Waves are signs of energy moving through the water. Wind creates waves, and fast, longer-blowing winds create large waves. Erupting volcanoes and earthquakes also cause waves. While waves move from sea to shore, they do not move water from one place to another the way currents and tides do. Waves simply carry the same water with them, just moving around in circles inside the wave.

When waves reach the shore, the water is too shallow for the wave's water to keep circling inside the wave, so the wave crests and breaks. **Swash** is foaming water from a wave that breaks onto the beach, and **backwash** is wave water that returns to the ocean.

A tide is the rising and falling of the surface of the ocean (or other body of water), usually twice a day. The rise and fall rhythm of tides is created mainly by gravity from the moon. The moon's gravity pulls at the water of the oceans closest to it. Since Earth is always spinning, moon's gravity also pulls the oceans on opposite sides of Earth. This is called **high tide**, and all the oceans between the two opposite sides of Earth are at **low tide**. Tides change from high to low as Earth spins and the moon's position changes.

Two times a month, during full- and new-moon phases, the sun, the moon, and Earth are in a line, so the gravity of the sun and the moon together creates high tides that are higher than normal and low tides that are lower than normal. These tides are called **spring tides**.

When the sun, the moon, and the earth form a right angle, the sun's gravity opposes the moon's gravity, so low tides are higher than normal and high tides are lower than normal. This happens during the first and last quarters of the moon's phase. These tides are called **neap tides**.

A **coast** is the land that borders a body of water. The shape of the ocean's coast is determined by the rock from which it is made and by the waves and the wind. The size of some coasts grows larger when matter is added to them; other coasts are decreased in size because of erosion by wind and waves. This can happen when water throws sand and small rocks against the coast, wearing it down. Erosion can also occur when the force of waves breaks rocks into smaller pieces. Bays, cliffs, and headlands are formed where the coast is eroded by the sea.

Answer the Following

1. What is the difference between a wave and a tide? _____

2. How do waves move? _____

3. What causes tides? _____

4. How does a coastline change? _____