**MODULE 2**

**Pre-test.** Answer the questions below and make your answer brief and concise.

1. What event began to occur about 190 million years ago?

Approximately 190 million years ago, Pangaea began to break up into Gondwanaland and Laurasia. Northern Africa and South America remained equatorial, whereas North America and Europe moved poleward.

1. If mountain ranges can form where plates are colliding, what would your hypothesis might be when plates are separating? Apply your hypothesis to identify locations on a world map where plates might be separating (both oceanic and continental lithospheric plate divergence zones can be identified on the map and in the flip books). The flipbooks will help you identify previous plate separations.

The theory of plate tectonics explains most of the features of Earth's surface. It explains why earthquakes, volcanoes and mountain ranges are where they are. It explains where to find some mineral resources. Plate tectonics is the key that unlocks many of the mysteries of our amazing planet.

1. What are the two forces involved in water cycle?

Gravity causes precipitation to fall from clouds and water to flow downward on the land through watersheds. **Energy from the sun and the force of gravity** drive the continual cycling of water among these reservoirs. As the water is heated, it changes state from a liquid to a gas. This process is called evaporation.

1. How important the biogeochemical cycle for you as a student upon doing the activity?

Answer: The **cycles move elements through ecosystems**, so the transformation of things can happen. They are also important because they store elements and recycle them. ... Human activity is disturbing some of these natural cycles and hurting different ecosystems.

1. What is the relationship between the direction of motion of the balloon and the wind currents on Earth?

But because the Earth rotates, circulating air is deflected. Instead of circulating in a straight pattern, the air deflects toward the right in the Northern Hemisphere and toward the left in the Southern Hemisphere, resulting in curved paths. This deflection is called the **Coriolis effect**.

**SELF- EVALUATION:** Fill-in the table below to self-assess the lesson. Make your answer brief but concise

1. In which frame did you locate the final breakup of Pangaea? Why did you choose that frame and not another?

According to **the continental drift theory**, the supercontinent Pangaea began to break up about 225-200 million years ago, eventually fragmenting into the continents as we know them today.

1. Sometimes when two plates collide, the landmasses (continents) within the plates are pushed together and a mountain range can form. Using a world map, identify two locations where mountain ranges exist and where you hypothesis plate collisions between continents or parts of continents have occurred. Use your flipbooks to confirm your hypothesis. (Note that not all present-day mountain ranges were formed by continental collision events or by plate convergence that occurred during the last 190 million years.)You can refer to the this link <https://geology.com/nsta/>

The eastern margin is **a convergent boundary subduction zone** under the South American Plate and the Andes Mountains, forming the Peru–Chile Trench.

1. During your coloring of the frames, in which frame did you locate the first appearance of the following landmasses:

|  |  |  |
| --- | --- | --- |
| **Continent** | **Frame** | **Time(Mya)** |
| North America |  |  |
| Australia |  |  |
| India |  |  |
| Europe |  |  |
| Antarctica |  |  |

1. How the container of the terrarium becomes important in giving illustration of a water cycle?

When you set **your terrarium in the sun the water inside the terrarium will heat up and turn into water vapor in the air**. ... You will see condensation - water droplets - sticking to the lid of your terrarium. If the drops get large enough, they will roll down the sides of the container or fall from the lid - rain!

1. If you are given a chance to take out one of the least important in biogeochemical cycle what is it and why?

A biogeochemical cycle is the pathway by which a chemical substance cycles the biotic and the abiotic compartments of Earth. The biotic compartment is the biosphere and the abiotic compartments are the atmosphere, hydrosphere and lithosphere.

1. What happened to the line as you rotated the balloon?

Now if I rotate the balloon and draw a line southward towards the equator in the Northern Hemisphere the line is deflected to the left. The exact opposite happens in the Southern Hemisphere. ... It's motion will never be a direct path because the rotation of the Earth deflects its path.

1. What happens to the line as you got closer to the center of the balloon?

As we tried to draw a straight line from the top of the rotating balloon towards the center, **the wider part of the balloon had to travel faster than the smaller top part**. When the marker got to the wider part, that part had moved farther than the area just above it, resulting in a curved line.

1. How does this activity demonstrate the Coriolis effect?

Put simply, the Coriolis Effect **makes things (like planes or currents of air) traveling long distances around Earth appear to move at a curve as opposed to a straight line**.

1. Who had coined the term “coriolis effect”? You may search by clicking this link on the internet at <https://www.carolina.com/teacher-resources/Interactive/modeling-thecoriolis-effect/tr10643.tr>

The Coriolis Effect is named after **French mathematician and physicist Gaspard-Gustave de Coriolis**. It affects weather patterns, it affects ocean currents, and it even affects air travel.

**Post-test** . Answer the questions below and make your answer brief and concise.

1. What event began to occur about 190 million years ago?

Approximately 190 million years ago, **Pangaea began to break up into Gondwanaland and Laurasia**. Northern Africa and South America remained equatorial, whereas North America and Europe moved poleward.

1. During your coloring of the frames, in which frame did you locate the first appearance of the following landmasses:

|  |  |  |
| --- | --- | --- |
| **Continent** | **Frame** | **Time(Mya)** |
| North America |  |  |
| Australia |  |  |
| India |  |  |
| Europe |  |  |
| Antarctica |  |  |

1. What are the two forces involved in water cycle?
2. How important the biogeochemical cycle for you as a student upon doing the activity?
3. What is the relationship between the direction of motion of the balloon and the wind currents on Earth?
4. How coriolis’ Effect explains the direction of the different monsoons, example the northeast and the southeast monsoons?