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| **Week** | **Lesson Descriptions** | **Goals** | **Lesson strategies & resources** |
| 1 | | Learning Experience 1: *Earth as a Sphere*   * Teacher reads aloud: *Journey to the Center of the Earth* * Students take notes * Students complete model using paper plate of layers of the Earth   Learning Experience 2: *Layers Surround the Earth*   * Students observe magnetic fields of magnets, small Earth models and compasses | -Introduce names, order and characteristics of Earth’s layers  -Students create model of relative sizes of Earth’s Interior  -Introduce the magnetosphere as Earth System  - Reinforce properties of Magnets (from Grade 2) | * Teacher tip: Journey to the Center of the Earth is long and detailed. Consider omitting the story or adapting it to make it more concise * Teacher tip: Use excerpts from book, *A Really* *Short History of Nearly Everything,* by Bill Bryson to introduce concepts about Earth’s history |
| 2 | | Learning Experience 3: *Features of the Earth’s Crust*   * Students complete pre-assessment about Earth’s Crust * Students watch Bill Nye video “Earth’s Crust” * Students correct pre-assessment based on video   Learning Experience 4: *Earth’s Moving Continents*   * Student watch video: Continental Drift * Student model how plates move with playdough | - Introduce natural processes that affect the Earth  - Introduce the concept of plate tectonics  - Use a model to demonstrate how plates move | * Many of the concepts and vocabulary presented in Learning Experiences 3 and 4 are not part of the Massachusetts standards for elementary grades(but are in grade 6-8) and can be omitted or adapted to save time |
| 3 | | Learning Experience 5: *Earthquakes*   * Teacher explains tectonic plates * Students watch video: *When the Earth Shakes* * Teacher demonstrates seismic waves using slinkies | -Reinforce concept of plate tectonics  -Build awareness of Seismic waves | * Many of the concepts and vocabulary presented in Learning Experiences 5 are not in the Massachusetts standards for elementary (but are in grade 6-8) and can be omitted or adapted to save time * Teacher Tip: Use *Restless Earth,* available as a Big Book to reinforce concepts of volcanoes, earthquakes and other forces that change Earth’s surface |
| 4 | | Learning Experience 6: *Mt St. Helens*   * Teacher reads aloud *Volcano- The Eruption of Mt. St. Helens* * Students observe Mt. St. Helens ash and images of Mt. St Helens   Learning Experience 7: *Types of Volcanoes*   * Students observe model volcano * Students watch 2 videos on Volcanoes * Students model volcano eruption using baking soda and vinegar in a bag | -Students use a model to demonstrate transforming plates  -Introduce how a volcano is related to plate tectonics  - Introduce models that depict volcano types | * Many of the concepts and vocabulary presented in Learning Experiences 7 are not in the Massachusetts standards for elementary (but are in grade 6-8) and can be omitted or adapted to save time * Teacher tip: Show video “Should I Stay or Should I go?” showing history of Mt. St Helens eruption in 1980 <http://www.history.com/topics/us-states/washington/videos/mount-st-helens-erupts> * Teacher tip: use online interactive to introduce volcanoes, includes interactive images and models <http://discoverykids.com/games/volcano-explorer/> |
| 5 | | Learning Experience 8: *Weathering: What is it?*   * Students observe samples of rock * Teacher reads aloud: *Cracking Up: A Story about Erosion* * Students watch videos on plate collision, mountain building an Appalachian mountains   Learning Experience 9: *Physical Weathering*   * Teacher shows power point: *What on Earth is Going On* * Students investigate the effect of weathering on sugar cubes | - Introduce the concept of weathering  - Introduce how weathering can change Earth’s surface  - Introduce idea that large rocks can become small rocks through weathering  -Students practice scientific inquiry (predicting, investigating, drawing conclusions)  -Introduce the concept of chemical weathering  -Students model chemical weathering | * Many of the concepts and vocabulary presented in Learning Experiences 8(especially around mountain building and plate collisions) are not in the Massachusetts standards for elementary (but are in grade 6-8) and can be omitted or adapted to save time * Lesson 9 offers opportunity for engaging hands-on experiments and inquiry |
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| 6 | | Learning Experience 10: *Acid Rain*   * Students observe photographs of tombstones * Students experiment with the effect of acid on chalk   Learning Experience 11: *Getting Carried away*   * Teacher Reads aloud: *Erosion: Changing Earth’s Surface* * Teacher shows Powerpoint- *Weathering & Erosion* | -Introduce the concept of erosion and deposition | * Lesson 11 offers opportunity for engaging hands-on experiments and inquiry |
| 7 | | Learning Experience 12: *Earth is a Water Planet*   * Teacher shows video Earth is a Water Planet * Students observe world maps looking at oceans * Students read book: *Ecosystems around the world* | -Build awareness that Earth is covered with an interconnected system of waterways  -Build awareness that the ocean is largest and most vital of Earth’s ecosystems | * Students can do Ecosystems reading as a jigsaw |
| 9 | | Learning Experience 13 *Science Center Field Trip: Stream Tables & Engineering Landslides*  - Students experiment with stream tables and work in groups to create model landscapes and engineer ways to stop erosion | -Students observe how a river causes erosion and changes the surface of the land  -Students engineer ways to stop erosion  -Students practice scientific inquiry (predicting, investigating, drawing conclusions) | * Recommended: Science Center Field Trip: Geology Tour:   On the trip, students visit and observe several landforms getting a glimpse into Needham’s Geologic history. They observe formations (glacial erratics, kettle ponds, volcanic rock) around Needham. They look at evidence of weathering and erosion and review how rocks are formed. |
| 9 | | Learning Experience 14-17  *Stream Tables & Engineering Landslides*   * Students watch video on landslides * Students create and test model landscapes with stream tables | --Students model and observe landslides and how they changes the surface of the land  -Students engineer ways to stop erosion  -Students practice scientific inquiry (predicting, investigating, drawing conclusions) | * Request stream table materials separately (not delivered in the kit) * Teacher tip: show students before and after photographs of landslides <http://www.wsj.com/articles/SB10001424052702304679404579461870711140580> |
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| 10 | End of Unit Assessments | -Review what students have learned about Changing Earth  -Assess what students have learned about Changing Earth |  |