Chapter 12 Pre-Test

1. Where do warm currents begin, and why are they warm? Name one warm current that affects our climate.

Warm currents begin in the Caribbean and near the equator. They are warm because this is where the sun is most intense, and water has a high heat capacity, meaning it takes a long time to heat up or cool down. One warm current that affects our climate is the Gulf Stream.

1. Where do cold currents begin, and why are they cold? Name one cold current that affects our climate.

Cold currents begin in the Arctic and Antarctic regions. They are cold because these areas are further away from the Sun, therefore its heat is less intense. One cold current that affects our climate is the Labrador Current.

1. How do currents affect climates?

Warm currents affect our climate by warming the air which blows onto land. Cold currents affect our climate by drawing heat from the air.

1. Why do we find very thick fogs off the coast of Newfoundland?

As warm most air above the Gulf Stream blows over the colder water of the Labrador Current it condenses, producing some of the thickest fogs in the world.

1. Explain El Nino.

Normally, the trade winds in the Pacific Ocean blow warm currents west along the equator, this creates very warm surface water temperatures in the western Pacific Ocean and upwelling in the eastern Pacific Ocean. During an El Nino year, the wind directions is reversed and warm water is blown eastward across the ocean.

1. How does El Nino affect our winters here in Canada?

During an El Nino year, the winter in Canada is milder than usual.

1. What affect does El Nino have on sea life?

El Nino may increase ocean temperatures which can cause some fish, birds, and other sea life to move farther north. It can also cause some plants and animals to die because they can’t survive for long in warmer waters.

1. What is a major period of cooling known as?

A major period of cooling is known as an ice age.

1. How does an ice age begin?

An ice age begins when you have a cooler than average winter with lots of snow, followed by a cooler than average summer that doesn’t produce enough heat to melt all the snow by the end of summer.

1. How high can the snow pile up during an ice age?

Scientists believe that over hundreds and thousands of years, the snow piles up to heights of 1 km and more.

1. Give 2 examples of distinct features that glaciers leave behind.

1) Boulders and stones frozen in the bottom of glaciers leave long parallel scratches in the underlying rock.

2) Glaciers erode the sides of valleys, producing gently curving U-shaped valleys.

3) When glaciers melt at the end of an ice age, the run-off carries away tiny rock fragments and sediment. These rock fragments are deposited in ridges that remain long after the glaciers have melted.

1. Why do scientists think that sea levels fell during the ice ages?

Scientists believe that sea levels fell during the ice age because with more water locked in ice, and with no flowing rivers to return water to the ocean, sea levels would have fallen by as much as 100m.

1. How did land mammals migrate between North America and Asia during the last ice age?

Land animals migrated between the two continents by a land bridge that connected Alaska with Siberia.

1. What is 1 hypothesis that scientists have to explain why ice ages may happen?
2. Occasional reductions in the Sun’s thermal energy.
3. An increase in volcanic activity leading to dust in the air that blocks the Sun’s energy.
4. Periods of mountain formation resulting in more snow on these peaks in the summer.
5. Ocean shape being altered by tectonic plate movement. This would change ocean currents.
6. A change in the tilt of Earth’s axis.
7. Give an example of a food chain with at least 3 organisms in it.

Sea Urchin -> Sea Otter -> Shark

1. Why is microscopic algae so important to life in the ocean?

Microscopic algae is important to ocean life because it forms the majority of plants in the ocean that are the basis for all major ocean food chains.

1. What is the difference between phytoplankton and zooplankton?

Phytoplankton is plant plankton, and zooplankton is animal plankton.

1. What do the phytoplankton that live more than 2.5 km below the surface of the ocean eat?

These phytoplankton eat chemicals that flow from cracks, or sea-floor vents, in the ocean floor.

1. Where can we find sea floor vents and what flows from them?

Sea floor vents are found along mid-ocean ridges. Hot water flows from these vents, carrying dissolved minerals and gases from below the ocean floor such as hydrogen sulfide gas.

1. Why were the Grand Banks in Newfoundland considered an ideal fishing ground? What made it such a good place to catch fish?

The continental shelf in this region forms a large rectangular ridge, thousands of square kilometers in area, where the water is about 55m deep. The Labrador Current meets up with the Gulf Stream and this produces good conditions for plankton, which fish eat.

1. What are the 3 potential causes that have led to the decline of the fishing industry in Newfoundland?
2. Overfishing
3. Changes in water temperature
4. Changes in nutrient level
5. How do fisheries alter food chains?

Fisheries tend to fish large fish, and expensive fish. As the populations of these fish decline, the smaller less commercial fish increase in numbers.

1. How do non-toxic chemicals that enter water systems have a negative impact on them?

Extra nutrients in the water can lead to an algal bloom which results in the water surface being covered in a film of green slime.

1. Give 2 examples of ways we can get energy from the ocean, that are renewable and sustainable.
2. Tidal power
3. Wave power
4. Thermal energy
5. What are the 2 fossil fuels we extract from the ocean called?

These are oil and natural gas.

1. Where is most offshore oil and gas extracted from?

Most offshore oil and gas is extracted from continental shelves.

1. What are 3 risks involved in extracting oil from the sea floor?
2. Oil tankers can leak and spill their oil.
3. It is dangerous to work on oil rigs.
4. Earthquakes could damage oil rigs or undersea pipelines.
5. Why are chemicals pollutants getting in the ocean so dangerous for humans?

Pollutants can enter the bodies of living organisms and enter their tissues, as they pass from organism to organism the pollutants become more and more concentrated.

1. Other than chemicals, what other pollutants can harm sea life and how?

Marine life can be injured by abandoned fishing lines, nets, plastic bags, needles and other objects. A huge problem is plastic in the ocean.

1. Why do people build dams?

People build dams for many reasons, one is to retain water resources.

1. Is most fresh water easily accessible? If not, where is it found?

Most fresh water is frozen or underground, making it hard to access.

1. What human activities add waste materials to water systems?

Agriculture, mining, and pulp and paper manufacturing all add waste materials to water systems.

1. What are some ways humans have dealt with water supply problems?

People have had to look for alternate sources, limit their water consumption, and wait for more rain.

1. Why are rivers and wetlands important to the water supply?

Rivers help distribute fertile silt during floods. Wetlands act like sponges, holding and purifying water and preventing flooding.

1. What are the 2 steps we need to take to restore healthy water systems?
2. Stop pollution
3. Conservation