

Lesson 2

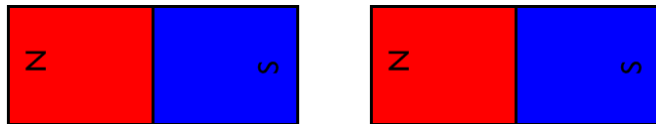
Resources	Context
<p>Per group of 2 students: Bar magnet, iron filings in shakers, mini plotting compass and A4 card</p> <p>Magnetic Field w/s</p>	<p>To create magnetic field lines.</p>

Starter – Magnetic Fields

All

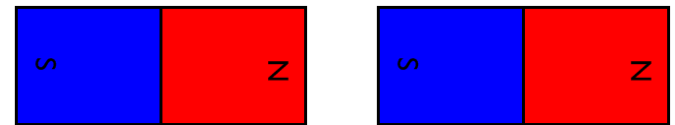
Will these magnets attract or repel? Draw and label in your book.

1.



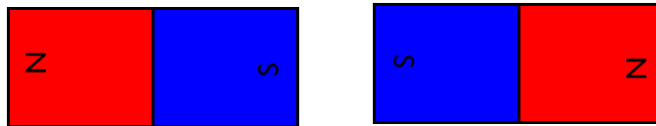
Attract

3.



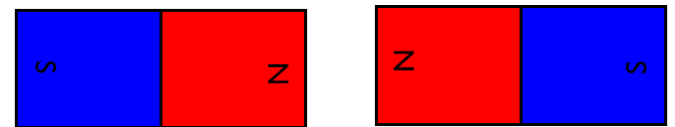
Attract

2.



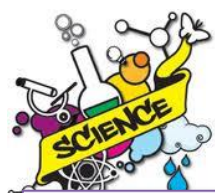
Repel

4.



Repel





Title: Magnetic Fields

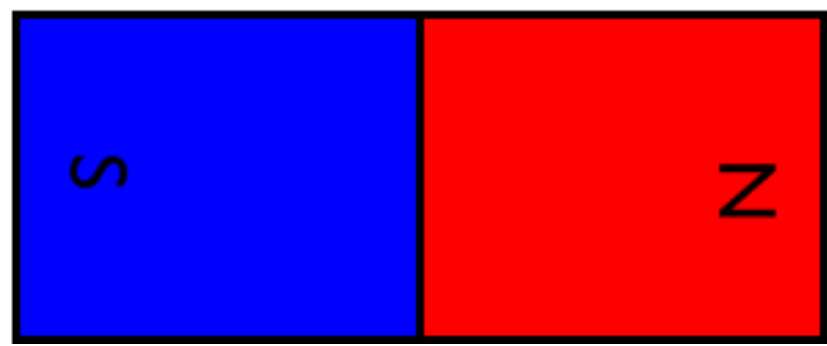
Homework: Write a story about what would happen if you became magnetic!

Level	Learning Objectives	Key Words	SPAG
All	Know that magnets create a magnetic field.		<ul style="list-style-type: none">To use accurate terminology when explaining ideas.
Most	Describe the magnetic field lines around a permanent magnet.	Field Compass	
Some	Explain how to find these field lines using a compass.	Magnetism	



Main Activity - Modelling

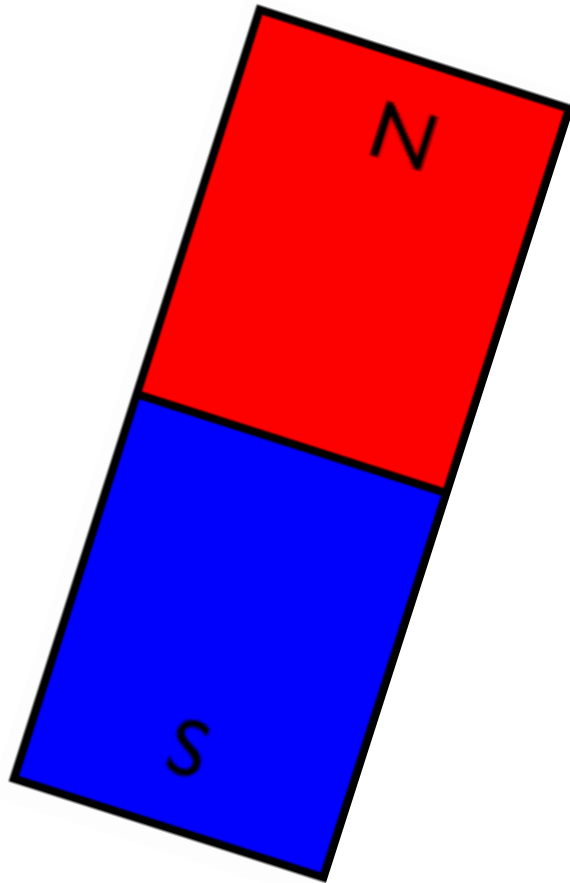
The force caused by a magnet is caused by a magnetic field around the magnet.



All	Know that magnets create a magnetic field.
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Main Activity - Modelling



Think	How could we see the magnetic field around a magnet?
Pair	Discuss your ideas and why you think this.
Share	Share your ideas with the class.

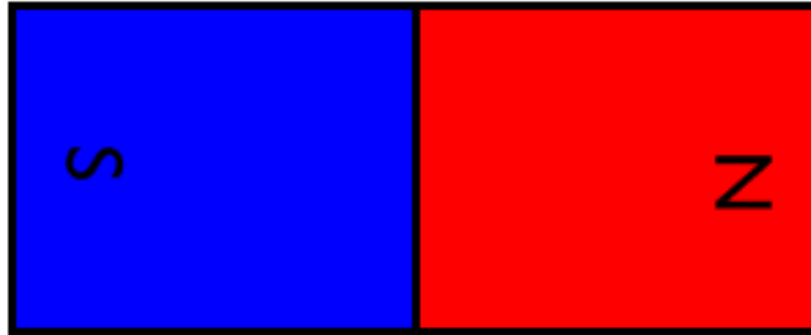


Main Activity - Activity

We are going to use iron filings to see the field.

Place your magnet beneath a piece of paper, sprinkle the iron filings slowly over the paper.

Sketch in you book the pattern they form.



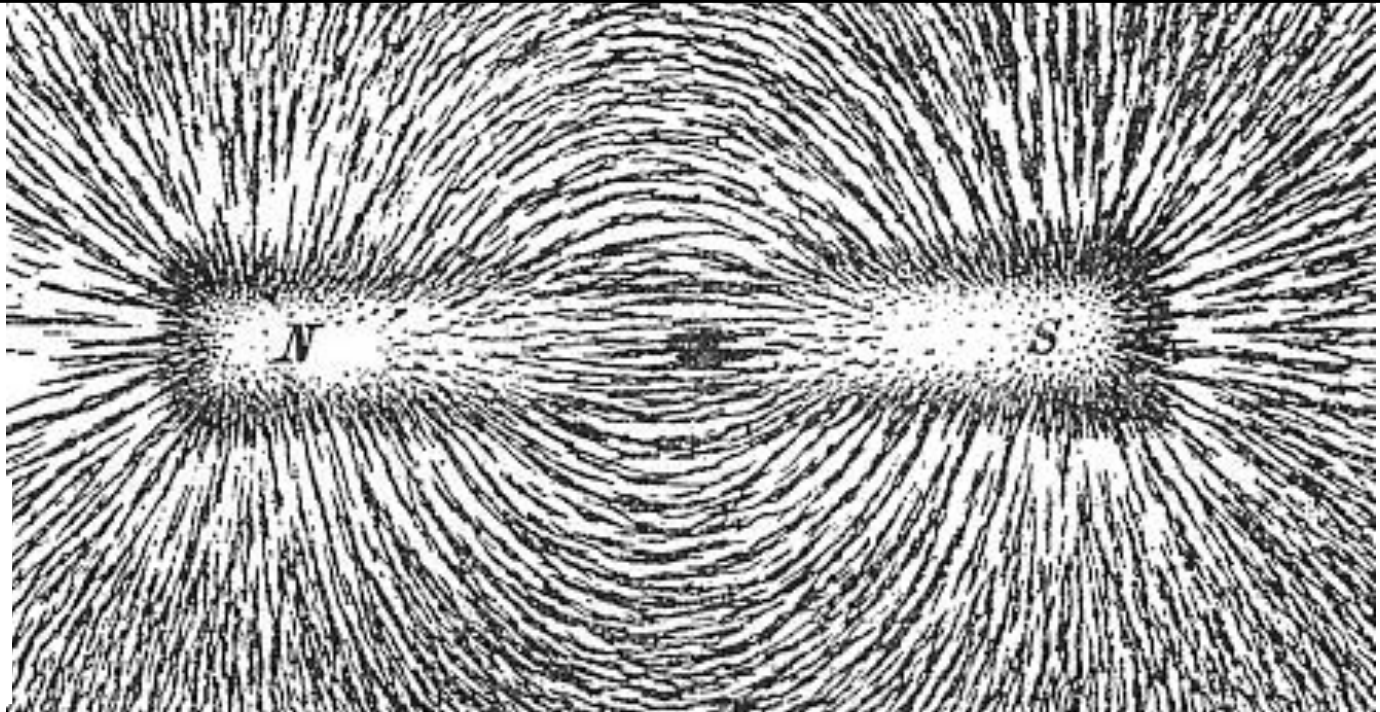
Main Activity - Task

The iron filings gather along the field lines.

Where the magnetic field is strongest, lots of filings gather.

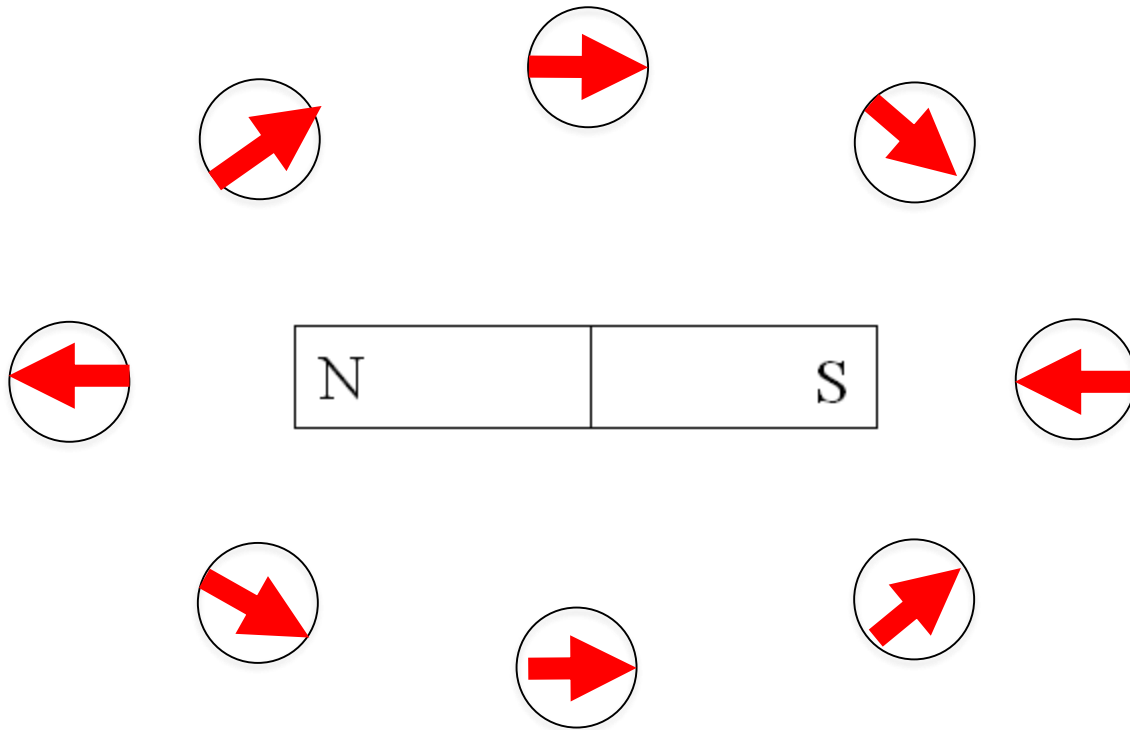
Where it is weak, less gathers.

The field is strongest where the field lines are closest together.



Main Activity - Modelling

Place mini-compasses in the positions shown below and draw the arrows on the sheet as they appear.

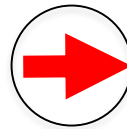
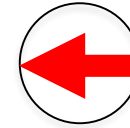
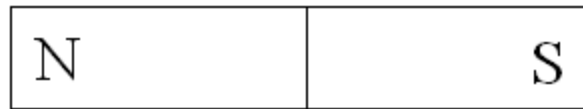
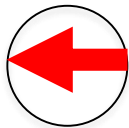


Main Activity - Modelling

Place mini-compasses in the positions shown below and draw the arrows on the sheet as they appear.

Some

Explain how to find these field lines using a compass.



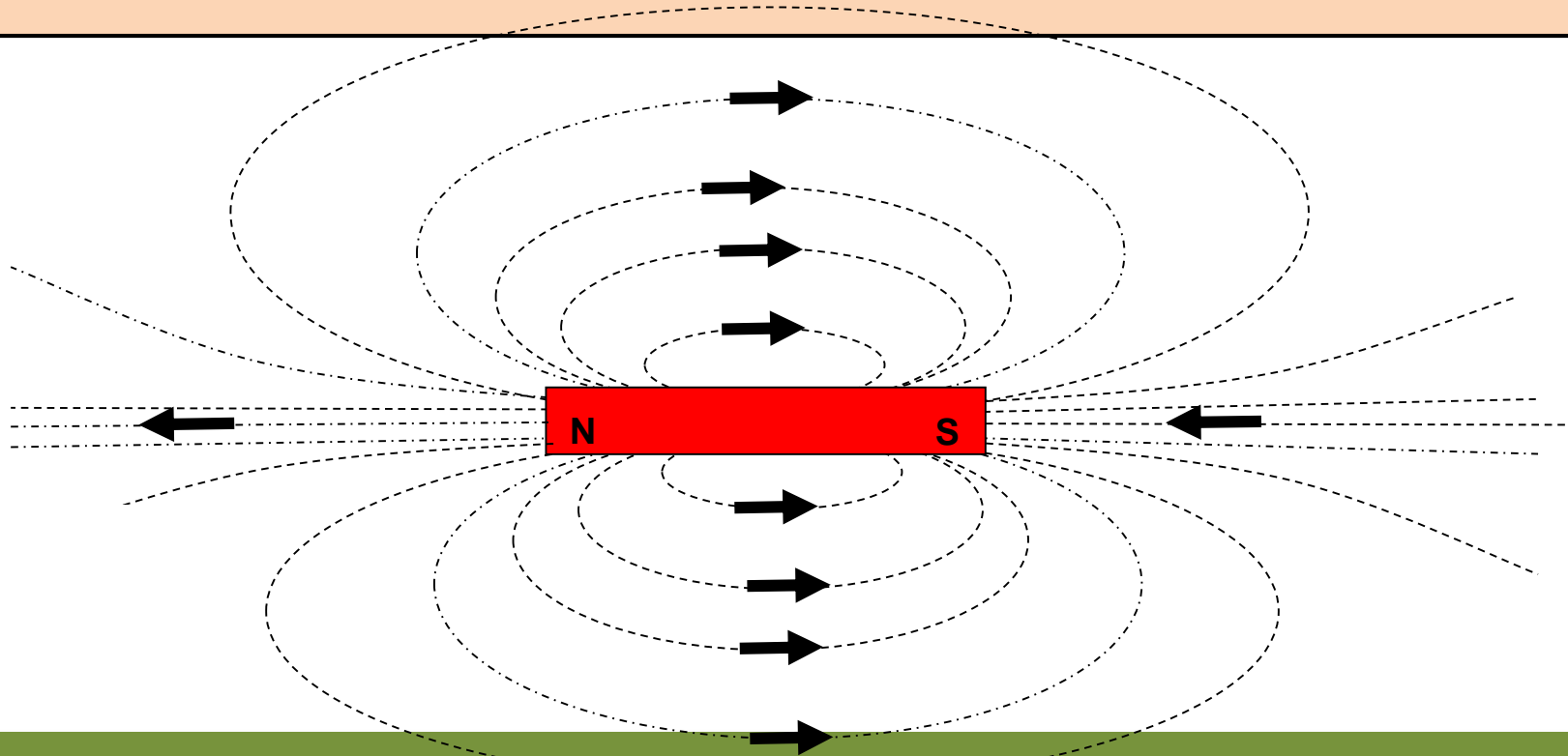
Main Activity - Task

We simplify the field lines like this.

The field is strongest where the field lines are closest together.

Field lines must have arrows which go from North to South.

Field lines NEVER Cross.



Main Activity - Task

We simplify the field lines like this.

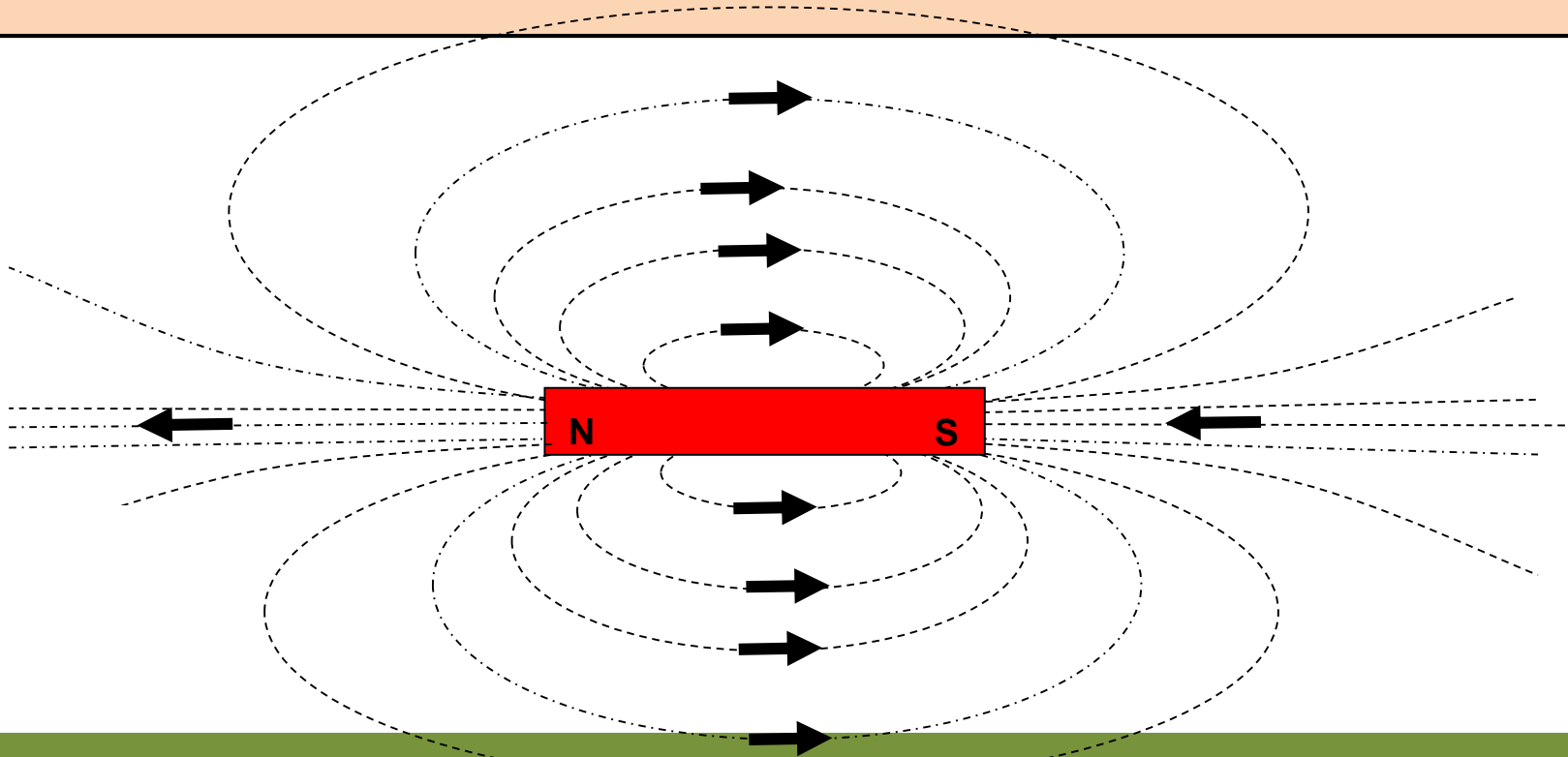
The field is strong

Field lines must

Field lines NEVER Cross.

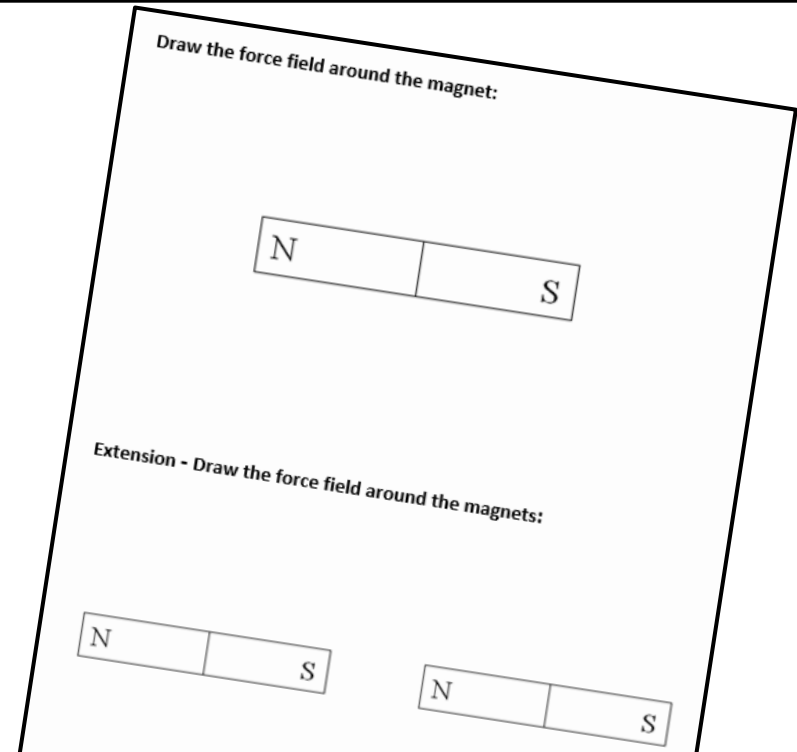
Most

Describe the magnetic field lines around a permanent magnet.

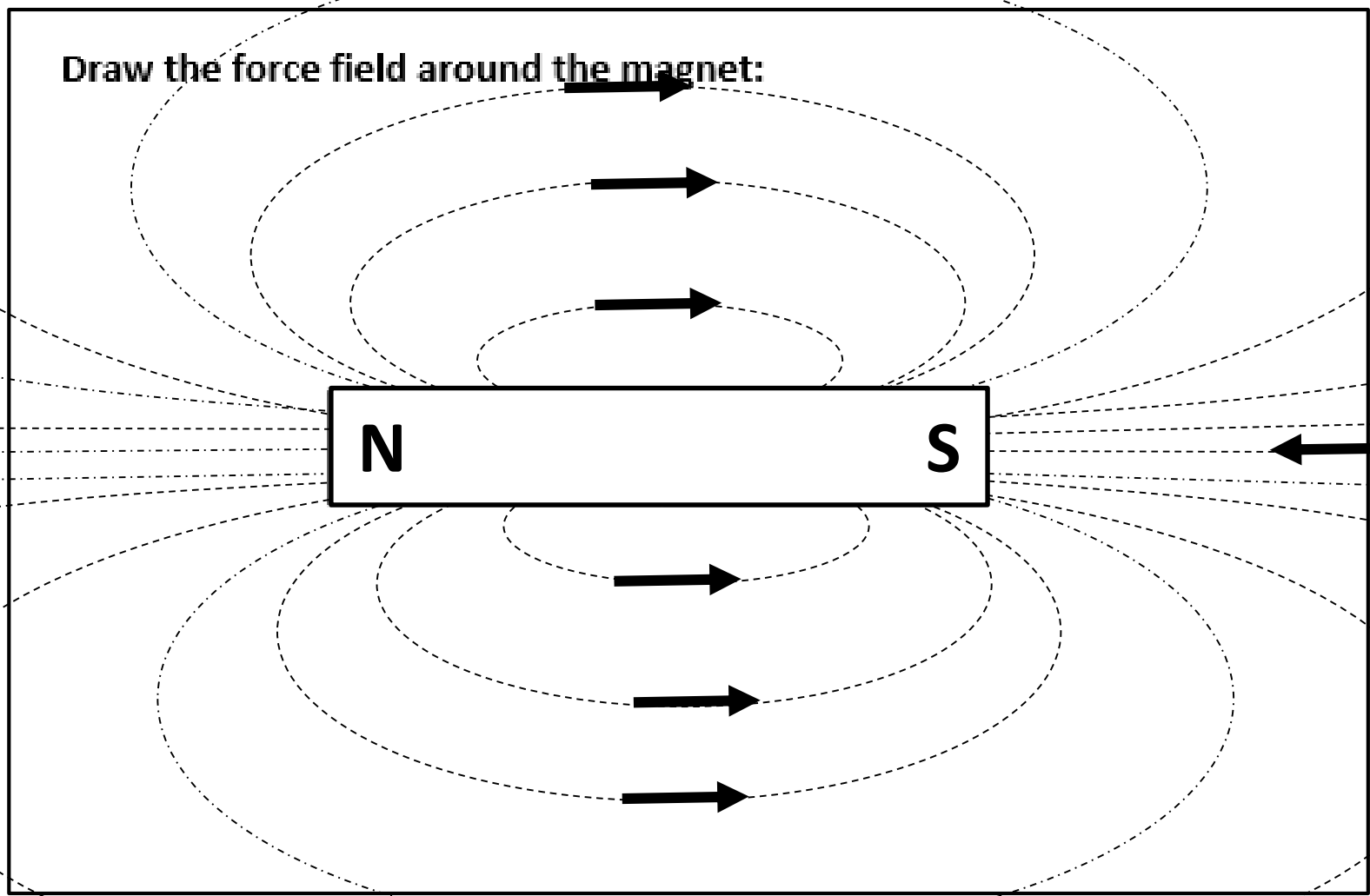


Main Activity - Modelling

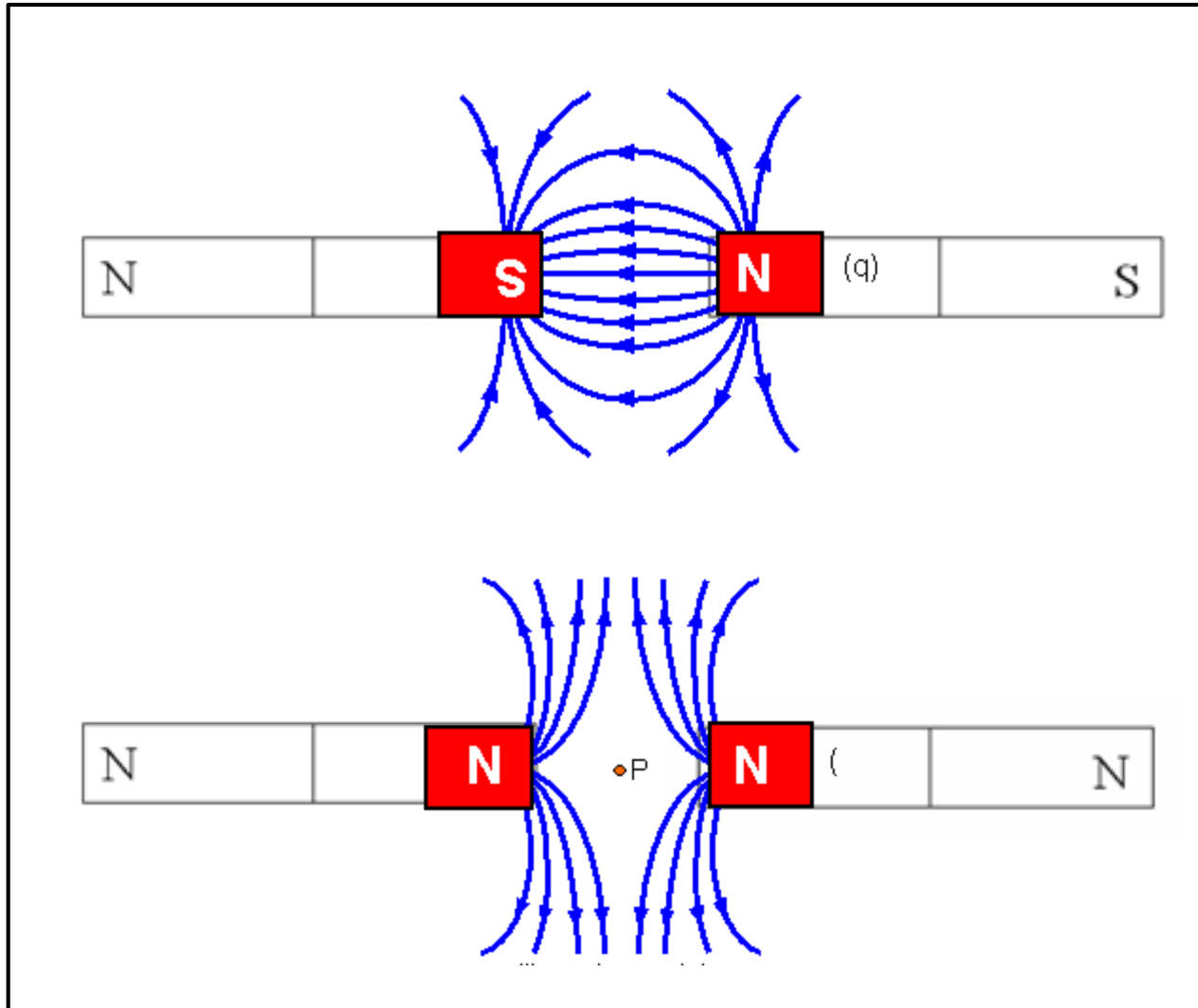
All	Draw the field lines around the magnet on the top of the sheet.
+	Investigate and draw the field lines on the extension set ups.



Main Activity - Modelling



Main Activity - Modelling



Thumbs Up/ Down

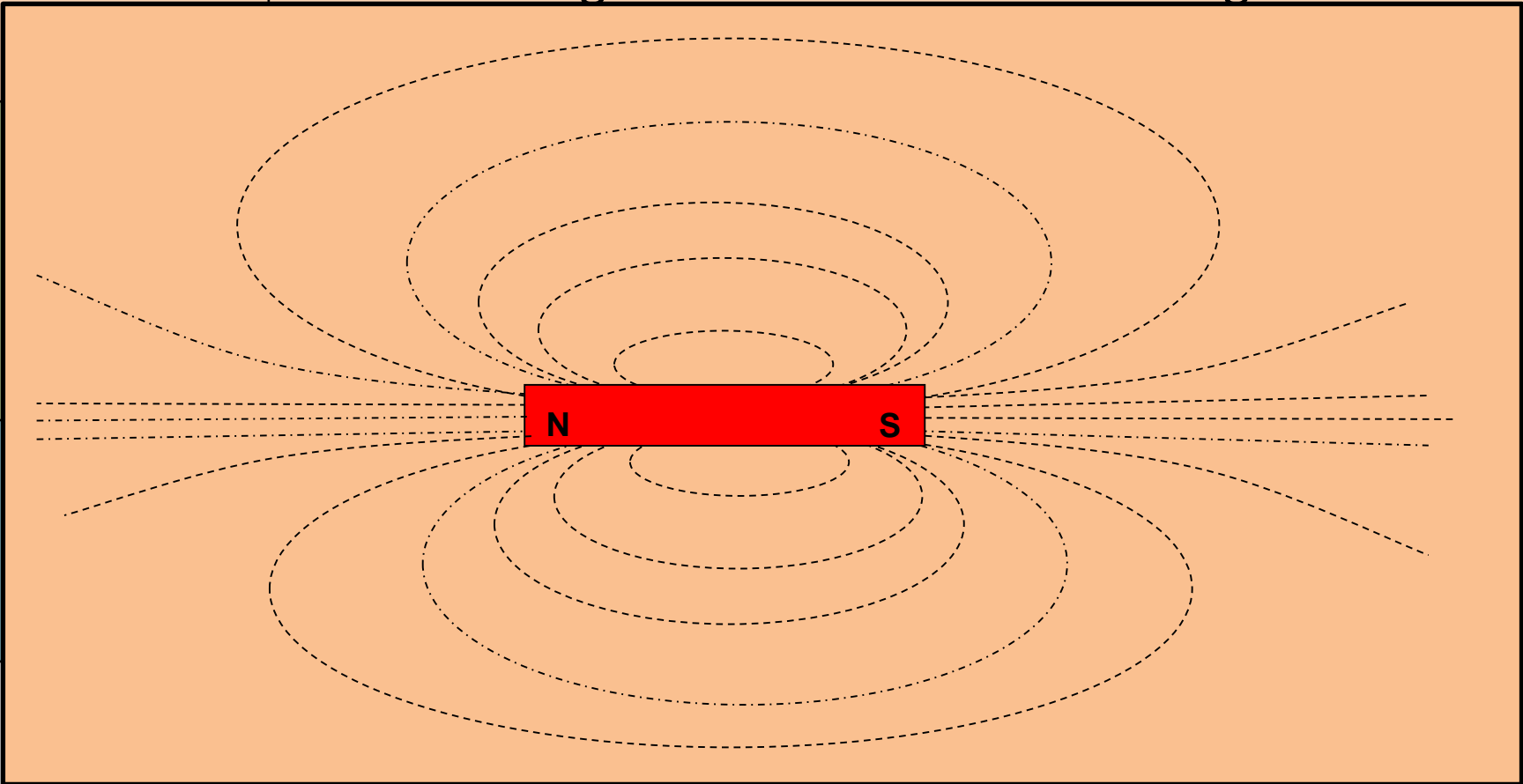
Think	Think about what we have discussed so far.
Share	Hold your thumb up if you are confident in your understanding. Hold your thumb down if you are not confident in your understanding. Hold your thumb across if you are in between.



Assessment Phase

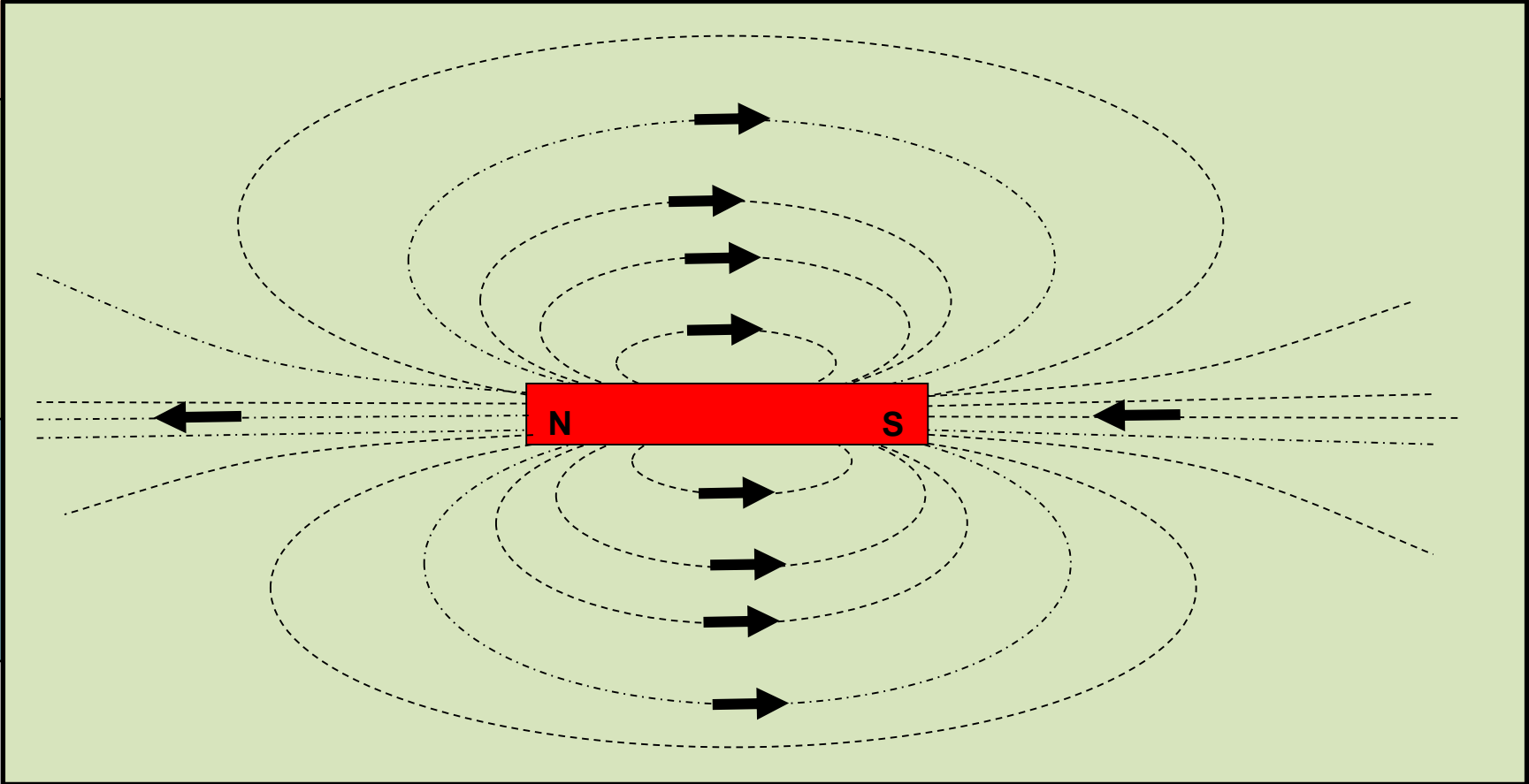
Level	Expectations
All	Draw the magnetic field around a bar magnet.
Most	Add to your diagram the field arrows.
Some	Write two rules for when drawing field diagrams.

Assessment Phase

Level	Expectations
All	<p data-bbox="407 319 1611 372">Draw the magnetic field around a bar magnet.</p>  <p>The diagram shows a red horizontal bar magnet with 'N' on the left end and 'S' on the right end. Dashed lines represent magnetic field lines. Some lines are straight and extend horizontally from the poles. Other lines are curved, forming loops that connect the two poles. The lines are more densely packed near the poles and spread out as they move away from the magnet.</p>

Assessment Phase

Level	Expectations
All	Draw the magnetic field around a bar magnet.



The diagram illustrates the magnetic field of a bar magnet. The magnet is a red horizontal bar with 'N' at the left end and 'S' at the right end. Dashed lines represent the magnetic field lines, which emerge from the North pole and enter the South pole. The field lines are shown as a series of nested, roughly elliptical loops that are most densely packed between the poles. Black arrows on the dashed lines indicate the direction of the magnetic field, pointing from the North pole towards the South pole. The entire diagram is set against a light green background, which is part of a larger assessment interface with colored sidebars (green and blue) and a header bar.

Assessment Phase

Level	Expectations
Some	Write two rules for when drawing field diagrams.

Field lines NEVER cross.

Field Arrows go from North to South.

Draw a horseshoe magnet and include its field lines.

