Magnetic Stripes – Student Activity

We can observe basalt flowing out from trenches at the center of mid-ocean ridges. At the time when the flow solidifies the magnetic minerals within align themselves with the North Pole. Scientists have noticed that some rocks demonstrated reversed polarity.

Materials per student or group

- Two books
- Two sheets of lined paper
- Pen/pencil
- A coin

Method

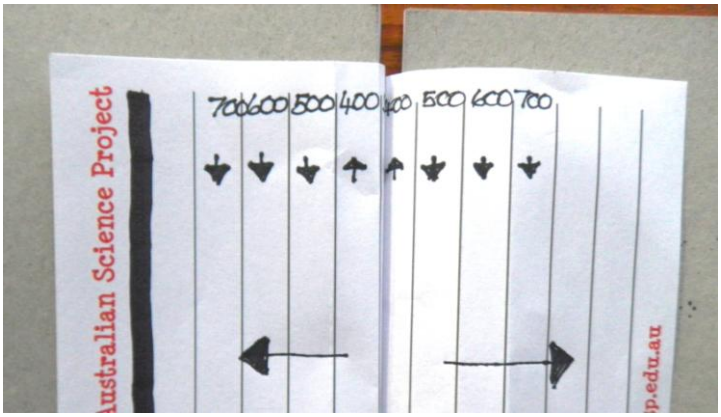
Mark one central line on the paper to represent the present. Each line on either side represents 100 years.

700 600 500 400 300 200 100 0 100 200 300 400 500 600 700

Toss a coin to decide whether the magnetic orientation of each of the seven one hundred year sections will be north or south.

Indicate with arrows which direction north lies on the paper. For each of the 7 sets of 100 years

Cut the paper in half along the “present” column.



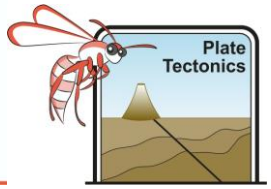
Wrap the sheets of paper round the books so that only a little protrudes. The books represent continental plates being pushed apart.

Draw out the paper from between the books and see how the magnetic striping can be modelled.

Does this activity prove the theory of seafloor spreading?_____

_____

Magnetic Stripes – Student Activity



Every so often convection currents in our outer core change and our poles "flip". The North Pole becomes the South Pole. When the polarity of minerals is oriented to the North Magnetic pole, this is termed "***NORMAL POLARITY***". Normal polarity is usually represented by the colour ***white***.
When it is oriented towards the present South Magnetic Pole this is termed "***REVERSE POLARITY***". The colour **black** usually represents reverse polarity.

The strip below represents polarity in basalt across a theoretical mid-oceanic ridge

Present

What is the polarity of rocks extruded at present? _____

How many years does the data cover? _____

If every block represents 100 years how many changes of polarity have happened in the last 350 years?

_____

Use the following page's data can be used to create a strip across a mid-oceanic ridge. Normal polarity rocks have positive VPG latitude.

HINT Every time the VPG latitude crosses zero is a change in polarity.

Materials per student

- Paper
- Ruler
- Pencil/pen

What do you notice about the stripes you have plotted? _____

_____

Does this magnetic stripe data support the theory of seafloor spreading? Explain your answer.

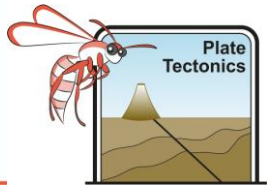
_____

_____

_____

_____

Magnetic Stripes – Student Activity



Data to support the hypothesis of seafloor spreading

Distance from ridge (km)	VPG Latitude (deg.)
-156	82.9
-133	-88.5
-125	-80.5
-109	71.1
-85	-82.9
-76	12.7
-52	38.8
-39	86.9
-19	82.2
-8	60.4
Distance from ridge (km)	VPG Latitude (deg)
10	58.4
21	84.0
38	87.4
60	40.2
76	9.6
87	-83.2
111	69.7
128	-78.8
136	-87.8
159	81.3