

## Semester 2 Final Review Notes

### Lawson - Science 7

The liquid area that surrounds the Earth's center is the **outer core**.

The solid area of the Earth's core is the **inner core**.

**Convection currents** are the cycle of movement in liquid or gas material where heat rises because it is less dense, then cools because it is more dense and sinks, then gets heated again and rises because it is less dense, then it cools again because it became more dense, so it sinks and the cycle repeats.

Earth's crust and the upper part of the mantle is the **lithosphere**.

The Earth's lithosphere (crust and upper mantle) is broken up into seven major pieces called **tectonic or lithospheric plates**.

**Divergent boundary** is when the tectonic/lithospheric plates move apart.

**Convergent boundary** is when the tectonic/lithospheric plates collide or come together.

**Transform boundary** is when the tectonic/lithospheric plates slide past each other.

**Mountains** can form when **convergent** plates collide.

**Weathering** is the breakdown of rock into smaller pieces; having the same mineral as the parent rock

**Erosion** is the process of moving the weathered sediments (wind or water)

**Deposition** is the process where the eroded sediments are deposited or dropped off IN LAYERS into a new location.

**Mechanical/Physical weathering** is the breakdown of material by physical disintegration where only the size of the changes.

**Chemical weathering** is where the parent rock is chemically changed (i.e., green on copper)

**Agents** of chemical weathering are rainwater, oxygen, carbon dioxide, and plant/animal decay acids.

**Rocks** are made up of two or more different minerals

A rock that is melted and cools forms **igneous rock**.

Every single rocks that becomes exposed to the elements on the Earth's surface become **weathered**; the weathered bits are eroded, deposited, compacted and/or cemented to form **sedimentary rock**.

The top layer of the Earth is called the **crust**.

The size of mineral **crystals** depends on how long it takes for the mineral to cool.

The thickest layer of the Earth is the **mantle**.

**Metamorphic rocks** form when rocks are changed by heat and pressure.

**Extrusive igneous rocks** form on the Earth's surface.

The **seafloor spreads** because magma flows into the gap in the mid-ocean ridges.

**Strata** is layers of rock in the ground

**The Law of Superposition** states that the rock layers/strata on the bottom are the OLDEST and each layer above is younger than the layer/strata below it.

Most earthquakes and volcanoes occur near the **Pacific Ring of Fire**.

**Intrusive igneous rocks** form inside the Earth's crust.

**Rocks** are classified by the way they were formed.

The three main **rock** classifications are: **Igneous, Metamorphic, and Sedimentary**

There are two main types of **igneous rocks**

**Intrusive** – Igneous rocks that formed inside the Earth.

**Extrusive** – Igneous rocks that cooled on the Earth's surface

**In the Rock Cycle, rocks can be formed by:**

**Compacted and/or Cemented** together, or  
Changed by **heat and pressure**, or  
**Melted** and then **cooled**.

**Crystals** that cool intrusively are larger than extrusive crystals; because they cool slower, giving those more time to grow.

**Metamorphosis** means change (think caterpillar to butterfly). Rocks that are changed into a new type of rock due to heat and pressure deep in the Earth are called metamorphic rocks.

There are two main types of **metamorphic rocks**:

**Foliated** – Metamorphic rocks in which the minerals have been flattened and pushed down into parallel layers. The bands in foliated metamorphic rock look like pages in a book.

**Non-Foliated** - Metamorphic rocks that do not display layers.

Rocks that are formed from the cementing together of small pieces of rocks, minerals or shells (Sediments) are called **sedimentary rocks**.

**Compaction** occurs in sedimentary rocks when the weight of top layers press down on the lower layers .

**Cementation** occurs in sedimentary rocks when water with dissolved minerals goes through the sediments and “glues” the sediments together.

The model that shows how all rocks can be recycled from one type to another is called the **Rock Cycle**.

The Rock Cycle could be explained using the following words:

If any rock (sedimentary, metamorphic, or igneous) becomes exposed to the Earth’s surface, it will start to become weathered. The weathered bits (sediments) eventually are eroded, deposited, compacted/cemented and form **sedimentary rock**.

If any rock, sedimentary, metamorphic, or igneous comes in contact with intense heat and pressure inside the Earth’s crust, it will change and become a **metamorphic rock**.

If any rock, sedimentary, metamorphic, or igneous, melts, (becomes magma), cools and hardens, it has become an **igneous rock**.

**Ecology** is the study of how living things interact with each other and their environment

**Biotic factors** are ALL LIVING organisms and their relationship with other living things, including grass and other producers

**Abiotic factors** are all NON-living things, including sunlight, water, amount of oxygen, soil, temperature, wind, rain, air

**Niche** is the role or purpose that a species serves in its ecosystem. It is a unique living arrangement of an organism in its ecosystem. This includes physical conditions an organism needs to survive and all of the ways that the species interacts with biotic AND abiotic factors.

**Factors that determine** of a species’ niche are the food that it eats and how the food is obtained and where it lives. An organism will physically adapt to its niche.

**Habitat** is where the species lives. The features of the habitat are determined by abiotic factors of the area, such as temperature and rainfall. These same abiotic factors can also influence the traits of the organisms that live there.

**Individual organism** - one of a species

**Population** is more than one of the same species.

**Community** is all (living) populations living together in the same habitat

**Ecosystem** is all of the biotic AND abiotic organisms in an area and how they all interact...can be

as large as a forest or as small as a pond and could even be a dead log on a forest floor.

**From smallest to largest:** Individual organism...population...community...ecosystem

Community Interactions include Competition, Predation (pre-day-shun), Symbiosis (Sim-by-O-sis)

**Competition** - when organisms struggle, compete, or fight for same niche or resources (food, water, space)

**Competitive Exclusion Principle** states that two different species CANNOT occupy the same niche in the same place for long. The different species would compete with each other for food and resources and eventually, one species wins.

**Predation** - interaction between predator and prey

**Predator** is an animals that hunts, kills, and eats another animal

**Prey** is the animal that is hunted, killed, and eaten

**Symbiosis** is a type of relationship where one organism lives off another organism

Host is the organism that supports another organism

Parasite is the organism that depends upon the host to survive

Three Types of Symbiosis are mutualism, commensalism, parasitism.

**Mutualism** - both organisms (host and parasite) benefit

**Commensalism** - one organism benefits and other is NOT harmed (not helped, but not harmed)

**Parasitism** - parasite benefits but the host is HARMED. The parasite does not usually kill the host, but causes it harm

**Resilience** - the ability of an ecosystem to bounce back (recover) from a disturbance or hardship (something that upset the normal functions of the ecosystem such as fire or flood)

**Succession** is the gradual process where ecosystems SLOWLY change into balanced, self-sustaining (self supporting) climax communities

**Stable/Climax Community** - where the community reaches a balanced point where very few (or none) organisms move in

**Carrying Capacity** - the amount of organisms that an ecosystem can support with space & resources

**Native Species** - are found in an area as a result of natural processes ONLY. They have developed naturally in an area over time. Some native species found in the Mojave Desert (Las Vegas is part of Mojave Desert) can include the desert tortoise, sage brush, and Pear Cactus.

**Invasive Species** - Non-native (not naturally from here) species which are added to an area naturally (the invasive species migrated due to habitat loss or range extension) OR can be a result of human activity.

**Different ways that invasive species can be brought to a new area** could be when pets escape (for example, a lionfish escapes from home aquarium during a hurricane), humans spread them on purpose (an attempt to biologically control a species), or humans and animals spread the invasive species accidentally.

Some examples of invasive species are cane toads, kudzu vines, Starling birds, and mongoose in Hawaii.

Invasive species pose or create **4 major threats:**

They alter or change the ecosystem

They destroy forests, crops, and producers

They reduce the beauty or use of the land

They introduce diseases or cause other negative health effects

**Biological Control** - bringing in a species (from another location) that can be used to hunt & kill the invasive species

**Mechanical Control** - creating barriers (fences) to prevent the movement of the invasive species, cutting down trees, hunting and trapping the invasive species, or destroying land to prevent them from spreading

**Chemical Control** - the use of chemicals or pesticides. These can leach (soak into) the waterways and soil.

**Overfished** is when too many fish are caught and the fish population cannot reproduce fast enough to maintain a healthy population level.

**Some Factors to Consider** when purchasing fish can include the cost of the fish, the type of fish purchasing, and the label color (which refers to the amount of fish caught).

The following happens at a (fish) **Dead Zone**:

Fertilizer runoff puts extra nutrients into the water

Phytoplankton grows in large numbers due to lack of predators (and then die off)

Fish & aquatic life have to either move to a new place or they suffocate & die

**Limiting Factors** are things that will limit how many organisms an ecosystem can hold. Some examples of limiting factors can include amount of water, temperatures that are too high, or the amount of sunlight.

After a **disruption** in an ecosystem, such as a fire, the first organisms to return would be the producers.

**Invasive species** that thrive (or grow or do very well) quickly in their new ecosystem because usually there are no, or very few, predators. Many invasive species tend to have many offspring (babies), and they tend to be generalists.

**Specialists** are animals that are very picky eaters and only eat one type of food.

**Generalists** are NOT picky eaters. They usually eat a variety of types of food.

**Nonrenewable** energy resources cannot be made within a normal human's lifespan. Once used up, there are no more of those nonrenewable resources available. Nonrenewable resources include coal, oil, and natural gas. These are also known as "fossil fuels."

One advantage to using nonrenewable energy resources is that they are cheap to use. One disadvantage to using nonrenewable would be that some cause pollution. For example, coal usually makes greenhouse gases worse.

**Renewable** energy resources CAN be made within a normal human's lifespan. If we can plant more of the item and expect more within a human's life, then it is considered renewable. Renewable resources include geothermal, wind, solar, hydropower, and biomass (energy obtained from recently living organisms). One advantage to using renewable energy resources is that they do not cause pollution. One disadvantage would be the expense of the initial startup.

**Intrusive Igneous Rocks** cool very, very slowly inside of the Earth's crust. This slow cooling allows the crystals/minerals to grow large enough to be seen without needing a microscope. Some examples of Intrusive Igneous rocks include granite, gabbro, and diorite.

**Extrusive Igneous Rocks** cool very quickly on the surface of the Earth. This quick/fast cooling DOES NOT allow the crystals/minerals to grow large enough to be easily seen. Some examples of Extrusive Igneous rocks include obsidian, basalt, and rhyolite

Sedimentary Rocks are the types of rocks where **fossils** are found. Shells of once-living organisms can be found in sedimentary rocks.

There are **3 types of sedimentary rocks**....

clastic (made from sediments of other rocks compacted and/or cemented together....

examples include conglomerate & breccia)

chemical (made from dissolved materials from solutions that evaporate....

an example is rock salt)

organic (made from once-living organisms that died & were buried in layers of sediments...

examples include limestone & coal)

The presence of coral fossils in Nevada bedrock indicates that areas of Nevada were once covered by seas or oceans.

The **Layers of the Earth** are (from top to center of Earth)...Crust, Mantle, Outer Core, Inner Core  
**Crust** is the thinnest layer. Crust is made of oceanic crust (More Dense....Basalt) and continental crust (Less Dense ...Granite)

**Mantle** is THICKEST layer of the Earth and is MOSTLY solid rock.

**Mantle** has three parts....upper part of the mantle, middle (Asthenosphere), and lower part (biggest part of the Mantle and is made of solid rock).

The upper part of the mantle & crust makes the **Lithosphere**. The Lithosphere FLOATS ON TOP OF the **Asthenosphere**.

**Convection currents** are found in the Asthenosphere and causes the Lithospheric/Tectonic Plates to move around and shape the Earth's surface. Convection currents move in a circular pattern, clockwise or counter-clockwise. The convection currents under the Mid-Atlantic ridge (and other oceanic ridges) move in opposite circles...**one move clockwise and the other moves counter-clockwise**.

**Continental Drift** is the very slow movement of the tectonic/lithospheric plates on top of the asthenosphere.

**Sea Floor Spreading** is a process when the magma hits cold ocean water it solidifies (turns into solid rock) and becomes basalt. This forms new ocean floor.

One piece of evidence that supports Sea Floor Spreading is that the older ocean floor is further away from mid ocean ridge. Newer ocean floor rocks are closest to the ridge. It is almost like 2 conveyor belts moving ocean floor away from a crack in the oceanic crust where magma bubbles up (this happens at a mid-oceanic ridge). Sea floor spreading forms new ocean floor.

When two tectonic/lithospheric plates become locked together, pressure builds up. When those plates suddenly jolt free, this causes an **earthquake**.

Subduction Zone is where the more dense tectonic plate will dive below the less dense tectonic plate at a convergent boundary. If the 2 plates are oceanic and continental, the oceanic plate is more dense than continental plate, so the oceanic plate will subduct (dive below) the continental plate.

**Fossil record** is used by geologists to determining the timing and relationships between events in Earth's history. Geologists **use the fossil record** to determine the history of life in Earth, how organisms have changed over time, and how the Earth's climate has changed over time.

To find the **Absolute Age** of a rock, scientists use radioactive dating.

**Index Fossil** is a fossil that is used as a guide for determining the age of rocks & their layers.

The Pacific Ring of Fire is located around the Pacific Tectonic Plate (which is under the Pacific Ocean) as it subducts (dives below) the other tectonic plates. This area is where you find 75% of the Earth's active volcanoes.