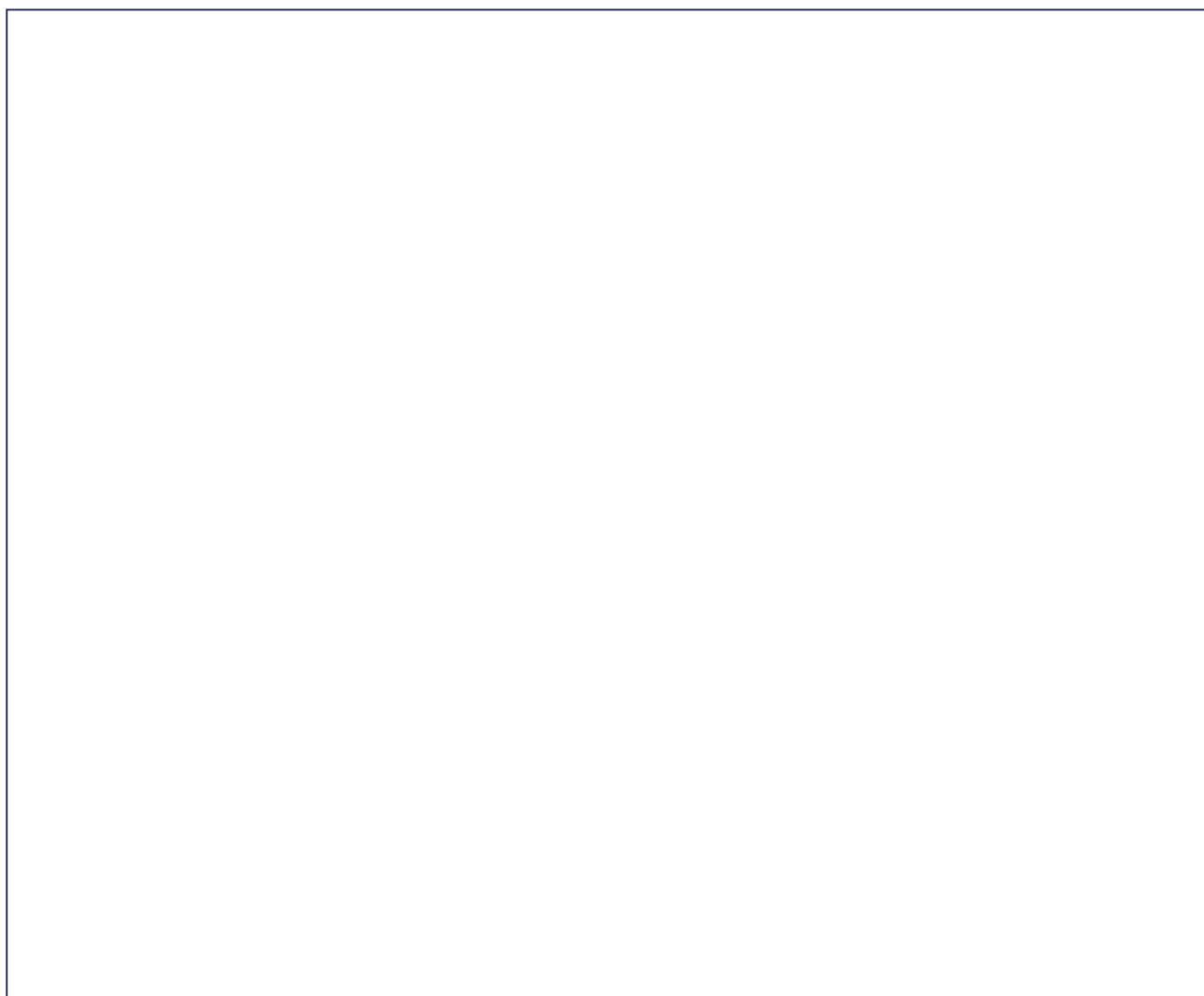


# Nova's Starlight Lab: Understanding Light and Reflection

*Learning objective: To understand how light travels in straight lines and how reflection occurs when light hits a surface.*

Follow the steps below to complete your scientific diagram. Use a ruler for all light rays to ensure they are straight lines. Remember to include arrows on your lines to show the direction the light is travelling.

**Draw:** Create a clear, scientific diagram on the left-hand side of your paper. Draw a flat, horizontal mirror surface. Position a torch to the top-left, shining a beam towards the centre of the mirror. Use a sharp pencil and a ruler to draw a straight line (ray) from the torch to the mirror, and a second line bouncing off the mirror at an equal angle. Add arrows to the middle of both lines pointing towards and away from the mirror. Include a dashed vertical line perpendicular to the mirror surface labelled 'Normal'.



*Label words: Light source · Incident ray · Reflected ray · Normal · Mirror surface · Angle of incidence · Angle of reflection*

## Steps:

1. Step 1: Draw a torch on the left side of your page. Draw a straight line from the torch to the mirror. Label this the 'incident ray'.

2. Step 2: Draw a second line bouncing away from the mirror. Label this the 'reflected ray'.
3. Step 3: Explain why we use arrows on our light rays. What do they represent in terms of the light's journey?
4. Step 4: If Nova replaced the smooth mirror with a piece of crumpled kitchen foil, describe what might happen to the light rays. Justify your answer.
5. Step 5: Compare and contrast the behaviour of light when it hits a transparent object versus an opaque object.
6. Step 6: Explain why we see our own reflection in a mirror but not in a matte-painted wall.