The Layers of the Earth

What’s beneath your feet right now? Carpet? Tile? A concrete sidewalk? Grass, dirt, and leaves? No matter what you’re standing on right now, you’re standing at the tip of the iceberg, so to speak. Whether you realize it or not, there are thousands of miles of Earth below your feet made up of all sorts of materials, including soil, rock, rivers of water, volcanic lava, and solid iron to name just a few. If you’ve ever dug a hole in your backyard, you know that digging can be a lot of work. It can be fun, though, to see what lies below the surface. Your hole probably consisted mainly of dirt and possibly a few rocks along the way. The deeper you dig, the harder it is to see to the bottom of the hole you’re digging. Unless you climb down into the hole, it also gets harder to dig the deeper you go. That’s why people who dig holes for a living, such as coal mines and water wells, use specialized equipment that allows them to dig really deep holes. Even the deepest coal mines and water wells, though, barely scratch the surface of what lies beneath Earth’s outer layer, called the crust. How do scientists know how hot Earth’s core is? They can’t see it. They can’t dig down deep enough to use a thermometer to measure its temperature. Despite the fact it's right under our feet, Earth’s core is inaccessible. Earth’s core is about the size of Pluto. Given the thousands of miles of rock and other materials that separate those of us on the surface from the core, it might as well be as far away as Pluto! How can we know anything about it? Modern scientists have come up with ingenious ways to study Earth’s layers. Geologists, for example, have long used seismic waves to learn about what lies below Earth’s surface. Seismic waves are the types of waves produced by earthquakes and other tectonic plate movements that occur below Earth’s surface. By measuring seismic waves, scientists can learn a lot about the composition of Earth’s subsurface layers. Because the layers are made up of varied materials that vary in thickness, researchers can analyze how seismic waves bounce off the boundaries between various layers.

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| How do scientists know how hot the core is?  A. Thermometers  B. Seismic waves  C. Oil wells  D. Measure the electromagnetic  spectrum | What would be the best title for this passage?  A. How Scientists Explore the Inside  of Earth  B. Details about Each of the Earth’s  Layers  C. Tectonic Plate Mania  D. The Rock Cycle |
| The Earth’s core is about the size of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  A. Saturn  B. Pluto  C. The United States  D. New York City | The deepest wells and holes drill into which layer?  A. Crust  B. Mantle  C. Inner Core  D. Outer Core |

Elements of Earth Science: The Planet Earth

Please answer each question carefully

1. Which of these statements about the layers of the Earth is true?

A.The inner core is 7,000 degrees Celsius and molten.

B.The crust is 1,300 kilometers thick and solid.

C.The outer core is 10 kilometers thick and contains tectonic plates.

D.The mantle is 2,800 kilometers thick and is the majority of Earth's volume.

2. Photosynthesis produces oxygen from water, sunlight, and which of the following?

A.nitrogen

B.methane

C.carbon dioxide

D.hydrogen

3. Which of the following statements about spring tides is true?

A.Two spring tides and two neap tides occur every day.

B.Spring tides cause lower high tides than normal.

C.The moon and sun are not aligned with Earth during a spring tide.

D.Spring tides occur during the full and new moon phases.

4. Which of the following travel at the speed of light?

A.visible light only

B.gamma waves and radio waves only

C.gamma waves, visible light, and radio waves

D.gamma waves only

5. Without electromagnetic radiation from the sun, which of the following would probably still occur?

A.crashing waves

B.falling stones

C.forming coal

D.blowing wind

6. What is the main reason the poles are colder than the tropics?

A.The sun's rays are concentrated at the equator.

B.Vegetation at the equator absorbs much of the sun's rays.

C.Most of the sun's rays are reflected by snow at the poles.

D.Moist air at the equator absorbs more of the sun's light.

Max. Score: 1

Scoring Type: machine-scored

Item Type: selected-response

D.O.K.: n/a

7.

What is the name of the regions of highly charged particles trapped in Earth's magnetic field?

A.

<div>auroras</div>

auroras

B.

<div>magnetospheres</div>

magnetospheres

C.

<div>Van Allen belts</div>

Van Allen belts

D.

<div>solar winds</div>

solar winds

8. Which of the following is most responsible for the phrase "dark side of the moon"?

A.

<div>The moon has no atmosphere to diffract light.</div>

The moon has no atmosphere to diffract light.

B.

<div>The moon rotates at the same rate as it revolves around Earth.</div>

The moon rotates at the same rate as it revolves around Earth.

C.

<div>The moon's plains appear darker than the rugged highlands.</div>

The moon's plains appear darker than the rugged highlands.

D.

<div>The moon is composed of lighter materials than the Earth.</div>

The moon is composed of lighter materials than the Earth.