

Extreme Earth: Earthquakes

Aim: Describe and understand key aspects of physical geography in the context of earthquakes. To explain what causes earthquakes and how they are measured.	Success Criteria: I can tell you where earthquakes happen. I can explain why earthquakes happen. I can tell you how to keep safe in an earthquake. I can compare the strength of earthquakes.	Resources: Lesson Pack Bowl of water and a pebble Blue and orange card You may wish to source a video of a recent earthquake, such as Japan (2011), New Zealand (2011) or Nepal (2015). Audio cue, such as musical instrument sound
	Key/New Words: Epicentre, shock wave, magnitude (power/strength), Richter, Mercalli.	Preparation: Cut credit card sized rectangles of blue and orange card (one of each) - per child Measuring Earthquakes Activity Sheet - as required

Prior Learning: Children should know the layers that make up the Earth and that the Earth's crust is made up of separate plates.

Learning Sequence

	How Do Tectonic Plates Move? Remind children of the different ways that tectonic plates can move by asking them to demonstrate the three kinds of movement using two pieces of coloured card.	
	Why Do Earthquakes Happen? Show a video of an earthquake. Discuss the visible effects of the earthquake (furniture shaking, things falling from shelves, buildings and roads damaged/destroyed). Demonstrate how the effect of an earthquake lessens as you move further away from the epicentre by dropping a pebble into a bowl to create ripples. Eventually, the ripples disappear as they don't have enough energy to travel any further – the same is true of the shock waves that create an earthquake.	
	Where Do Earthquakes Occur? Show children the map of the world's earthquake hotspots and tectonic plate boundaries in the Lesson Presentation . Discuss the main areas affected (Pacific Ocean, mid-Atlantic Ocean, West coast of North & South Americas, Indonesia) and that many occur in seas and oceans.	
	What Should You Do? Explain to children that at some point during the lesson, they will practice what people living in some areas prone to earthquakes do; an earthquake drill (compare this to school fire drills the children will have experienced). Share with children an audio cue (e.g. a musical instrument sound) that will trigger the start of the earthquake. What do children think they should do when they hear the noise? Read through the advice slide in the Lesson Presentation to prepare children.	
	How Strong Is It? Remind children of the video they watched earlier in the lesson. The earthquake shown in the video was a very strong one. Explain that there are different ways to measure how strong an earthquake is. Machines called seismographs measure the power of an earthquake at its epicentre on a scale called the Richter scale. Another measure is the Mercalli scale, and this is based on people's observations during an earthquake.	
	Measuring Earthquakes: Use the Measuring Earthquakes Activity Sheet .  Children illustrate the statements of the Mercalli scale.  Children sort the Mercalli scale statements into the correct order and illustrate.  Children sort the Mercalli scale statements into the correct order, using Roman numerals to label.	
	Did You Remember What to Do? At some point during childrens' independent work, make the earthquake warning noise. Children should try to act out what they would do, remembering the advice given earlier in the lesson. Continue making the noise for about 1 minute, then show the earthquake drill instructions again. Did children remember what to do? How did you feel when you heard the noise? Would you feel the same if you were in a real earthquake? How long did our earthquake last? Allow children to continue with their independent task.	

Taskit

- Designit:** Use cocktail sticks and marshmallows (or modelling clay) to create buildings to test in earthquake situations. A large roasting tin of jelly makes an ideal earthquake simulator!
- Composeit:** Earthquakes are noisy! Use tuned and untuned musical instruments to compose a soundtrack for an earthquake. What sounds might you hear and how can these be represented musically?
- Linkit:** Visit [Teachable Moments](#) (British Geological Society) to find out about recently occurring earthquakes. Use the data sheets to see how real life data reports of earthquakes are used to map out affected areas.