MOUNTAINS AND SEAS in NC
SNAPSHOT

DRIVING QUESTION: HOW DOES PLATE TECTONICS AFFECT NORTH CAROLINA?

Recommended Grades: K – 6; Adaptations for 7 – 12.

Classroom or Center Activities	*Outside or Larger Space Activities*	*Technology-Based Activities*	*Stem-to-Go Take Home*	*Field Work and/or Natural Area Needed*
X	X	X	X	X

Materials: Three colors of modeling playdough or clay, an aluminum or Pyrex pie plate, card stock with maps, scissors, hot water, maps of North Carolina, Laffy Taffy or Milky Way Bars.

Teacher Prep: <15 Minutes

Participant activity: 30 minutes

Objectives:

1. Identify landforms on the earth: hills, mountains, valleys,
2. Explain evidence that was used to support plate tectonics theory.
3. Apply geologic theories to NC's provinces.
4. Model convection currents that drive plate tectonics.
5. Model three types of plate boundaries and apply them to North Carolina's provinces.

STEM Skills

S: Classify landforms and the geologic processes that create them.

T: Utilize models to explain plate tectonics.

E: Identify potential geologic hazards in NC and ways to mitigate them.

M: Calculate slope of NC's I-40 from the mountains to the sea.

Teacher Tips: Mountains and Seas in NC

Plan ahead: Make copies of the plate tectonics map and distribute scissors and pie plates. Hot water from the tap should be your last step. If you need free NC maps, order them at https://www.visitnc.com/travel-guides. Copies are also available at welcome centers and rest areas across the state.

Total prep: < 15 minutes to make copies

Safety: Hot water from the tap is safer than heating water in a microwave. During the Plate Tectonics Dance, it is helpful to remind participants about personal space and respectful interaction. A reminder regarding personal space during the dance is helpful. If walking outside, make sure to designate

Sensory Integration Issues: If fine motor skills are not adequate for using scissors, tearing the paper works fine, too. During the plate tectonics dance, some participants may not feel comfortable touching. So proximity can be substituted for the whole group, rather than

Cost: Minimal, <$1 per person. Play dough can be homemade or purchased in bulk. Generally, snack sized and bulk candies go on sale after Halloween and Easter. **Please note NC maps are free, but may take**

What else do I need? Paper towels/rags. State maps can be helpful.

Clean Up: Hands, equipment, and surfaces can be washed

7. NC CAP's Unit Planner

Classroom or Center Activities	*Outside or Larger Space Activities*	*Technology-Based Activities*	*Stem To-Go*	*Field Work and/or Natural Area Needed*
Continent Races	Plate Tectonics Dance	City of Asheville Slope Interactive Map:	Landform Hike	Landform Hike
I-40 Slope Stops	Hill Race	Geologic Map of NC: https://deq.nc.gov/about/divisions/energy-mineral-land-resources/north-carolina-geological-survey/interactive-geologic-maps		
Candy Crush for Continents		NC's Mountains to Sea Hiking Trail: https://mountainstoseatrail.org/the-trail/map/		

NC Essential Standards Correlations: Mountains to Sea in NC

1.P.1.1: Explain the importance of a push or pull to changing the motion of an object.
1.E.2.1: Summarize the physical properties of Earth Materials including rocks, minerals, soils, and water that make them useful in different ways.
3.P.1.1: Infer changes in speed or direction resulting from forces acting on an object.
3.P.1.3: Explain the effect of earth's gravity on the motion of any object on or near the earth.
3.P.2.3: Summarize changes that occur to the observable properties of materials when different degrees of heat are applied to them, such as melting ice or ice cream, boiling water or an egg, or freezing water.
3.E.2.2: Compare Earth's land features (including volcanoes, mountains, valleys, canyons, caverns, and islands) by using models, pictures, diagrams, and maps.
4.P.2.2: Classify rocks as metamorphic, sedimentary, or igneous based on their composition, how they are formed and the processes that create them.
4.P.3.1: Recognize that basic forms of energy (light, sound, heat, electrical, and magnetic) as the ability to cause motion or create change.
4.E.2.3: Give examples of how the surface of the earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.
4.L.1.3: Explain how humans can adapt their behavior to live in changing habitats (e.g., recycling wastes, establishing rain gardens, planting trees and shrubs to prevent flooding and erosion.
5.P.1.1: Explain how factors such as gravity, friction, and change in mass affect the motion of objects.
5.P.3.1: Explain the effects of the transfer of heat (either by direct contact or at a distance) that occurs between objects at different temperatures (conduction, convection, or radiation).
6.P.1.1: Compare the properties of waves to the wavelike property of energy in earthquakes, light, and sound.
6.P.3.1 Illustrate the transfer of heat energy from warmer objects to cooler ones using examples of conduction, radiation, and convection and the effects that result.
6.E.2.1: Summarize the structure of the earth, including the layers, the mantle, and core based on the relative position, composition, and density.
6.E.2.2: Explain how crustal plates and ocean basins are formed, move and interact using earthquakes, heat flow and volcanoes to reflect forces within the earth.
7.P.1.1: Explain how the motion of an object can be described by its position, direction of motion, and speed with respect to some other object.
7.P.1.2: Explain the effects of balanced and unbalanced forces acting on an object (including friction, gravity, and

magnets).
7.P.1.3: Illustrate the motion of an object using a graph to show a change in position over a period of time.
7.E.1.1: Compare the composition, properties and structure of Earth's atmosphere to include: mixtures of gases and differences in temperature and pressure within the layers.
8.E.2.2: Explain the use of fossils, ice cores, composition of sedimentary rocks, faults, and igneous rock formations found in rock layers as evidence of the history of the Earth and its changing life forms.