

## Grade 8 SCIENCE

## Chapter 2

## QUESTIONS

### Page 43 QUESTIONS

1. A basin is a low spot in the Earth's surface.
2. Scientist believe Earth's water came from ICE in comets that struck the Earth.
3. In plate tectonics, pieces fo Earth's surface called PLATES float over molten rock called MAGMA.
4. Ocean ridges are an undersea mountain ridge formed when two tectonic plates move apart, and magma pushes through the gap then cools.

A TRENCH is created when an OCEAN PLATE collides with a CONTINENTAL PLATE, causing the OCEAN PLATE to be forced underneath.

5. An ABYSSAL PLAIN are wide, flat areas covered in sediment in the ocean.

### PAGE 47QUESTIONS

1. A continental MARGIN is made up of a continental SHELF and a continental SLOPE.
2. In SONAR MAPPING, a ship sends SOUND WAVES to the OCEAN FLOOR. The TIME it takes for the sound wave to REFLECT back is measured and the water depth is calculated.
3. In SATELITTE MAPPING, large areas of the ocean can be SURVEYED in a SHORT TIME.
4. MANNED SUBMERSIBLES carry PEOPLE DOWN into the ocean.

REMOTE-CONTROLLED SUBMERSIBLES go much deeper, but cannot carry people. They can carry cameras and video equipment aaand are CONTROLLED by SOMEONE at the SURFACE.

**Page 51 QUESTIONS**

1. A) Earth's five major oceans are: PACIFIC; ATLANTIC; INDIAN; SOUTHERN and ARCTIC.  
B) The PACIFIC Ocean is the LARGEST and the ARCTIC OCEAN is the SMALLEST.
  
2. The WATER that OFRMEED THE OCEANS came from:
  - (i) ICE in COMETS that struck the Earth
  - (ii) WATER VAPOUR thrown into the atmosphere during VOLCANIC ERUPTIONS.
  
3. The wide flat areas of the ocean basins are called ABYSSAL PLAINS.
  
4. OCEAN RIDGES are places on the ocean floor where TWO TECTONIC PLATES are moving apart causing MAGMA to come up through the gap and cool.
  
5. A TRENCH is formed when ONE TECHONIC PLATE (OCEAN PLATE) moves UNDER another (CONTINENTAL PLATE) on the ocean floor.
  
6. The STEEP side of the edge of a continent is called a CONTINENTAL SLPOE.
  
7. The process of plate tectonics SLOWLY moved the continents to their current position.
  
8. Volcanoes contributed to the formation of the oceans. WATER trapped inside VOLCANIC MATERIAL was RELEASED into the atmosphere as WATER VAPOUR during ERUPTIONS.
  
9. A) A RIDGE is an UNDERWATER MOUNTAIN RANGE formed when TWO TECTONIC PLATES are forced APART.  
  
B) A TRENCH is a DEEP RIFT in the OCEAN FLOOR formed when TWO TECTONIC PLATES COLLIDE and ONE is FORCED UNDERNEATH the OTHER.
  
10. DRAW the DIAGRAM in your NOTEBOOK LABELLING EACH PART. Page 51

11. **Three modern technologies** which help **scientists explore the DEEP oceans** include:

- (i) SONAR MAPPING
- (ii) SATTELITE MAPPING
- (iii) SUBMERSIBLES with DEEP SEA CAMERAS AND VIDEO.

Pause and reflect questions

A)  $2.5 \text{ cm per years} \times 12 \text{ years} = 30 \text{ cm}$  in your lifetime

distance the plates have moved in your lifetime

B) If you live to be 100 years of age,  $2.5 \text{ cm} \times 100 \text{ years} = 250 \text{ cm}$  or 2.5 m in 100 years

### **Page 56 QUESTIONS**

1. An OCEAN CURRENT is a large amount of ocean water moving in a particular pattern and unchanging direction.

2. THREE FACTORS which PRODUCE COEAN CURRENTS are:

- (i) WIND
- (ii) Rotation of the Earth
- (iii) Shape of the continents

3. Ocean currents are directly related to the PREVAILING WINDS.

4. The SPIN of the EARTH causes currents to CURVE CLOCKWISE in the NORTHERN HEMISPHERE while COUNTER-CLOCKWISE in the SOUTHERN HEMISPHERE.

This is called the CORIOLIS EFFECT.

5. CONTINENTS DEFLECT EAST-WEST CURRENTS either to the NORTH or SOUTH.

**PAGE 59 QUESTIONS**

**PAGE 56 QUESTIONS**

1. DENSITY CURRENTS are SINKING MASSES of COLD WATER that flow DOWNWARD and move along the ocean floor.
2. Draw FIGURE 2.17 on page 57 in your exercise. OCEAN SURFACE

NOTE: MIXED LAYER - very narrow

Thermoclines - thicker than mixed layer

DEEP WATER layer - very thick

3. FRESH WATER can enter the ocean:
  - (i) From a stream
  - (ii) From melting glaciers
  - (iii) From precipitation
4. UPWELLING is a VERTICAL MOVEMENT of WATER from the ocean floor to the surface.
5. UPWELLINGS bring nutrients from the ocean floor to the surface, helping plant life to grow and attracting fish.

**WHAT DID YOU FIND OUT QUESTIONS page 61**

1. As water temperature DECREASES, water depth INCREASES.
2. Water temp. is not constant as you go deeper.
3. The depth where water temperature has the greatest difference is between 400-800 m.

4. A) COLD water is denser. Water increases in density as its temperature decreases until just about freezing.
- B) As water becomes denser, it SINKS. Less dense water (warm water) will FLOAT.
- C) The COLD water of the Labrador Current will SINK under the WARMER water of the Gulf Stream.

**PAGE 63 QUESTIONS**

1. The three main causes of an OCEAN SURFACE CURRENTS are: wind action, Earth's rotation and the shape of the continents.
2. A) NORTH of the equator, winds and currents will be deflected CLOCKWISE.
- B) SOUTH of the equator, winds and currents will be deflected COUNTER-CLOCKWISE.
3. The THERMOCLINE is a layer of ocean water 200 m to 1000 m below the surface where the water temperature is constant.
4. When COLD, DENSE ocean water meets WARM, LESS DENSE OCEAN WATER, the mixing of the two currents creates HEAVY FOG.
5. UPWELLINGS can occur when strong offshore winds push surface water away from the shore and COLD DEEP WATER rushes up to replace it ( ex. Grand Banks)
6. Figure 2.17 KNOW

NOTE: MIXED LAYER - very narrow \_\_\_\_\_  
Thermoclines - thicker than mixed layer \_\_\_\_\_  
DEEP WATER layer - very thick \_\_\_\_\_  
\_\_\_\_\_

7. DENSITY CURRENTS are produced when masses of COLD WATER sink and then move along the ocean floor.
8. SURFACE CURRENTS occur up to a depth of 200 meters .

Surface current MOVEMENT is caused by WIND ACTION, ROTATION of the EARTH, and the SHAPE of the CONTINENTS.

DEEPER WATER'S CURRENTS movements are caused by TEMPERATURE and SALINITY of the water.

9. OCEAN WATER DENSITY changes in different parts of the ocean due to DIFFERENCES in SALINITY and TEMPERATURE.

Ocean water in the TROPICAL AREAS, areas at NORTH POLE, or areas at the SOUTH POLES will be DENSER due to HIGHER SALINITY.

10. UPWELLING AREAS are good for fishing because NUTRIENTS from the OCEAN FLOOR are brought to the surface and cause water plants to thrive. These plants attract fish to the area.

### **PAGE 69 QUESTIONS**

1. A SWELL is a SMOOTH WAVE.
2. As a wave approaches the shore, its WAVELENGTH DECREASES and HEIGHT INCREASES. It collapses on the shore as a BREAKER.
3. A tsunami is caused by earthquakes, volcanic eruptions or landslides on the ocean floor.
4. SHORELINE EROSION can be from:
  - (i) longshore currents running along the shore and taking sediment and sand
  - (ii) waves wearing away at the rocks on shore
  - (iii) the action of seawater on minerals and rocks, eroding them by chemical action.
5. WAVES erode a shoreline UNEVENLY creating BAYS in areas where rocks erode more quickly and creating HEADLANDS in between the bays.

### **Page 71 QUESTIONS**

1. SPRING TIDES occur when EARTH, the Moon and the Sun are in line. They have HIGHER than average TIDAL RANGE.  
NEAP TIDES occur when the Sun and the Moon are at right angles to each other. They have LOWER than average TIDAL RANGE.

2. A TIDAL RANGE is the difference in LEVEL between HIGH TIDE and LOW TIDE.
3. TIDAL ACTION is the result of the MOON'S GRAVITAIONAL PULL on the EARTH.
4. A SHORELINE with a NARROW V0shaped bay will have HIGHER TIDES than a bay that is WIDER and has a LARGER MOUTH.

### **PAGE 77 QUESTIONS**

1. SEA STACKS can be formed from eroded headlands or when a sea arch collapses.
2. SHORELIENS are in constant state of change from waves that erode and redeposit sediment.
3. The cycle of tidal movement is linked to the motion of the MOON. The MOON's motion is a predictable cycle.
4. A TIDAL BORE is a wave produced when a RISING TIDE enters a long V-shaped bay, such as the Bay of FUNDY.

A tsunami is caused by activity at the ocean floor such as earthquake, volcanic eruptions or landslides. It has nothing to do with tides.

5. Tsunamis strike land up to 800 km/h and have wavelengths of up to 150 km. The size and speed of the wave means the destructive force is spread over a larger distance.
6. TIDAL RANGE vary in different areas due to the SAHPE of the SHORELINE. A v-shpaed bay will have a larger tidal range than a open shoreline will.
7. The tidal range in Corner Brook is 1.45 m – 0.85 m – 087 m.
8. OCEAN WAVES are similar to other kinds of waves in that they have HEIGHT, WAVELENGTH and SPEED OF MOTION.

9. See page 68 Figure 2.29. KNOW  
Headlands extend farther out into the ocean than other parts of the shoreline so they will receive the MAIN FORCE of the WAVES.
10. As a wave approaches the shore, its WAVELENGTH DECREASES and HEIGHT INCREASES, then it collapses as a BREAKER.
11. It is the MOON'S GRAVITATIONAL PULL which causes TIDES.
12. A resident at the coastal town A would have to wait 6 days for the near noon tide (12:10 p.m.)
13. The TIDAL RANGE of MEXICO is SMALLER than the BAY OF FUNDY because the GULF has a NARROW OPENING with a WIDE BAY INSIDE allowing the rising tide to spread out more. Since the bay of FUNDY has a v-shape, the RISING TIDE enters the WIDE OPENING and then PILES UP inside along the NARROW END of the bay.

#### **CHAPTER REVIEW QUESTIONS page 78-79**

1. The ocean floor is not flat because tectonic plates cause the ocean ridges and trenches in the ocean floor.
2. Three factors that affect ocean surface currents are:
  - (i) Wind action
  - (ii) Earth's rotation (the Coriolis Effect)
  - (iii) The shape of the continents
3. Winds form as a result of masses of air moving rapidly from one area to another due to uneven heating of the Earth's surface.
4. Ocean waves form when winds blow across the surface of the water.
5. People who earn a living off the ocean must know about low and high tides because at low tide they can gather shellfish which at high tide would be underwater.
6. As the trough of a wave reaches the shoreline, it LSOWS down by friction, but the CREST continues. The crest 'outruns' the trough, topples forward or "BREAKS."
7. The LIMESTONE shoreline will change more quickly than a GRANITE one because LIMESTONE is a softer rock and erodes more quickly.



8. OCEAN TRENCHES are found on the sea floor where two tectonic plates have collided and one has been forced UNDERNEATH the other.
9. Trenches form at the edge of some continents because the continental plate will collide with another.
10. If the Earth had TWO MOONS, there would be TWO HIGH TIDES and TWO LOW TIDES each day. The tidal range would probably be smaller since the gravitational pull from EACH moon would be in a different direction.
11. The areas of coastline that erode faster for BAYS and the areas that resist become HEADLANDS.
12. SPRING TIDES occur when EARTH, the Moon and the Sun are in line. They have HIGHER than average TIDAL RANGE. These tides are the largest.  
NEAP TIDES occur when the Sun and the Moon are at right angles to each other. They have LOWER than average TIDAL RANGE. They are smaller waves.
13. Wave action causes rock fragments to rub against each other until they eventually become grains of sand. Where the shoreline is a gentle slope, waves will deposit sand and eventually become a beach (like Pasadena Beach).
14. SATELLITES record data using RADAR, INFRARED LIGHT or other technologies to measure features in the ocean floor.
15. DENSITY CURRENTS are produced when masses of COLD WATER sink and then move along the ocean floor. They are caused by COLD TEMPERATURE or HIGHER SALINITY that increase the ocean water density and cause it to sink and move along the ocean floor.
16. Sample 2 comes from the ocean floor because it has a lowest temperature and the highest density.
17. UPWELLING is the vertical movement of water from the ocean floor to the ocean surface. It brings nutrients from the ocean floor to the surface, helping plant life to grow and attracting fish.
18. The sediment on an ABYSSAL PLAIN comes from the continents, brought to the ocean by rivers.
19. SALINITY can be DECREASED by the addition of FRESHWATER from:
  - (i) rivers emptying into the ocean
  - (ii) icebergs and glaciers melting
  - (iii) in areas of high precipitation

SALINITY INCREASES in areas:

- (i) with hot, dry climates where ocean water evaporates
- (ii) with cold climates with little precipitation

20. The Atlantic Ocean is getting WIDER as the Pacific Ocean is getting smaller due to movements of tectonic plates.
21. Scientists take pictures of the ocean floor by using deep sea photography and videography cameras placed in remote- controlled submersibles.
22. Strong winds blowing over the surface of the water cause the warm surface water to move away from the shore. Cold deep water moves up to take its place. This is UPWELLING.
23. An earthquake on the ocean floor would create an tsunami. They travel so fast and so far, they can crash against the coastlines of several countries.
24. The lining up of the Sun, the moon and the Earth causes SPRING TIDES, which are the largest tide.
25. Before satellites, scientists used SONAR MAPPING to determine the shape of the ocean floor.
26. When the heated air rises, cooler air replaces it and the moving masses of air creates wind that blows horizontally across the Earth's surface.
27. When ocean water evaporates, it increases the SALINITY of the water that remains. This result increases the density of the water causing it to sink.
28. The Gulf Stream meets the Labrador Current at the Grand Banks. When the two currents meet, it creates an ideal place for nutrients for marine life.
29. A shoreline that is V-shaped, such as the Bay of Fundy, will produce a LARGRE TIDAL RANGE.