

Nova's Magnetic Exploration Lab

Learning objective: To understand the properties of magnets, including attraction, repulsion, and the invisible magnetic field.

Follow the steps to complete your magnetic diagram. Use your best scientific labelling to identify the forces at work in Nova's laboratory.

Draw: Draw a top-down view of Nova the owl's laboratory table. In the centre, draw two bar magnets placed end-to-end, close enough to show they are repelling each other. Surround the magnets with tiny dots to represent iron filings forming a curved 'magnetic field' pattern. Use arrows to show the direction of the invisible force pushing the magnets apart. Ensure the poles (N and S) are clearly marked on each end of the bar magnets.



Label words: North Pole · South Pole · Magnetic Field · Attraction · Repulsion · Magnetic Force · Iron Filings

Steps:

1. Label the two poles on the magnets in your drawing. If these two poles are pushing each other away, what is this force called?
2. Explain why the iron filings arrange themselves into curved patterns around the magnet rather than staying in a straight line.
3. Compare and contrast what happens when you place a North pole next to a South pole versus placing a

North pole next to a North pole.

4. Justify your answer: If you were to cut a bar magnet in half, would you end up with one side being only North and the other only South? Explain your reasoning.

5. What might happen if you placed a thin sheet of glass between the two magnets? Would the magnetic force still be detectable? Why?

6. Create a scientific hypothesis: How would the strength of the magnetic force change if you moved the two magnets further apart? Provide a reason for your prediction.