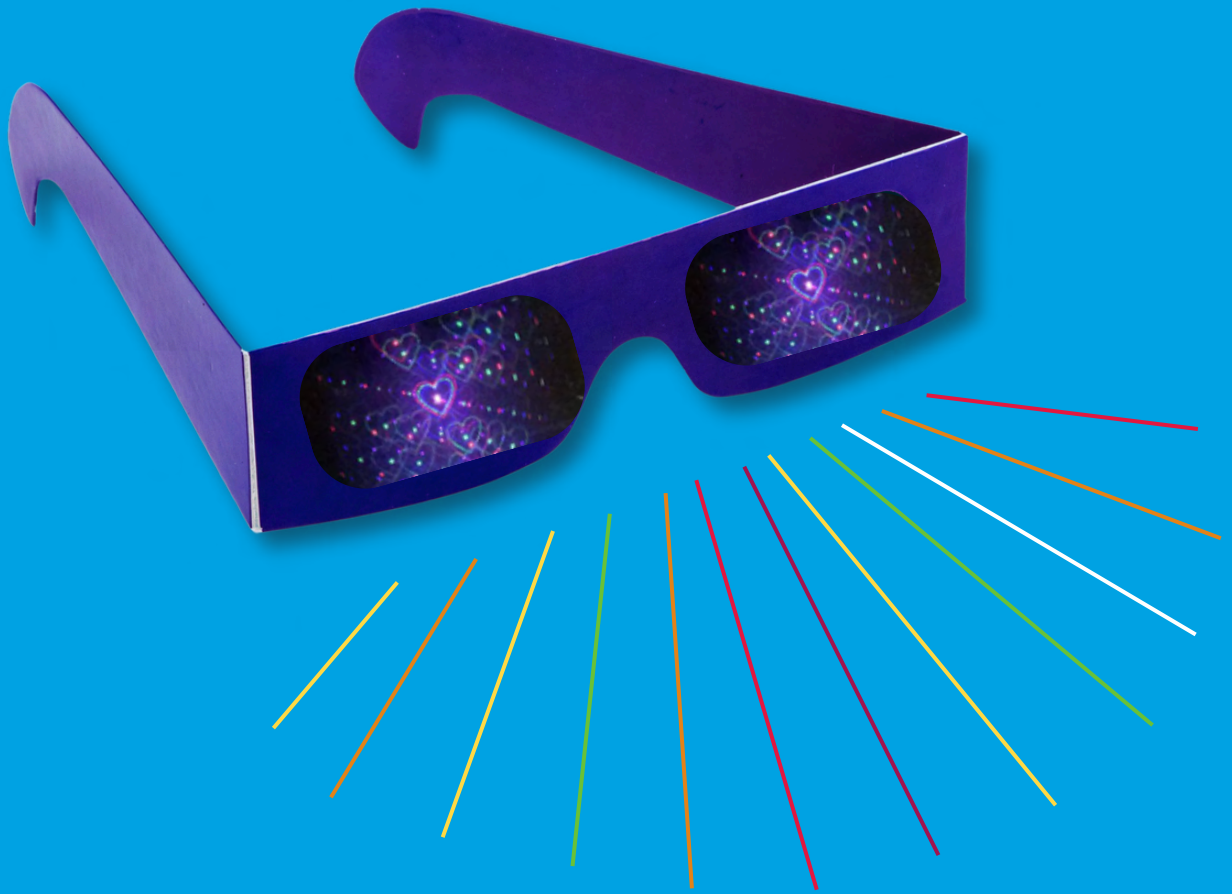


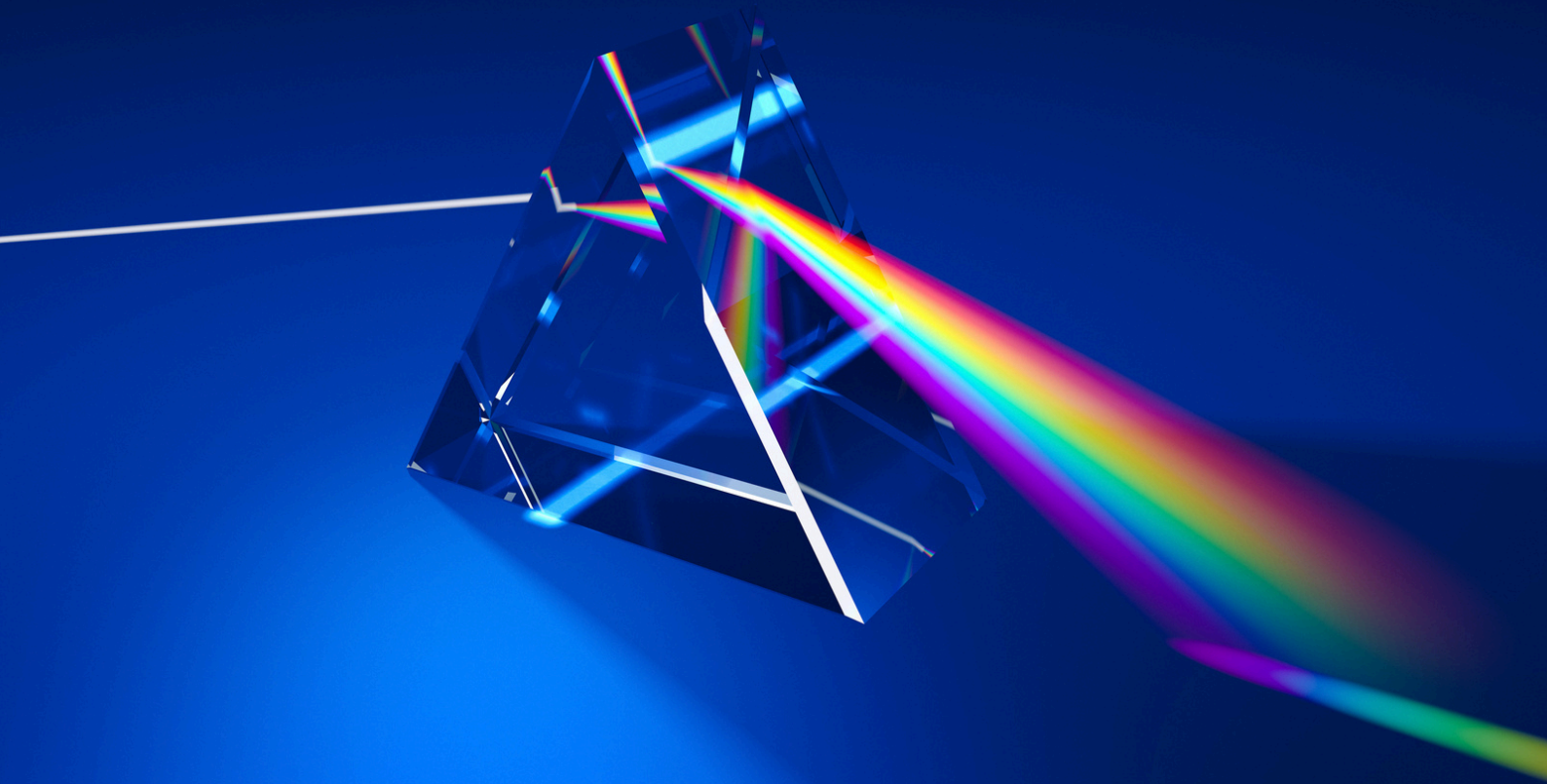


**Britannica
EDUCATION**



Understanding Light and Diffractions

Learning Resources and Activities aligned to
the Australian Curriculum



Background Information and Activity Overview

Helping students make sense of light and colour

We live in a world full of colour and light - but how often do students stop to think about why they see what they see?

Light doesn't always behave the way we expect. When it encounters tiny gaps or slits, it doesn't just keep moving in a straight line - it bends, splits, and spreads into colourful patterns. This activity pack introduces students to the concept of **light diffraction** in a way that is accessible, engaging, and connected to the world around them. Through direct observation and creative expression, students learn that light isn't just a straight beam - it can **bend, spread, and reveal hidden colours** when it passes through objects or tiny openings. It will challenge them to **observe and interpret the colours of light** using diffraction glasses.

Through guided observation, critical thinking, and creative drawing, students explore how light bends through diffraction and reflect on what this reveals about light's structure.

Understanding Light and Diffractions

Learning Outcomes

By the end of this activity, students will be able to:

- Describe diffraction as the bending of light through narrow openings.
- Distinguish diffraction from refraction and understand the role of wavelength.
- Observe how white light splits into constituent colours.
- Record scientific observations using sketches and written reflections.
- Connect wave behaviour to real-life examples in nature and technology.

Curriculum Connections

This lesson plan aligns with the **Australian Curriculum Version 9.0: Science**. Here's how it connects:

Strand	Sub-Strand	Year 5	Year 9
Science Understanding	Physical Sciences	AC9S5U03: Investigate how light from a source forms shadows and can be absorbed, reflected, and refracted.	AC9S9U04: Explore wave and particle models to describe energy transfer, including light.
Science Inquiry Skills	Questioning and Predicting	AC9S5I01: Pose investigable questions to identify patterns and test relationships.	AC9S9I01: Formulate questions or hypotheses that can be investigated scientifically.
	Planning and Conducting	AC9S5I02: Plan and conduct repeatable investigations to answer questions, including fair tests.	AC9S9I02: Plan, select, and use appropriate investigation methods to collect reliable data.
	Processing and Analysing Data and Information	AC9S5I04: Compare patterns in data with predictions when suggesting explanations.	AC9S9I04: Analyse patterns and trends in data, including describing relationships between variables.
	Evaluating	AC9S5I05: Reflect on the fairness of investigations and suggest improvements	AC9S9I05: Evaluate conclusions, identifying sources of uncertainty and possible alternative explanations.
	Communicating	AC9S5I06: Communicate ideas and findings using multimodal texts.	AC9S9I06: Communicate scientific ideas and information for a particular purpose.
Cross-Curriculum Priority: Sustainability	Understanding the principles of light and its interactions with materials can foster discussions on sustainable technologies, such as energy-efficient lighting and optical devices.		

Real-World Relevance

Diffraction isn't just a science experiment - it's happening around us all the time:

- Rainbows after a storm.
- Halos around the moon.
- The shimmering colours on a CD, bubble, or butterfly wing.
- Advanced technologies like spectroscopy, telescopes, fibre optics, and even security holograms.

By learning about diffraction, students gain insight into natural beauty, scientific discovery, and technology - all from a single beam of light.

The Big Idea

“Light is everywhere - but most of the time, we don't see its full story. Diffraction helps students unlock the colours and patterns hiding in plain sight.”



Why Use This Pack?

- ❑ **Student-Friendly:** Designed for students aged 9–15, the activities build from simple observation to deeper thinking. Instructions are visual, engaging, and scaffolded for success.
- ❑ **Curriculum-Aligned:** Supports science inquiry skills, understanding of wave behaviour, and real-world application. A great fit for physics, STEAM, and cross-disciplinary learning.
- ❑ **Hands-On and Creative:** Includes drawing, observation, and reflection—making space for both scientific accuracy and personal interpretation.
- ❑ **Minimal Prep:** All you need are diffraction glasses (sourced from Britannica), some light sources, and the included worksheet.
- ❑ **Helps Students Think Differently:** Diffraction shows students that light is not always what it seems. It gives them a new lens - literally - to view the world.

Whether you're teaching a core science concept or looking for a cross-curricular STEAM experience, this pack offers a **meaningful, memorable, and magical** way to explore the science of light.



What is light? 💡

Light is a type of energy that travels in waves - just like waves in the ocean!

We can see light when it comes from the sun or even a torch. Most of the time we see white light. But here's a secret: **white light is made up of lots of different colours** all mixed together.

You might know these colours already...

Red, Orange, Yellow, Green, Blue, Indigo, Violet

(Yes, that's a rainbow!)

Teacher Explicit Instruction - PRIMARY

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Put on Your Diffraction Glasses - What Can You Observe?

- Look at different types of lights (white LEDs, torches, lamps).
- Describe the colours you see.
- Move or tilt their heads - does the pattern change?
- Look at the pattern through the diffraction glasses.

Teacher Explicit Instruction - SECONDARY

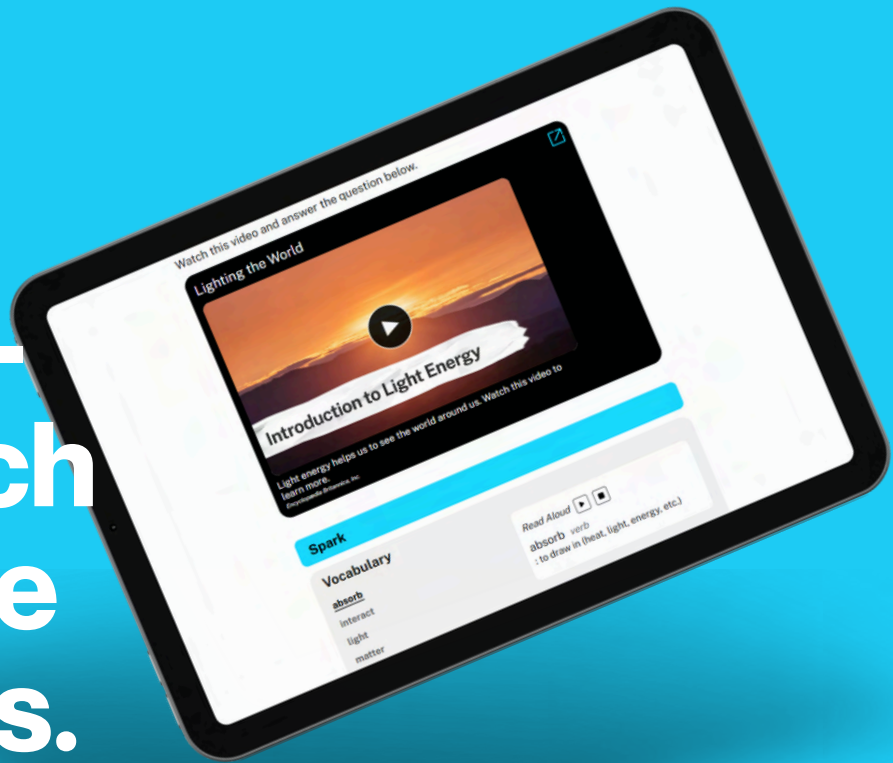
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