ACTIVITY AT HOME

PINK PALACE MUSEUM

Earth Science

Physics

THE BULGING BALL

Determine why the Earth bulges at the Equator.

Materials

Construction Paper-16 in. (40 cm)

Scissors

Paper Hole Punch

Ruler

Paper Glue

Pencil

Once you have assembled the papers and pencil, you should have a model like the one you see here:

Procedure

- Use the ruler to cut two 1 ¼ in. x 16 in. (3 cm x 40 cm) strips from construction paper.
- Cross the strips at their centers and glue them together, making an 'X.'
- Bring the four ends together, overlap, and glue, forming a sphere, then allow the glue to dry.
- Cut a hole through the center of the overlapped ends with the hole punch.
- Push about 2 in. (5cm) of the pencil through the hole.
- Hold the pencil between your palms.
- Move your hands back and forth to make the paper sphere spin.

Results

While the sphere is spinning, the top and bottom of the strips flatten slightly, and the center bulges.

Why?

The spinning sphere has a force (called centrifugal force) that tends to move the paper strips outward, causing the top and bottom to flatten. The Earth, like all rotating spheres, bulges at the center and has some flattening at the poles. The difference between the distance around the Earth at the Equator (the imaginary line that runs around the Earth like a belt), and the distance around the Earth at the poles (top and bottom) is about 42 miles (67.2 km)!

Fun Fact: While Mount Everest (located in the Himalayas) is the tallest mountain on Earth, meaning its summit, or peak, is the furthest from sea level, Mount Chimborazo in Ecuador is the closest point on Earth to outer space. This is because Chimborazo is not only a very tall mountain, but is very close to the Earth's Equator, where the force you saw in this activity makes Earth the widest.

To learn more about the Earth's motion and the Equator, check out the *Restless Earth* exhibit at the Pink Palace Museum or the EquatorTrek blog on our website at https://memphismuseums.wordpress.com/

This activity adapted from *Earth Science for Every Kid.*