NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**2**

DATE \_\_\_\_\_\_\_\_\_\_\_\_\_ PER \_\_\_\_\_\_\_

Dynamic Earth

Use Dynamic Earth Power Point to answer the following questions.

1. List an observation from the picture.

2. Explain how you think the rock got the wavy lines.

3. What does a Dynamic Earth mean?

4. Earth’s constant change results in P\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causing ENERGY to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and MATTER to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. List 3 examples of processes that involve matter cycling and energy flowing.

A. B. C.

6.What type of energy do you think would drive the ROCK CYCLE? Use Evidence

to explain your claim!

7. SOLAR ENERGY drives the weather. How does the weather drive the rock cycle?

8. Where does the energy come from that drives geysers, volcanoes, earthquakes & mountain building?

9. Where does the Earth’s internal heat come from?

A.

B.

Radio-Active Decay

10. What are 3 common radioactive elements contained in the earth?

11. When radioactive elements decay to become stable, what do they give off?

**Write 1 sentence explaining the main idea of each paragraph.**

If you think about a volcano, you know Earth must be hot inside. The heat inside Earth moves continents, builds mountains and causes earthquakes. Where does all this heat inside Earth come from?  
**Earth was hot when it formed.**A lot of Earth’s heat is leftover from when our planet formed, four-and-a-half billion years ago. Earth is thought to have arisen from a cloud of gas and dust in space. Solid particles, called “planetesimals” condensed out of the cloud. They’re thought to have stuck together and created the early Earth. Bombarding planetesimals heated Earth to a molten state.

So Earth *started out* with a lot of heat.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Earth makes some of its own heat.**Earth is cooling now – but very, very slowly. Earth is close to a *steady temperature state*. Over the past several billion years, it might have cooled a couple of hundred degrees. Earth keeps a nearly steady temperature, because it *makes* heat in its interior.

In other words, Earth has been losing heat since it formed, billions of years ago. But it’s producing almost as much heat as it’s losing. The process by which Earth makes heat is called *radioactive decay.* It involves the disintegration of natural radioactive elements inside Earth – like uranium, for example. Uranium is a special kind of element because when it decays, heat is produced. It’s this heat that keeps Earth from cooling off completely.

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Many of the rocks in Earth’s crust and interior undergo this process of *radioactive decay* . This process produces subatomic particles that zip away, and later collide with surrounding material inside the Earth. Their energy of motion is converted to heat.

Without this process of radioactive decay, there would be fewer volcanoes and earthquakes – and less building of Earth’s vast mountain ranges.

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**How hot is it inside Earth?** No one has come close to exploring Earth’s interior directly. But the rate of travel of waves from earthquakes – called “seismic waves” – tells scientists a lot about what materials make up the planet. Seismic data also reveal whether these materials are liquid, solid or partially solid. Meanwhile, laboratory data indicate at what temperatures and pressures the materials inside Earth should begin to melt. From this evidence, Earth’s core temperature is estimated to be around 5,000 to 7,000 degrees Celsius. That’s about as hot as the surface of the sun, but vastly cooler than the sun’s interior.

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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By the way, while the heat energy produced inside Earth is enormous, it’s some 5,000 times less powerful than what Earth receives from the sun. The sun’s heat drives the weather and ultimately causes weathering, erosion & depostiton. So it’s ironic that – while Earth’s heat makes mountains – the sun’s energy tears them down again, bit by bit.

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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