

Video question script: Divergent margins

Question/Activity	Likely response	Rationale
Exploring the characteristics of divergent margins, including the 'Faults in a Mars™ Bar' Earthlearningidea		Introduction to divergent margin characteristics
This is a discussion about divergent plate margins – where new plate materials are added		All concrete preparation for an understanding of divergent plate margins
<p>Explain the oceanic ridge diagram:</p> <ul style="list-style-type: none"> • The rising solid mantle rocks of the lithosphere partially melt • The melt rises at the oceanic ridge and either erupts at the sea bed or cools underground to form new oceanic plate material • This continues as the plate-driving mechanisms move the plates apart • As this region is hot, it has a lower density than the surrounding areas, and so floats in the mantle at a higher level – as an oceanic ridge • As the plates are moved apart, a rift valley forms at the centre of the ridge (a chunk of new crust slides down along normal faults) 		
The result is the topography of the Mid-Atlantic Ridge, for example. Note that this is offset at intervals by transform faults		
The divergent margin has volcanic activity – Icelandic type basalt lavas that flow readily		
Basalt lavas under water form pillow basalts – ancient pillow basalts are seen in the slide		
Heat is also lost from the oceanic ridge by black smoker activity		
<p>We can model a divergent margin using a Mars™ Bar. Demonstrate this. Ask: What do the different parts of the model represent?</p>	<ul style="list-style-type: none"> • The broken apart area in the centre is the rift valley • The solid chocolate on either side is the rigid lithosphere moving left and right • The toffee models the asthenosphere with its plastic flow • The nougat beneath models the solid mantle under the asthenosphere • Fractures that form parallel to the direction of pulling are like transform faults, although the mechanism is quite different 	Bridging between the model and reality
Ask: How is the rift valley aligned to the directions of the pull-apart pressures (= tension)?	<ul style="list-style-type: none"> • The rift valley forms at right angles to the pressure directions 	Construction: seeking a pattern between pressures and results
Ask: Where on Earth can we see a rift valley like this on land?	<ul style="list-style-type: none"> • Iceland 	Bridging; from the model to reality