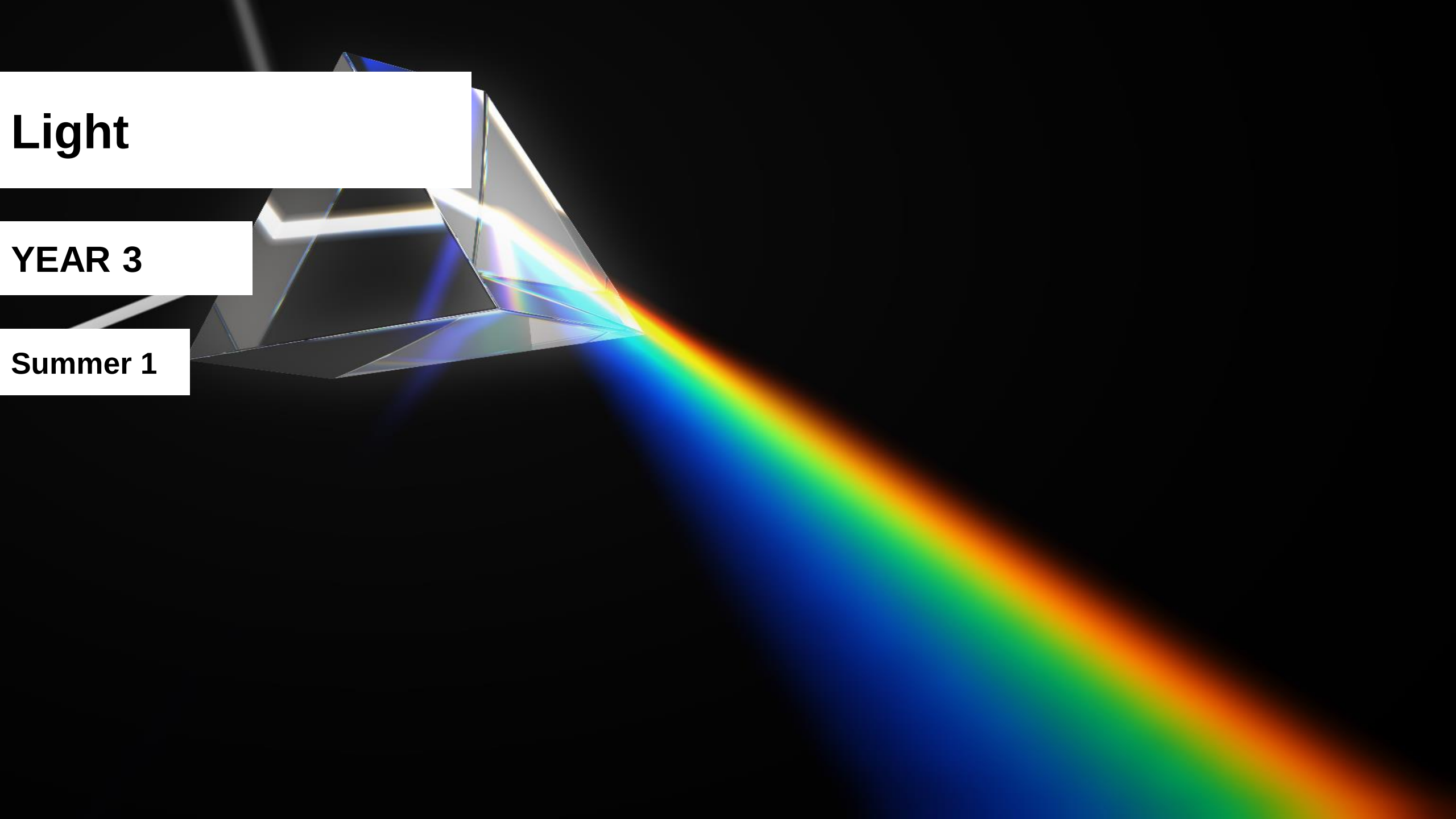
Light

YEAR 3

Summer 1



LESSON 1

What is light and where does it come from?

Do Now – Retrieval practice: previous units

1. **Match the rock type to how it is made:**

Igneous	- Formed when heat or pressure changes igneous or sedimentary rock
Metamorphic	- Formed when magma or lava cools and solidifies
Sedimentary	- Formed when pressure from layers of sediment causes the sediment to compact and cement.

1. **Say whether each of the following are solid, liquid or gas?**
   a) I can be compressed and I fill whichever container I am in. What am I?
   _____
   b) I am not compressible and I have a fixed shape. What am I?
   _____
   c) I take the shape of the bottom of the container I am in. What am I?
   _____

How many things can you think of that give off light?

- _____
- _____
- _____
- _____

Read the following passage about light

Light is form of energy that can be passed from one object to another across space. Objects that give off light are called **sources** of light or can be described as being **luminous**. Examples include light bulbs, fire and stars like our Sun. Each of these objects produce light which moves outwards from the objects in a straight line.

What are sources of light?

_____

_____

Which word means something that gives off light?

_____

Although light can only move in a straight line, it can bounce off objects that it comes into contact with (we call this **reflection**). Light that bounces off objects around us enable us to see them (such as the page you are currently reading from!).

Sometimes if a lot of light reflects from an object, it can look like the object is luminous but this is not the case. A good example of this is the moon – although the moon can be very bright and it seems as though the moon is giving off light, it is actually only reflecting light from the Sun.

Why is the moon very bright if it is not giving off light?

_____

_____

When there is very little or no light somewhere, we describe that place as being **dark**. Darkness is simply the absence of light. We can have different level of light to go from complete darkness (with no light at all) to very bright light that we might experience on a very sunny day in summer. A shadow is created when light is blocked across an area to create a patch of darkness in an area that is otherwise light.

What is darkness?

How is a shadow created?

The amount of light that is present in a certain area can be found by using a **light meter** and the light level is measured in **lux**. Look at the table below to see levels of light on different days:

Type of day	*Level of ligh*
Sunny day	10,000 Lux
Cloudy day	1,000 Lux
Twilight	100 Lux
Moonlight	1 Lux

Which instrument is used to measure the level of light present?

Below is a list of light sources. Can you put them in order of when they first existed?

1	The sun is formed
	First fireworks are used to light up the night sky in China
	Humans make fire for the first time
	First house is lit with gas lamps
	The laser is invented
	First candles are made and used by the Romans
	First electric light bulb is designed by Joseph Swan

Using the dates on the board draw a timeline showing when each light source first existed.

Complete the practical to investigate light and darkness through shadows

Before you begin, define the following words:

- A **transparent** objects is one that _____
- A **translucent** object is one that _____
- An **opaque** object is one that _____

Method:

1) Collect a perspex (see through) object from your teacher
2) Cut a shape of your choice out of paper
3) Cut a different shape of your choice from cardboard
4) Set up a lamp (or torch) so that it is switched on, facing downwards onto the table (WARNING – do not touch the area where the bulb is as this will get hot)
5) Hold each object in the air between the table and the lamp and observe what happens
6) Move each object closer and further away from the lamp and oberve what happens
7) Turn each object on its side and observe what happens.

Fill in the results below:

Object	*Transparent/translucent/opaque?*	*Why do you think this?*
Perspex		
Paper		
Cardboard		

Object	*What happened when you moved it closer to the lamp?*	*What happened when you moved it further away from the lamp?*
Perspex		
Paper		
Cardboard		

For each of the following uses, state what kind of material would be best (transparent, translucent or opaque) and why:

- Windows in a house should be _____ because _____

  _____

- The walls of a house should be _____ because _____

  _____

- Glasses to help someone see better should be _____ because

  _____

- Sunglasses to help someone see better should be _____ because

  _____

The sky can can transparent, translucent OR opaque. Discuss how this can be true and how we can tell.

Return to page 3 to complete the learning review.