning floating food particles. This inhibits "smooth sailing" by increasing friction and drag and decreasing the ability of a boat to sail rapidly.
11. Answers will vary. An example: diatoms, krill, penguins.
12. Answers will vary. Using the previous example of a food chain, we can show how whalebone whales also eat krill; therefore, the penguins and whales are "woven" into a food web because they both depend on the same source of food.
13. Bioluminescence allows it to see, communicate, and attract prey in deep-sea darkness. Large jaws and sharp teeth increase the likelihood of a successful attempt to capture food. Light near its tail serves to distract predators.

Discussion Questions

1. Example: Diatoms are the main food source for krill, which, in turn, are the major food source for many other Arctic creatures, such as squid, petrils, penguins and various whales. If diatoms could not survive in frigid conditions, these other animals could not flourish either. Evolutionary principles cannot explain how these creatures, each dependent upon its food source, could evolve and survive without the food evolving at just the right time also. These organisms were clearly designed to coexist.
2. Jawless marine fish are akin to freshwater leeches; they obtain their food by sucking body fluids from their prey.
3. Whales live their entire lives in water, swim, and are predatory. While most fish hatch from eggs, some types of fish and all whales bear live young. However, whales breathe air with lungs, while fish breathe through gills. (Not mentioned in this book: Fish have fins and swim with a side-to-side motion, and whales have fins and tail flukes that enable them to swim with an up and down undulating motion.)
4. Evolutionists would maintain that lampreys and sharks are precursors to bony fish. However, fossils of rays and sharks like their modern counterparts have been discovered. Clearly, if evolution was to adhere to its meaning of "change," these fish should have changed in form from pre-history to today. Microevolution enables small changes that allow new species of fish to form, but the three scientific classes of fish remain—jawless, cartilaginous and bony.

Lesson 8

Terms to Know and Spell

atoll—circle-shaped coral reefs that enclose a lagoon; often formed around sunken volcanoes

barrier reef—an offshore coral reef with a deep, wide lagoon between it and the shore

coral bleaching—an unhealthy condition which occurs when algae no longer grows on a coral reef and it loses its brilliant color

equatorial region—warm water marine areas near the equator where most coral reefs are located

fringing reef—a reef of both hard and living coral, usually formed around volcanic islands, such as in Hawaii

Great Barrier Reef—largest, world-famous reef located off the coast of Australia

mangrove—a tropical tree that flourishes in tropical salt marshes

polyp—free-floating immature stage of a coral that will attach itself to a rock or dead coral, feed, and grow

shoal—an underwater sandbar or land ridge, not always covered with coral, that posts a hazard to ships

Short Answer

1. coral, sponges, sea anemones
2. atolls; fringing
3. coral reefs
4. polyp
5. atoll
6. The reef is great due to its tremendous size (more than a thousand miles long). It is a barrier to sea trade because ships cannot navigate its shallow waters with hardened

coral formations.

Discussion Questions

2. A coral polyp is an animal because it catches its food from the water that flows past it. It appears to be a plant, though, because it usually stays in one location after it attaches itself to a rock or limestone formation made of dead coral.
3. A mangrove tree is able to live along the shoreline. It tolerates brackish water. Its twisted, entangled roots keep sand from washing away and encourage other vegetative growth. Its fruit is a berry that germinates before planting, anchors quickly in the mud and provides a haven for many coral reef animals, such as tropical fish, shrimp and crabs.
4. When large groups of coral die, their formations harden into limestone with sharp, rough edges that can do serious damage if a ship forcefully hits it.
5. Based on the measured growth rate of the coral, scientists determined that the Great Barrier Reef could have been formed in only a few thousand years, rather than several million years, as recommended by evolutionists.

Lesson 9

Terms to Know and Spell

Archimedes principle—the basic principle that the force holding a vessel in the water is equal to the weight of the fluid displaced (pushed out of the way)

ballast—extra weight used to help a submersible sink

displace—to move something aside; in marine terms, "displaced" refers to the water that must part to let a vessel through

diving plane—a horizontal rudder on a submarine used when

diving or surfacing

hull—the outer shape or shell of a boat

mid-water drifter—a submersible that can drift along with a current, below the surface

oceanographic research ships—a working scientific platform with special equipment, such as radar, satellite tracking gear, helicopter landing pads, deep sea vehicles, cranes, cable and crew members—all used for the purpose of obtaining particular information from the marine world

Polynesia—groups of islands in the South Pacific Ocean

submersible—a specially equipped, manned or unmanned watercraft that can go underwater to obtain information

Short Answer

1. submersible
2. Most oceanographic research vessels have mechanical arms, video cameras, sonar instruments and devices to take sea-floor core samples. In this chapter, mostly manned submersibles are considered.
3. For answers, refer to terms defined here and to the text.

   diving bell—one of the first submersibles, used for observing underwater habitat

   bathysphere—a hollow steel ball lowered from a ship by a cable; first used in the 1930s

   bathyscaph—a technologically advanced submersible that can maneuver up and down without the use of cables

   DSV—a deep submergence vehicle that is used for research or rescue missions

   ROV—a remotely operated vehicle—an unmanned submersible controlled by cable connections to the mother ship, used for researching deep water with a video recorder

DSRV—a deep submergence rescue vessel, designed to rescue crews of disabled submarines

submarine—boats designed to stay submerged for extended periods, even weeks at a time; large in size and somewhat restricted in maneuverability

4. A bathyscape has no cables and can be independently controlled. A bathysphere is attached to a mother ship via cables and maneuverability is usually controlled by devices on the mother ship.
5. A Nansen bottle is a device which can be submerged from an oceanographic research vessel to gather data, such as temperature or salinity, at specified depths.
6. They cannot descend as deep as specially designed submersibles; however, they may carry ROVs that can do the necessary work.
7. The Trieste was a bathyscaph that enabled researchers to descend seven miles into the deep for the first time in 1960.
8. hydraulics
9. equal; weight

Discussion Questions

1. The first submersibles were remotely operated, significantly limiting the human experience with the marine world. Later, manned vessels were developed. Sonar enables tracking and mapping, satellite technology enhances communications of pertinent information. Computer technology enables scientists to record and process data efficiently.
2. A submarine has a space between its two hulls or ballast tanks on its outside, as well as a horizontal rudder called a diving plane. When descending, the ballast space is flooded with water, and the increased weight enables

the submarine to descend in compliance with the law of gravity. To surface, the diving plane is angled upward, and the water is pumped out by means of compressed air, making the submarine more buoyant.

3. Yes. Advances in knowledge about the oceans has made transportation routes safer, given populations advance notice of weather or water temperature changes and led to more protective measures for marine animals. (See other chapters.) Some core sample research has led scientists to believe that special creation is more plausible than evolution.

Lesson 10

Terms to Know and Spell

dimensions—the height, width and length of an object

hydraulic—fluids under pressure, doing work

sedimentation—particles of varying sizes transported and deposited in a liquid environment to later form rock

Halocline diagram—an illustration of the gradient in ocean salinity

density gradient—the distribution of salt at different levels of the ocean

Mount St. Helens—an active, volcanic peak in southwest Washington

submarine canyon—a deep, steep-sided underwater valley

uniformitarianism—the philosophy that the slow geological processes seen today have always been in effect in the unobserved past, slowly changing the face of the earth

sediment gravity flow—liquid-suspended particles whose settling has been caused by gravity and kinetic energy

cichlid fish—a unique freshwater tropical fish found mainly in

African lakes

Cambrian—a layer of sediments defined by some as an ancient evolutionary "era." Creationists view these sediments as containing vertebrate and invertebrate life in the pre-Flood seas.

Short Answer

1. Noah's Ark
2. Genesis 6:7,13; 7:11,19–22; 8:13; 2 Peter 3:3–7
3. Mars
4. halocline diagram
5. sediment gravity flows
6. Mount St. Helens
7. one

Discussion Questions

1. The physical evidence points to a catastrophe on a very large scale. Even evolutionary geologists are turning away from a slow and gradual geologic process (uniformitarianism) in favor of catastrophism—although they still deny the scriptural teaching of a Flood (Genesis 6–9).
2. It would show even the plain language of Scripture to be suspect and that God is unable to clearly express to His people what He is saying. The clear teaching of a worldwide judgment can also be "interpreted" as just a minor, local event. Other basic biblical teachings could also be radically reinterpreted.
3. Because of the wickedness of mankind, the earth was "filled with violence."