

Energy Inside Earth Study Guide

Earthquakes

1. Energy is changed from which form to which in order to make earthquakes?

From heat to mechanical

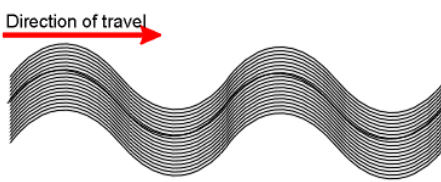
2. What is the focus of an earthquake? How is it different from the epicenter?

The focus is the actual starting point of the earthquake below the surface of the Earth. The epicenter is the first place on the SURFACE where it hits.

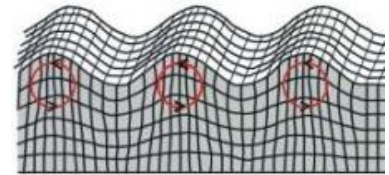
3. Draw each type of seismic wave in the order they appear. Tell if they are transverse, surface, or longitudinal.



*P-waves push and pull
Longitudinal*



*S-waves shake up/down or side to side
Transverse*

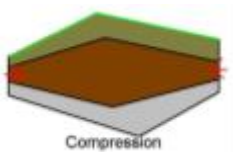


*Surface rolls the ground
Surface waves*

4. Which type of wave does the most damage—WHY? Give two reasons.

Surface—they roll the ground, they are on the surface and they are the slowest

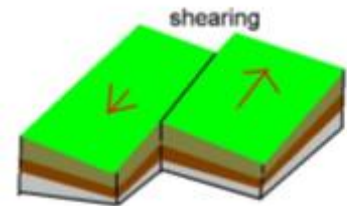
5. Draw and describe each of the three types of stress.



Compression pushes



Tension pulls

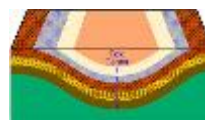


Shearing pushes one way and pulls another

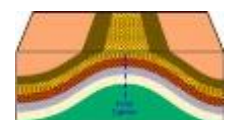
6. What is the difference between a fault and a fold?

A fault is a break in the crust of the Earth, a fold is just a bend

7. What are the two types of folds? Draw them here:



Syncline bends down



Anticline bends up

8. Which one type of stress causes folds?

Compression

9. List the 3 earthquake scales and what they each rate about an earthquake.

Mercalli—rates damage, Richter—rates size of seismic waves, Moment magnitude—rates energy released

10. Which scale do we use the most today to measure earthquakes? Why is it better?

Moment magnitude scale—it is more accurate because it uses more data (3 types of data)

11. What is a seismograph?

The instrument that measures the size of seismic waves in an earthquake

12. Explain why Utah has earthquakes—what kind of stress is here and why is the stress here?

There is tension that is created when the entire North American plate moves. That creates the crack, or fault we live along.

Volcanoes

1. Describe the structure of each of the three types of volcanoes.

Shield-*made of solid lava, dome shaped* Cinder cone-*made of loose cinders, looks like a giant anthill*

Composite-*made of layers of lava and ash, looks like a large, cone-shaped mountain*

2. Describe the eruption of each type of volcano.

Shield-*quiet and flowing lava* Cinder cone-*fairly explosive eruptions of cinders and ash*

Composite-*very explosive eruptions of ash then quiet eruptions of lava*

3. Describe the following materials that come out of volcanoes:

Ash-*microscopic rocks* Bombs-*large boulders* Cinders-*golf ball sized rocks*

4. Volcanoes make which type of rock? *Igneous*

5. Volcanoes release energy from the interior of the Earth by transforming energy from which form to which?
Heat to mechanical

6. Name three changes that volcanoes create on the surface of the earth.

They create rocks and minerals, craters, mountains (the volcano), they spread ash, create new land, create islands (among MANY other things)

7. How are volcanoes connected to earthquakes? Name at least two ways.

Volcanoes create earthquakes and earthquakes create volcanoes. They both release energy from the earth.

8. Name 3 ways that heat has affected the surface of the Earth at Yellowstone National Park.

It has created geysers, craters, new rocks, causes the earth to rise, creates earthquakes

9. Give three pieces of evidence that there is a volcano under Yellowstone.

Craters, geysers, quartz crystals, layers of ash, rhyolite rock, earthquakes, the earth is rising

10. What is the difference between magma and lava? *Magma is below the earth, lava is outside the earth*

Minerals

1. What are the four characteristics of minerals?

1. *Non-living*

2. *Natural*

3. *Solid with crystal structure*

4. *Has a chemical formula*

2. What are the two ways that minerals can form?

Cooling of magma and lava, evaporation of water

3. What factor affects the size mineral crystals will be?

The length of time it is allowed to cool/evaporate

4. What are the 8 properties that you could use to identify a mineral?

1. *color* 2. *Streak* 3. *Luster* 4. *Hardness* 5. *Crystal system*
6. *Breakage pattern* 7. *Density* 8. *Special properties*

5. What is the difference between cleavage and fracture?

Cleavage is when the mineral breaks cleanly along straight lines, fracture is when the mineral breaks with no pattern

Rocks and the Rock Cycle

1. What is a rock? *A mixture of minerals*

2. What makes the three groups of rocks different from each other?

The way they are formed

3. Fill in the chart below.

Type of Rock	How it is Formed	Identifying Characteristics
Igneous	<i>Old rocks are melted into magma, the magma cools to make a rock</i>	<i>Glassy, speckled, has holes</i>
Sedimentary	<i>Old rocks are broken down to pieces, the pieces are glued and pressed together</i>	<i>Dull, has little sediments in it, fossils, layers</i>
Metamorphic	<i>Rocks are buried beneath the surface where they are exposed to major heat and pressure</i>	<i>Flakey or weird layers, streaked or swirly, metallic, crystalized</i>

4. Explain what intrusive and extrusive igneous rocks are and how you would visually tell the difference between the two.

Intrusive rocks are formed inside the Earth and have visible crystals, extrusive rocks are formed on the Earth's surface and have no crystals and sometimes have holes

5. Name one place where you might find a lot of igneous rocks.

Volcanoes

6. Name two places where you might find a lot of sedimentary rocks.

Near beaches, deserts, rivers

7. How are volcanoes involved in the rock cycle?

They provide heat for metamorphic rocks, they make igneous rocks, they can melt rocks

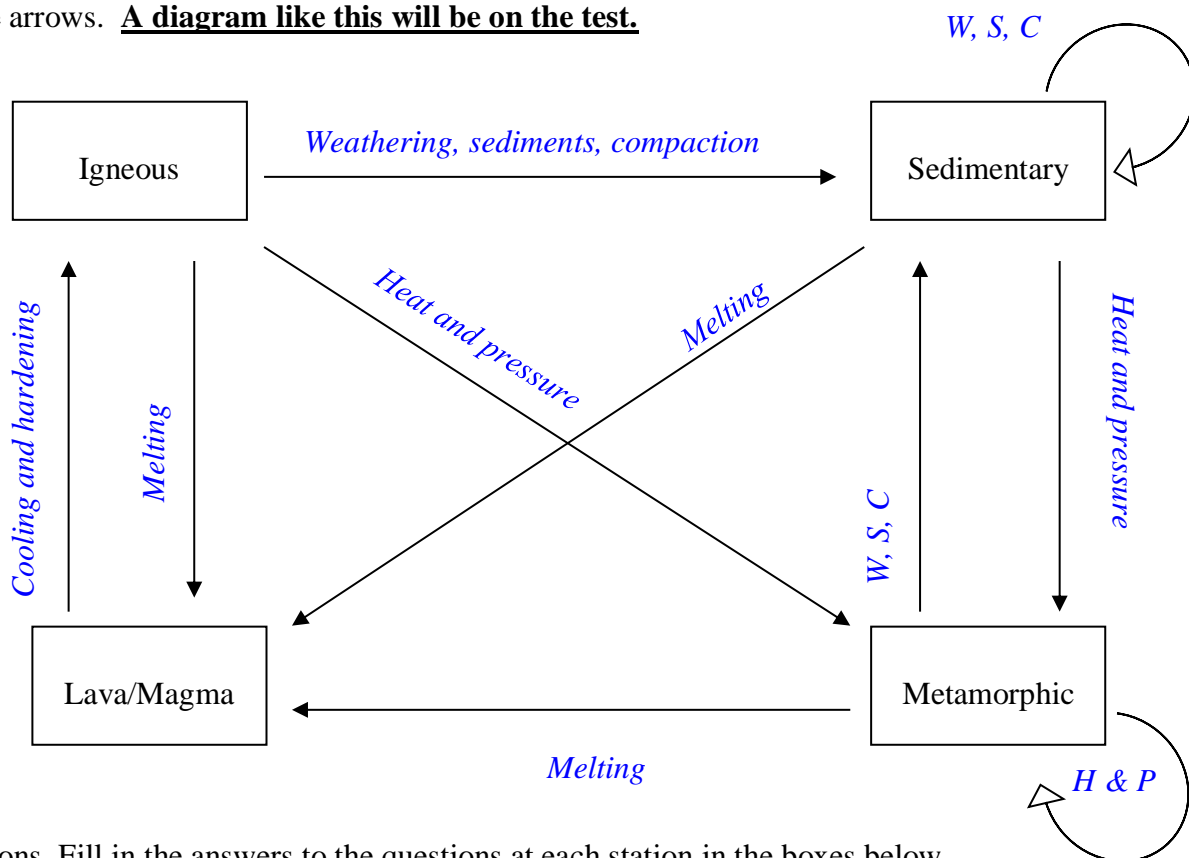
8. How are earthquakes involved in the rock cycle?

They create pressure for metamorphic rocks, they can lift rocks to the surface in order to be weathered, they create volcanoes

9. Which two forms of energy are used most in the rock cycle?

Heat and mechanical

10. Label the arrows. **A diagram like this will be on the test.**



Review Stations Fill in the answers to the questions at each station in the boxes below.

<p>Station 1</p> <p><i>See separate link on Study Helps page for answers to the review stations</i></p>	<p>Station 2</p>
<p>Station 3</p>	<p>Station 4</p>
<p>Station 5</p>	<p>Station 6</p>