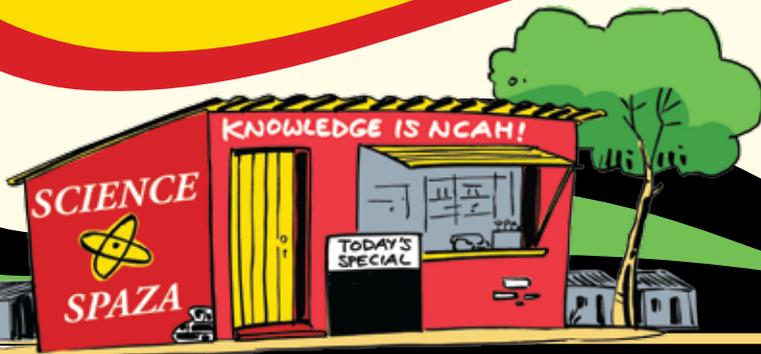




Knowledge is Ncah!



LIGHT

DO YOU KNOW
WHAT LIGHT IS?
HAVE YOU EVER
WONDERED HOW
LIGHT ENABLES
YOU TO SEE?



THIS WORKSHEET
WILL COVER THE
FOLLOWING:

1. Light
2. Properties of light
3. How light behaves (Demonstration)
4. Nanotechnology



Light is a form of energy that we can detect with our eyes. When it is dark we cannot see things because there is no light coming into our eyes.

PROPERTIES OF LIGHT

Which of these facts do you know?
Match each one with a speech bubble
and share your ideas about it.

- Light can bounce.
- Light can bend.
- Light can travel through some substances (gases, liquids and solids), but not through others.
- Light can travel through space.
- The speed of light is the fastest speed there is.



YOU CAN SEE
REFLECTIONS ON
THE SURFACE
OF WATER.

MANY PEOPLE
WEAR GLASSES
TO HELP THEM
SEE MORE
CLEARLY.

LIGHT FROM
THE MOON TAKES
ABOUT 1 SECOND
TO REACH THE
EARTH.

YOU CAN
SEE STARS AT
NIGHT.

YOU CAN
SEE THROUGH
GLASS, BUT NOT
THROUGH A
BRICK WALL.



DEMONSTRATION: How light behaves

WHAT YOU WILL NEED:

A TORCH,
A LARGE PLASTIC BOTTLE,
A BUCKET OR A SINK,
AND WATER.



Hold your hand in the stream of water. What do you notice?

WHAT TO DO:



1

Make a hole in the side of the plastic bottle, near the bottom, about 10mm in diameter.



2

Close the hole with your finger and fill the plastic bottle with water.



3

Position the hole to face the bucket or sink, and ask a friend to shine the torch through the bottle, aiming at the hole.



4

Remove your finger from the hole.

WHAT IS HAPPENING?

Why does the bent stream of water light up?

Why is there a sharp spot of light where the stream of water hits your hand?

Light can travel through water. As it travels along the stream coming out of the hole, most of the light is reflected along the inside of the water stream, until it shines against your hand.

Some of the light escapes through the surface of the water and comes to your eyes. That is why you can see the stream light up.

NANOTECHNOLOGY – FIBRE OPTICS



These properties of light are used in fibre optics to transmit information. An optical fibre can transmit light around bends, just like water.

An optical fibre is a flexible, transparent fibre (made of plastic or glass) which lets very

little light escape. An ordinary optical fibre is about as thick as hair from your head.

If we make the optical fibres very, very thin the light can bend around much tighter corners and we will get much better transmission of light – and hence, faster information. Nanotechnologists have created super-thin fibres (nanofibres) that are just 1 millionth of a millimetre thick (1 nanometre) for super-fast information that we use in cell phones and computers.

CURRICULUM LINKS:



- **Knowledge area**
 - Waves, Sound and Light
- **Themes** – Geometrical Optics
- **Core Concepts**
 - Light, total internal reflection, fibreoptics in telecommunications

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