

Chapter Eight Science: How Earth Changes Over Time Study Guide

Lesson Four

Rock Movement

- Rocks can move up, down, or sideways
- Rocks can be bent, squeezed, twisted, or broken

Mountains

- Folded Mountains-a mountain made mostly of rock layers folded by being squeezed together
- Fault-block Mountains-made by huge tilted blocks of rock separated by a fault

Plateaus-large area of flat land at a high elevation

- often found next to mountain ranges
- were probably raised by the same forces as mountains around them
- were not folded or faulted as greatly
- rock layers are horizontal, but the surface of a plateau is often not level

Plain-large area of flat land at a low elevation

Breaking Down Crusts

- Weathering-breaking down of rocks into smaller pieces by natural processes
- Erosion-picking up and removal of rock fragments and other particles

Mechanical Weathering-breaking down of rock by physical changes

- examples include frost action, abrasion in moving water, and the actions of plants and animals

Chemical Weathering-break down rocks by changing their composition; oxidation and the action of acids are important chemical-weathering processes

Soil-loose, weathered rock that can support the growth of rooted plants

- is a mixture of weathered rock, humus, air, water, and living things.
- bacteria, fungi, worms, and insects help in the formation of soil

Humus-material produced by breaking down plant and animal remains

- decayed plants and animals are the main source of nutrients for plant growth

Soil Horizons-distinct layers

Soil Profile-the series of horizons in soil from the surface down to bedrock

- Horizon A is often called topsoil; rich in humus
- Horizon B is called the subsoil; plant roots penetrate this area with very little humus
- Horizon C is weathered rock that is cracked and broken bedrock
- Bedrock

Groundwater-rain that soaks into the spaces between rock fragments

- groundwater system is similar to a river system
- if the soil and rock are permeable water can easily pass through easily
- if the soil and rock are impermeable the water builds up on top of the rocks

Water Table-upper surfaces of the soil and rocks that are filled with water

Lesson Five

Mass Wasting-downhill movement of Earth's material caused by gravity

Deposition-dropping off at the bottom of the hill or at places where the hill becomes less steep

Sediment-deposited particles

Wind-another way for erosion and deposition to work (wind moving sand or dirt at the beach or in a field)

- as wind slows deposition is dropped off
- can also blow sediment against rock (can cause polished stones)
- sand that is blown can build up into a dune

Water-another powerful force that changes the shape of Earth's surface

- pieces carried by moving water act like tiny drills
- when water slows down, particles are dropped off

Rivers and Streams-carry particles downhill and deposits them elsewhere as sediment

- curves develop and water if faster along outside curve eating soil away; inside slows down and sediment is dropped off

Glaciers-huge moving sheets of ice

- some form in valleys in mountains
- others form near poles
- form when more snow falls in the winter than melts in the summer and snow gets deeper and deeper
- as snow piles up and gets to about 100 meters thick it can move
- can push loose rocks and soils out of path and this drags sediment underneath

Till-when ice melts, the rocks that were frozen into it fall to the ground in a jumble

Moraine-deposit of many sizes of sediment from a glacier that collects in front of or along the sides of the glacier

- as a glacier melts the moraine is left behind

Lesson Six

Rocks-solids and make up Earth's crust; can be one mineral or a mixture of minerals

- because they are a mixture they are not as easy to tell apart
- one way to identify rocks is to identify the individual minerals that make it up
- texture-another way to tell rocks apart; based on the size and the shape of pieces of materials and the shape of pieces of materials in the rock
- structure-way the pieces of materials in the rock fit together

Minerals-naturally occurring solid with a definite structure

- each is made up of particular elements
- it is not made of any matter that was living
- minerals can be told apart by their structure and properties
- hardness-measure of how easily a mineral can be scratched
- luster-how a mineral reflects light (can be dull, silky, or glassy)
- streak-color when it is ground into powder

Igneous Rock-form when hot liquid rock material cools and hardens into solid

- some form from magma-have a coarse texture
- some form from lava-have a fine texture

Sedimentary Rock-bits and pieces of rocks clumped together

- layers build up of sediment and the pressure over a given area increases. The upper layers press sediment into a bottom layer
- can be made with parts that were once living (ocean animals or shells)

Metamorphic Rock-a rock that was changed; rock starts out as an igneous rock, sedimentary rock, or metamorphic rock. Great heat, great pressure, and even chemical reactions change them.

- often found deep underground
- can also form when rocks come in contact with hot magma or lava
- when metamorphic rock forms it does not melt but instead changes structure and texture of rock

Rock Cycle-rocks continually change from one to another in a never ending cycle
 -cycle has no beginning and no end

Lesson Seven

Superposition-in a series of rock layers, the bottom layer is the oldest, and the top layer is the youngest

Relative Age-age compared with another rock

Geologic Column-a listing of Earth's rock layers in order from oldest to youngest.

Fossils-any remains, trace, or imprint of a living thing preserved in Earth's crust

- tell us what kind of creatures lived in the past
- many formed when living things were covered, or buried, by mud or sand soon after they died
 - soft parts of the body decay quickly but the hard parts last long enough to be preserved
 - hard parts harden into rocks (hard parts may include teeth, bones, shells, seeds, pollen grains, wooden stems)

Index Fossils-the remains of living things that were widespread but only lived for a short part of Earth's history.

Half-life-the time it takes for half the mass of an original element to change into a new product, the decay product

Absolute Age-the rock's age in years

Eras-long stretches of time in history

- each is marked by the kinds of life on Earth based on fossils found
- Precambrian Era-Earth's earliest era; lasted about 4 billion years (80% of Earth's history)
- Paleozoic Era-began about 600 million years ago; first land life dates to this period
 - first forests, coal beds, insects, and amphibians
 - fish became abundant
 - continents were close together, sea levels were high and some continents were covered by water
 - Mountains began forming; climates became drier and colder
- Mesozoic Era-began about 245 million years ago; lasted for 160 million years
 - continents began breaking apart
 - climates became milder
 - reptiles thrived and Rocky and Andes Mountains formed
 - First mammals and birds found in this era
 - Dinosaurs flourished and were dominant life form but died out by the end of the era
 - plants became better adapted to life on dry land
- Cenozoic Era-era we live in
 - began about 70 million years ago
 - time of many ice ages
 - mammals are the dominant life form
 - today's mountain ranges were lifted up and Grand Canyon was formed
 - cooling and drying trend has occurred