

**“Sedimentary Rocks”
Newcomer Academy
Visualization Two**

Chapter	Subtopic/Media	Key Points of Discussion	Notes/Vocabulary
Introduction	Title Various Pictures of Sedimentary Rocks	NA	NA
Introduction Movie:			
Fly through various locations	<p>Most of what we see on the surface of Earth is sedimentary rock.</p> <p>A majority of the land on Earth is covered by a thin, to miles thick, veneer of sedimentary rock. Road cuts, surface mines, and river banks are a few locations where the underlying sedimentary rock is revealed. Most of the seafloor is also covered by a layer of sedimentary rock, which covers the ocean floor basalts.</p>	<p>The sedimentary rock cover of the continents of the Earth's crust is extensive (most of what we witnessed in the video was sedimentary rocks), but the total contribution of sedimentary rocks is estimated to be only 8% of the total volume of the crust. Sedimentary rocks are only a thin veneer (layer) over a crust consisting mainly of igneous and metamorphic rocks.</p> <p>Sedimentary rocks are deposited in layers as strata. Sedimentary rocks are important sources of natural resources like coal, fossil fuels, drinking water or ores.</p> <p>The study of the sequence of sedimentary rock strata is the main source for scientific knowledge about the Earth's history.</p>	<p>Sedimentary Rock</p> <p>Crust</p> <p>Igneous</p> <p>Metamorphic</p> <p>Strata</p> <p>Resources</p> <p>Coal</p> <p>Fossil Fuels</p> <p>Ores</p>
Sedimentary Rock Formation	<p>Sedimentary Layers</p> <p>Pictures:</p> <p>Layers, Settle, Organic Matter</p>	Sedimentary layers form over millions of years as dead organic matter and minerals settle on the floor of the body of water (sea, lake, etc.). This may take millions of years per layer.	Organic Matter Settle Layer
	<p>Compaction/Cementation</p> <p>Pictures:</p> <p>Pressure and Gravity compacting rocks</p> <p>Cementation</p>	As the layers stack upon one another the pressure and gravity cause the rocks to compact. Minerals and water cause cementation to occur, resulting in rocks being formed. (Example: mixing and making one's own concrete or cement.)	Pressure Gravity Compact(ion) Minerals Cementation
	<p>Types of Rocks Made</p> <p>Pictures:</p> <p>Conglomerate</p> <p>Breccia</p> <p>Coal</p>	<p>Overall characteristic of sedimentary rocks is that they are made of dead organic matter and minerals.</p> <p>Conglomerates and Breccia are made of other rocks cemented and compacted together.</p>	<p>Conglomerate</p> <p>Breccia</p> <p>Angular</p> <p>Coal</p> <p>Vegetation</p> <p>Oil Shale</p>

	Oil Shale Limestone Sandstone	<p>Conglomerates have rounded rocks and breccia has angular rocks.</p> <p>Coal is made from dead vegetation that is pushed into the earth and compacted. The heat and pressure traps the energy stored in the plants.</p> <p>Oil shale is made from marine organisms that die and settle on the floor. After millions of years, heat and pressure from the upper layers turns the matter into oil shale (flaky and porous allowing it to hold oil). This fossil fuel is what powers our automobiles and is used to make plastics.</p> <p>Limestone is made from minerals and marine fossils that are cemented together. This can be seen in the Egyptian pyramids.</p> <p>Sedimentary rocks are categorized by the type and size of the rocks, fossils and minerals that they are comprised.</p>	Marine Organisms Limestone Sandstone
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Reinforcement Movie Clip:

Weathering and Erosion	<p>Basic Definitions</p> <p>Pictures: Weathering Erosion Impact Crater displaying what is left to this day</p> <p>Water Cycle</p>	<p><u>Weathering:</u> Weathering is the process that produces change in the surface of rocks exposed to the atmosphere and/or hydrosphere. Weathering takes place as rocks are broken down into progressively smaller pieces by the effects of weather. These pieces <u>do not move to a new location</u>, they simply break down, but remain next to one another.</p> <p><u>Erosion:</u> Erosion is the process of moving sediment from one location to another. The most important FORCE of erosion is GRAVITY. The most important AGENT of erosion is WATER.</p>	<p>Weathering Atmosphere (Air) Hydrosphere (Water) Weather</p> <p>Erosion Gravity</p>
	<p>Water</p> <p>Pictures: Falling Water sources Moving Water sources Resulting Landforms</p>	<p>Falling Water hits soil and rocks causing displacement. After displacement the loosened soil and rocks can be moved causing erosion.</p> <p>Moving Water causes friction between the water and rocks/soil, thus loosening it. The constant movement of the water causes erosion and transports the rock downstream.</p>	<p>Displacement Loosened</p>
	<p>Wind</p> <p>Pictures: Wind</p>	<p>Creep = rocks roll along the ground. The contact with the ground causes the rock to lose some of its matter. 25% of wind erosion is caused by creep.</p>	<p>Creep Saltation Particles Suspension</p>

	<p>Suspension Resulting Landforms</p>	<p>Saltation = the rocks crash into objects. This crash causes particles from the rock to be cast into the air. 50% of all wind erosion is a result of saltation.</p> <p>Suspension = expelled rock particles to be carried in the air by the wind. This causes 25% of erosion. This suspended rock acts as a “sandblaster”.</p>	<p>Expelled</p>
	<p>Ice Pictures: Ice Glacier Resulting Landforms</p>	<p>Ice and Glaciation = As water seeps into cracks/holes in the rock it freezes and becomes ice. Freezing causes the ice to expand. This expansion can cause rocks to break/crack.</p> <p>As glaciers form and move across the landscape, they push and scrap the rocks and soil. This carves out rock and transports it as the glacier moves. As the glacier thaws and becomes water it deposits the rocks. Finally the water evaporates, leaving behind a new landscape. The land beneath the glacier rebounds upward after being pushed down by the force of the glacier.</p>	<p>Glacier Expansion Landscape Evaporates</p>
Reinforcement Movie Clip:			
Transportation and Deposition	<p>Water Pictures: Transportation Deposition Stream beds Delta</p>	<p>Transportation = Water is always moving to make its way back to sea level. As it rushes through creeks, streams, and rivers, it moves the rocks. Lighter rocks at the top are moved first.</p> <p>Deposition = The rocks are dropped off along the way. The distance traveled depends on the speed of the water and the mass of the rock. Rocks will often settle around the bends of the river/stream or at the end of the river. This can deposit fertile minerals at the end of the river... resulting in a delta (River Nile).</p>	<p>Transportation Sea Level Deposition Settle Fertile Delta</p>
	<p>Wind Pictures: Dust Storm Materials Moved Sand Dunes</p>	<p>Transportation = As wind speed increases it is able to displace and move items.</p> <p>Deposition = The wind will deposit items depending on its speed and the mass of the rock/item being moved/transported. This can be seen by examining sand dunes.</p>	<p>NA</p>
	<p>Ice/Glaciation Pictures: Glacier</p>	<p>Transportation = As glaciers grow in size they expand and move. This movement causes the ice to scrap the land below and move its loosened rocks.</p>	<p>NA</p>

	Resulting Deposits	Deposition = The rocks inside the ice are deposited when the glacier thaws or by the edge of its boundary.	
Reinforcement Movie Clip:			
Comparison	Moon Rocks Pictures: Rock Samples	Rocks on the Moon have similar composition as those on the Earth. The rocks on the moon are not sedimentary, because there is no atmosphere. Any rocks fused together or broken apart are from meteor impacts after the moon was first formed.	Composition
	Lack of Weather, Wind and Water Pictures: Impact Crater on Moon compared to Yucatan Crater Today (After Weathering and Erosion) Dust Footprints by Astronauts	Without an atmosphere, there is a lack of weather, wind and liquid water. All key components of forming sedimentary rocks. Rocks on the surface of the moon are primarily igneous, created from molten rock and lava flows. Display the footprints left by astronauts in 1969, and explain that those prints are still there to this day.	Atmosphere
	Mars Rocks Pictures: Curiosity Rock Samples	Rocks on Mars have recently been found to have similar composition to that of rocks found on Hawaii (igneous/basaltic).	NA
	Wind and Ice Exist Pictures: Dust Devils Dust Storms Polar Ice Caps	Wind and Ice exist, therefore erosion and weathering transforms the rocks on the surface.	NA
	Evidence that water once existed on the planet Pictures: Canyons Landforms	Looking at surface pictures of Mars, can one infer that flowing/moving water once existed? Is there evidence from pictures of Martian rocks that would give evidence to weathering and erosion?	NA
Reinforcement Movie Clip:			