

Energy

Chasing the Path of Light

NCF and/or NCERT Learning Outcomes:

- Understand that light always travels in a straight line.
- Learn to design a simple model to visualise the path of light.

Why Should You Learn This?

- Tracing the path of light with your own model shows you why these phenomena happen and makes the concept easier to understand.
- Doing this hands-on activity builds confidence to explore and test scientific ideas on your own.
- Understanding how light travels helps you make sense of everyday phenomena like shadows, eclipses, and how objects become visible.

Think

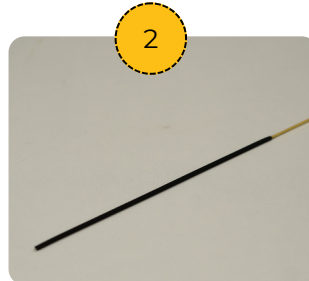
- Have you ever observed sunlight passing through the leaves of a tree?
- What about beams of car headlights? Or a sunbeam entering a dark room?



How do the beams appear? Can you describe the path of the light rays in these examples? Let's try to explore this through a simple activity.

Materials Required:

A transparent plastic bottle



Incense stick



Laser pointer

Disclaimer:

- Use the laser pointer carefully. Don't shine it on anyone's face or eyes.
- Please switch off the laser pointer when not in use.

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How to do it?

1



Open the bottle cap and pass the laser beam through the opening into the bottle.

2



Can you see the beam of light inside the bottle?

3



Fill the bottle with smoke.

4



Shine the laser beam into the bottle again.

Can you see the laser beam now? Can you describe the path of the light?

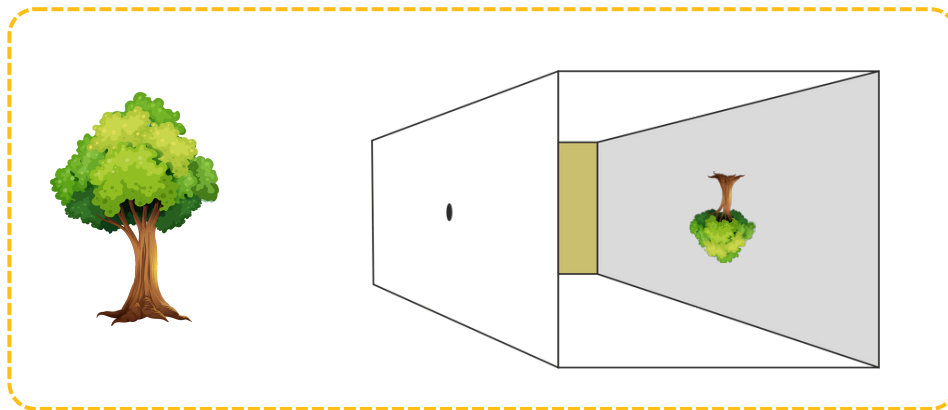
What did you observe?

- The laser beam is invisible in step 2 and clearly visible in step 4. This shows that light travels in a straight path.
- We can see the path of the light beam clearly when there are tiny particles like water droplets, smoke or dust.
- On the basis of these observations, answer the questions asked in the beginning.

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Now explore

1. In the laser beam experiment, why did we use smoke to visualize the path of light?
2. Can you think of another example that proves light travels in a straight line?
3. You've read about the pinhole camera in your textbooks. Light enters through a small hole and forms an inverted image on the screen inside. Why is the image inverted? Show with a diagram.



Pin hole camera

Try to see the path of light in your classroom

- Darken the room. Shine a torch through a small slit or hole in the wall or door.
- Sprinkle chalk dust gently in the beam. Observe the path of the beam.

