

Key Science Concepts and Skills	
Activities Summaries	Earth Science Principles
<p>Activity 1: An Earthquake in Your Community Students use a model to learn how energy stored in rocks is released in the form of an earthquake. They then use Slinkys to explore the movement of earthquake waves through the Earth, and make inferences about the effects these waves may have on the Earth's surface.</p>	<ul style="list-style-type: none"> • Earthquakes • Earthquake or seismic waves • Epicenter and focus
<p>Activity 2: Detecting Earthquake Waves Students construct a simple seismometer and then learn how to interpret seismograms to determine arrival times of the two types of seismic waves. They can then use the Internet to learn how to determine the epicenter of an earthquake.</p>	<ul style="list-style-type: none"> • Seismometer • Interpreting seismograms • Using travel-time curves
<p>Activity 3: How Big Was It? Students rank the observed effects of a single earthquake to determine the earthquake's approximate origin. A web-based exercise then allows students to examine how scientists use an earthquake's amplitude to determine its magnitude.</p>	<ul style="list-style-type: none"> • Earthquake intensity • Effect of local geology on earthquake intensity • Earthquake magnitude
<p>Activity 4: Earthquake History of Your Community Students use maps to examine and describe the distribution of earthquakes at global, regional, and local scales. By examining earthquake data, along with the relationship between faults and earthquakes, students determine the potential risk for future earthquakes in their community.</p>	<ul style="list-style-type: none"> • Earthquake patterns and plate tectonics • Faults • Earthquake risks
<p>Activity 5: Lessening Earthquake Damage Students construct a map of earthquake intensities based on recorded observations to determine the approximate origin of the earthquake, and investigate how the effects felt vary in relation to the epicenter. Students then look at the geologic changes and destruction associated with earthquakes around the world, and finally assess the earthquake risks of their own community and how to prepare themselves during an earthquake.</p>	<ul style="list-style-type: none"> • Isoseismal map • Earthquake hazards • Tsunamis • Earthquake preparedness
<p>Activity 6: Designing "Earthquake-Proof" Structures Students build models to investigate factors that make buildings stable or unstable during earthquakes. They interpret photos to gain insights into damage caused by real earthquakes. They also use a model to understand how wave frequency influences vibrations of structures. They think about how the buildings in their community would respond in an earthquake.</p>	<ul style="list-style-type: none"> • Duration of shaking • Direction of motion • Influence of underlying materials on behavior of structures • Resonance