**Chapter 2 Utah’s Geologic History… how was Utah formed?**

Geologic Eras

What are the 4 Eras we should remember called?\_\_\_\_\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_\_\_\_

* Precambrian Era: 85% of the earths \_\_\_\_\_\_\_\_\_\_\_\_ billion years were in the Precambrian Era
  + The Precambrian era was the \_\_\_\_\_\_\_\_\_\_\_\_of the eras.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_era means “ancient life”.
  + Fossil fuels such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_were starting to form.
  + Fossil fuels are formed by the remains of decaying \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The Mesozoic era means “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”.
  + In the Mesozoic era \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_roamed the earth.
  + The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_were also formed in the Mesozoic era
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_era means “recent life”.
  + This is the era that began to shape the earth’s surface to the point where we recognize it today
  + Several periods called \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ helped change the look of the land

Sedimentary Rock

* Sediment: Loose \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that are carried by water and drift to the bottom of bodies of water
* Sedimentary Rock: Rock formed when sediment is under \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forcing it together
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pressed sediment together to form Utah’s sedimentary rock
  + Some layers of sedimentary rock in Utah are as thick as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Utah’s national parks are located in the \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ Region and formed mostly of sedimentary rock

Dinosaurs

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: where many dinosaur bones have been uncovered in Utah
  + World’s most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ dinosaur skeleton found in Utah!
  + \_\_\_\_\_\_\_\_ complete dinosaurs found here, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ partial dinosaurs too
  + Can see digs happening at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ near Vernal, Cleveland-Lloyd Dinosaur Quarry in Emery County, and in Moab
  + Dinosaur remains turn into fossil fuels: \_\_\_\_\_\_\_\_, natural gas, \_\_\_\_\_\_\_\_\_\_
  + Name dinosaurs that can be found in Utah: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Formation of Mountains

* Rocky Mountains
  + Formed by pressure on the North American tectonic plate from the Pacific and Atlantic Ocean floors, causing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Earthquakes caused buckling, folding, and cracks (called \_\_\_\_\_\_\_\_\_\_\_\_\_\_) along North America
  + Utah was raised up into peaks and cliffs
  + Mountain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was washed into the valleys, leaving the rocky core visible
* How were Utah’s Mountains Formed?
  + The Rocky Mountains (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and \_\_\_\_\_\_\_\_\_\_\_\_\_ Mtns) were formed from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Mountain Ranges in Utah (La Sal,\_\_\_\_\_\_\_\_\_\_\_\_\_\_Mtns, Abajo, etc) were formed from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Volcanoes

* Utah was covered with active volcanoes, but all of them are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ today
* They left behind craters and a few \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Hot springs are formed when the water is heated by rocks beneath the surface
* Volcanoes formed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the Great Basin and Colorado Plateau

Colorado Plateau

* + This area was raised into a high, flat area during the buckling and folding
  + Water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(wearing away) caused the sedimentary rock to form cliffs and canyons
  + Some amounts of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ activity also formed small mountain ranges in this region

Rocks and Minerals

* Utah has many \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: oil, natural gas, and coal
* Utah also has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, gold, and silver
* Utah has enough \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to satisfy the world’s needs for a thousand years
* Sand and gravel were also left behind by Lake Bonneville and are used to make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Building stones such as quartz, sandstone, limestone, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and marble

Ice Age

* Last major shaping of Utah took place
* A huge sheet of ice covered much of North America, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ formed over the Rocky Mountains
  + Some glaciers are still found at high elevations
  + Many glacial \_\_\_\_\_\_\_\_\_\_\_\_\_\_ were formed
  + Canyons and basins were created as the glaciers moved along the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - When the glaciers melted, they filled basins with water
      * These \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ provide Utah with important water sources
  + Ice Age Animals
    - Deer, chipmunks, rabbits, gophers mice
    - Mammoths, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, ancient bison, musk ox, cave bears, camels, saber-toothed tigers

Lake Bonneville

* Ice Age temperatures heated up and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the ice
  + The water formed a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that spread over much of Utah
  + At its largest, it covered \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ square miles and was nearly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ feet above the current Great Salt Lake
* Lake Bonneville washed against the sides of the mountains, forming \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or terraces, that were flat places people live on today
  + Warming caused the lake to shrink and each change left a new bench on the mountain side
* 8,000 years ago, the lake was lowered when water broke through Red Rock Pass and flowed to the ocean
* Mountain streams flowing into the lake deposited sediment, forming the best soil for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the state and large gravel deposits
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, Utah Lake, and Sevier Lake are left behind from this
  + The Great Salt Lake is Utah’s largest body of water
    - It is found in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-
    - It is very shallow
    - Rivers flow into the lake, with minerals, but no \_\_\_\_\_\_\_\_\_\_\_\_\_ flow out —making it very salty
      * It is saltier than the ocean, and too salty for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Natural Forces Shaping Utah Today

* Wind, water, ice, heat, and cold shape the land today through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, rock slides, floods, and earthquakes change things

Earthquakes in Utah today:

* Over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ earthquakes occur in Utah each year.
* Most of Utah’s Major cities are built on a giant \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ called the Wasatch front
* What is liquification?
  + Liquification is when supersaturated \_\_\_\_\_\_\_\_\_\_\_\_\_\_ soil acts like a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in an intense earthquake.
* Where will it happen in Utah?
  + In the \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_… Sandy, South Jordan, Salt Lake City etc
* What will happen to that place when it occurs?
  + Large objects will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* What could happen to Alpine in an earthquake?
  + Mud slides and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* When is the only time you should use the phone after an earthquake?
  + Incase of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ injury (life and \_\_\_\_\_\_\_\_\_\_\_\_\_)
* Why is this the only time you should make a phone call after an earthquake?
  + Phone lines will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and important calls will\_\_\_\_\_\_\_\_\_\_\_\_\_\_ get through in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.