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| **Ch 3 Earth’s Structures (also review notes and study pictures and graphic organizers on IAN pages 15, 16, 17, 19, & 28)** |
| 1. Crust
 | Outermost layer of the earth, solid, thinnest layer, made of rock and mostly silicon & oxygen |
| 1. Mantle
 | Thickest layer of earth, “flowing solid” due to high heat, moves by convection currents; mainly iron and magnesium |
| 1. Outer Core
 | Only liquid layer of Earth and it also flows with convection currents; mainly iron and nickel |
| 1. Inner Core
 | Solid, dense, metal ball at the center of Earth; mainly iron and nickel; heat source for the Earth’s interior. |
| 1. Convection Current
 | The circular pattern that forms as heat transfers in a fluid, or in the mantle.  |
| 1. Rock Cycle
 | Series of processes that can change any rock from one type to another |
| 1. Sedimentary Rock
 | Rock that forms from small particles of plants, animal, OR other rock fragments compacted and cemented together |
| 1. Igneous Rock
 | Rock formed when molten/melted material (magma or lava) cools and hardens |
| 1. Metamorphic Rock
 | Rocks that form when another rock is transformed by heat and pressure |
| 1. Lava
 | Molten rock that has reached the Earth’s surface |
| 1. Magma
 | Molten rock beneath the Earth’s surface |
| 1. Intrusive igneous rock
 | Rock formed within the crust when magma cools and hardens; cooling slowly = large crystals |
| 1. Extrusive igneous rock
 | Rock formed when lava cools and hardens on the surface cooling quickly = small crystals |
| 1. Granite
 | Most abundant intrusive igneous rock found in the crust, light color, coarse grain/large crystals |
| 1. Basalt
 | Most abundant extrusive igneous rock found on the ocean floor; dark color, fine grained/small crystals |
| 1. Weathering
 | The breaking down of rocks into sediments (typically by wind, rain, ice, plant roots, chemical reactions) |
| 1. Erosion
 | The carrying away of sediments by wind, water, ice, or gravity |
| 1. Deposition
 | When sediments are dropped out of the wind or water carrying them and pile up in a new place |
| 1. Compaction
 | When sediments are pressed and squeezed together |
| 1. Cementation
 | When sediments are glued together to form rock as dissolved minerals crystallize |
| 1. Clastic rock
 | Sedimentary rock formed from other rock fragments |
| 1. Organic rock
 | Sedimentary rock formed from dead plants and animals deposited in layers: coal, limestone |
| 1. Chemical rock
 | Sedimentary rock formed when dissolved minerals crystallize |
| 1. Foliated rock
 | Metamorphic rock that has a patterns of layers or bands in the grain |
| 1. Non-foliated rock
 | Metamorphic rock that has a random arrangement of grains (no pattern) |
| 1. Mineral
 | A solid naturally occurring inorganic substance that has a definite crystalline shape and chemical composition |
| 1. Geologist
 | Scientist who studies the earth |
| **Ch 4 Earth’s History (also review notes and study pictures on IAN 40 & 42)** |
| 1. Fossil
 | The preserved remains or traces of ancient organisms |
| 1. Paleontologist
 | A scientist who studies fossils |
| 1. Extinct
 | No longer exists and never will again on earth |
| 1. Evolution
 | The change in living things over time |
| 1. Law of Superposition
 | In undisturbed layers of rock, the youngest is on the top and it gets older the deeper you go. |
| 1. Index fossil
 | Fossils of widely distributed organisms that lived during a geologically short period that are used to match rock layers in different locations to determine the relative age of that layer. |
| 1. Relative Age
 | The age of a rock compared to the ages of other rocks. |
| 1. Absolute Age
 | The age of a rock given as the number of years since the rock formed. |
| 1. Fault
 | A break in Earth’s crust along which rocks move. |
| 1. Unconformity
 | A gap in the geologic record that shows where rock layers have been lost due to erosion. |
| 1. Intrusion
 | An igneous rock layer formed when magma hardens beneath Earth’s surface; Age Rule: it is younger than the layers it cuts through |
| 1. Extrusion
 | An igneous rock layer formed when lava flows onto Earth’s surface and hardens. Age Rule: It is younger that anything below it |
| 1. Radioactive Decay
 | The breaking down of atoms in a radioactive element to form new, more stable element |
| 1. Half-Life
 | The amount of time it takes for the radioactive element to decay by half. |
| 1. Geologic time scale
 | A record of the Earth’s past geologic events and evolutionary history of life on earth |
| 1. Uniformitarianism
 | A principle that states the geologic process that occur today occurred and shaped the earth in the past |
| **Ch 5 Plate Tectonics (also review notes and study Pictures on IAN 49, 50, 52, 56, 58, 59, 60, 61)** |
| 1. Continental Drift
 | Wegener’s idea that the continents slowly moved over Earth’s surface.  |
| 1. Pangaea
 | the name if the “supercontinent” or giant landmass when all the continents were joined together about 300 million years ago.  |
| 1. Plate Tectonics
 | The theory that states the earth’s crust is broken in to plates that are in slow constant motion due to convection currents in the mantle |
| 1. Mid-ocean ridge
 | – mountain ranges along the ocean floor |
| 1. Sea-floor spreading
 | the process where convection currents in the mantle pull the oceanic crust apart and which new crust is added to the ocean floor at a divergent boundary |
| 1. Deep-ocean trench
 | an underwater canyon that forms where oceanic crust bends downward into the mantle |
| 1. Subduction
 | process where the ocean floor sinks back down into the mantle. |
| 1. Divergent boundary
 | When convection currents in the mantle make tectonic plates pull apart and it can create land forms such as rift valleys, volcanoes, and mid-ocean ridges |
| 1. Convergent boundary
 | When convection currents in the mantle make tectonic plates collide and it can create land forms such as volcanoes, volcanic islands, high mountain ranges, and deep ocean trenches |
| 1. Transform boundary
 | When convection currents in the mantle make tectonic plates slide past one another in opposite directions horizontally with little or no vertical movement causes earthquakes but no new land features are created |
| **Ch 6 Volcanoes (also review notes and study Pictures on IAN 49, 50, 52, 56, 58, 59, 60, 61)** |
| 1. Volcano
 | A mountain that forms in the Earth’s crust when molten material reaches Earth’s surface |
| 1. Hot spot
 | An area where magma can seep through a weakened section of crust and form volcanoes as the plates pass over them |
| 1. Ring of fire
 | A major belt of volcanoes that encircle the Pacific ocean |
| 1. Silica
 | Chemical compound made of silicon and oxygen found in magma |
| 1. Viscosity
 | the resistance of a fluid to flow; in volcanoes, high silica content in magma makes it thick and sticky so it flows slowly while low silica content makes magma thin and runny to so it flows/spreads fast |
| **Ch 7 Earthquakes (also review notes and study Pictures on IAN 49, 50, 52, 56, 58, 59, 60, 61)** |
| 1. Stress
 | a force that acts on rocks to change shape or volume |
| 1. Tension
 | stress that **pulls** the crust and creates a thinner mid-section (at divergent plate boundaries) |
| 1. Compression
 | stress that **squeezes** rock until it folds or breaks (at convergent plate boundaries) |
| 1. Shearing
 | stress that **pushes** a mass of rock in opposite **horizontal directions** (at transform boundaries) |
| 1. Normal fault
 | Occurs where 2 plates **diverge** and the **hanging wall will slip down** as they pull apart (@ divergent boundary; hint: “Slide down”)) |
| 1. Reverse fault
 | occurs where 2 plates **collide** and the **hanging wall will moves up** while the footwall slides down (@ convergent boundary; hint: “Ramp up”) |
| 1. Strike-slip fault
 | the rocks **slip** past each other **sideways** little or no up-down motion; (@ transform boundary) |
| 1. Earthquake
 | the shaking and trembling that results from movement of rock beneath Earth’s surface. |
| 1. Seismic waves
 | vibrations traveling through the earth carrying the energy released by earthquakes; the speed and path of waves depends on the type of material traveled through |
| 1. Seismograph
 | An instrument that records the strength of an earthquakes vibrations |
| **Ch 8 Land, Air, and Water resources and Human Impact on the environment** **(also review notes and study pictures on IAN 64-66)** |
| 1. Natural resource
 | Anything naturally occurring in the environment that humans use |
| 1. Desertification
 | The advance of desert-like conditions into areas that previously were fertile; caused by over-farming, overgrazing, drought, and climate change. |
| 1. Urbanization
 | The development or large land areas for cities |
| 1. Emissions
 | Pollutants released into the air |
| 1. Photochemical smog
 | A brownish thick haze that is a mixture of ozone and other chemicals formed when pollutants react with sunlight |
| 1. Greenhouse effect
 | A natural process where certain gases in the atmosphere help trap heat from the sun to maintain a reasonable temperature on earth  |
| 1. Global Warming
 | A trend where the average overall temperature of Earth is increasing; currently scientific theory is this trend is occurring at an accelerated rate due to humans burning fossil fuels. |
| 1. Pollutant
 | A substance or condition that contaminates air, water, or soil. **Pollutants** can be artificial substances, such as pesticides and PCBs, or naturally occurring substances, such as oil or carbon dioxide, that occur in harmful concentrations in a given environment. |
| **Nature of Science Review**  |
| 1. Independent variable
 | Also called the manipulated variable because it is the variable being changed by the scientist to test his hypothesis in an experiment (“cause”) |
| 1. Dependent variable
 | Also called the responding variable because this is the response from the test subject during an experiment (“effect”) |
| 1. Constants
 | All the potential variables that you control and keep the same in every test group of the experiment to make a fair test |
| 1. Hypothesis
 | The suggested solution to an experiment’s problem question |