Year 3 Science –Light

Vocabulary

Light source	An object that emits light around itself.	
Opaque	Not able to see through (not transparent).	
Translucent	A material allowing light, but not detailed shapes, to pass through (semi-transparent).	
Transparent	A material allowing light to pass through so that objects behind can be seen clearly.	
Shadows	An area of darkness produced by an object coming between rays of light and a surface.	
Darkness	The absence of light in a place.	
Reflection	The throwing back of light, heat or sound by a body or surface without absorbing it.	
Light beam	A projection of light energy radiating from a light source.	

Making Ourselves Bright

When we are out in the dark, we must remember to wear light clothing, reflective clothing or carry a light source with us so that we can be seen by others.

Knowledge

We need light to see things. Darkness means there is **no light.** Light travels from the light source into our eyes, allowing us to see.

Light always travels in a straight line

Light sources

- Light sources can be natural such as the sun or flames.
- Light sources can be man made such as light bulbs or tv screens
- Light sources will often give off heat as well as light.
- The moon **is not** a light source.

Shadows

- Shadows are formed when light rays are stopped by an object.
- The opaquer an object is, the darker its shadow will be.
- Shadows will form a similar shape to eh object stopping the light ray.
- When you move the object closer to the light you will increase the size of the shadow.
- Shadows created by the sun will change direction throughout the day.

Reflected light

- Light is reflected when it travels from a light source and 'bounces' off an object.
- Dull materials will not reflect light very well whereas shiny objects reflect light extremely well.
- Mirrors are made from shiny objects so that we can reflect light off of them and see around us.
- Mirrors are used to make telescopes, microscopes, car mirrors to see behind us and curved mirrors for safety in shops and on roads.

Light safety

You must never look directly into a light source as this could damage your eyes.

Quizzing

Ask your partner the questions below. Can they find the correct answer on the right-hand side?

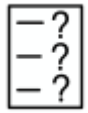
We need light to see. True or False?	sun, flame, fire, candle, etc
Materials that allow no light through are called _____ materials.	transparent
Mirrors allow us to see our reflection. What else do they help us see?	True
Which type of material would create faint shadows?	Shiny
Which surfaces does light reflect best off? Shiny, dull, bumpy	smaller
The further away from the light source an object is the **smaller / bigger** the shadow gets	opaque
Name two natural light sources	heat
Other than light, what else do light sources give off?	False
Light sources can't damage our eyes. True or False?	around corners, behind us, far away etc.

Quiz at home

Ask your adult to look at the KO.

Quiz them using the vocabulary and knowledge section or the quiz questions.

- Can they beat your score?
- Can they score more than 5? 10?
- Compete with your adult in the elimination quiz. Take it in turn to ask each other questions. The first person to get a question wrong is out.



BIG Questions

How do we know light is there if we can't always see where it comes from?

How does light help us understand what objects are made of?

Why can we see our reflection in a mirror but not in everything else?

How do animals that live in very dark places find their way if they can't rely on light?

If light travels in straight lines, how does it seem to "bounce" around the room?

Beat the adult

Your teacher can give **10 facts** in **1 minute** about this topic.

How many can you give to your partner?

Word scramble

Unscramble the key vocabulary from this topic below. You can create your own at the bottom

rogech tlius	
pqaeuo	
cstlnaurent	
rntspnera	
swodahs	
sanskder	
fnceioelrt	
gaihmtelb	

Creative Tasks

1. Design your own quiz using the information in the knowledge organiser.
2. Create a short presentation or poster to teach another year 3 class how to stay safe during the dark.
3. Create shadows using different light sources (candle, torch, sun etc). Take some pictures if you can and write down your observations about the shadows.
   - What do you notice about its size? Darkness? Movement etc.

Challenge

A year 3 class is preparing for a school treasure hunt. The treasure map is inside a box in the classroom. When the children open the box, they discover that the map is very faint and hard to see.

Next to the box are three objects:

- A torch which cannot be moved.
- A shiny metal tray
- A piece of black cloth

The classroom blinds are closed, so the room is quite dark. The note says "Use what you know about light to help make the treasure map easier to see. You may use the objects next to the box. Explain what the problem is and how you can solve it."

Enquiry

predictions

Amelia has a new pet hamster. Her hamster is nocturnal so sleeps all day but is finding it difficult because it is too bright. Amelia wants to find some material that she can make a curtain out of to wrap around her hamster's cage. She needs you to find out which material is the best to use.

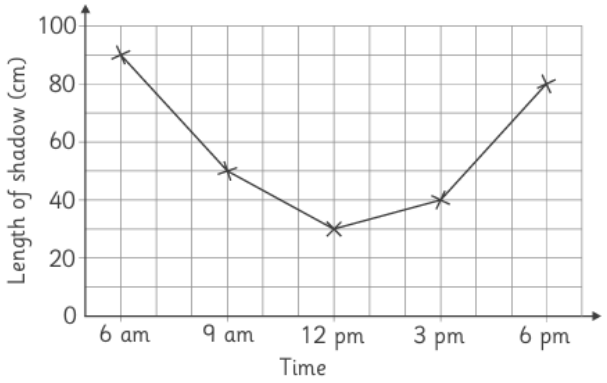
She tests bubble wrap, black cloth, tin foil, cotton wool and paper.

Which material do you think will be best at blocking the light? Write your prediction below

I predict _____

Using graphs

Year 3 measure the shadow that a wooden post makes at different times during the day. There results are shown on this line graph.



Use the graph to complete the following sentences.

1. At 9am, the shadow was _____ cm long.
2. At 3pm, the shadow was _____ cm long.

Circle the correct word in each of the following sentences.

1. Between 6am and 12pm the shadow gets **shorter / longer**
2. Between 12pm and 6pm the shadow gets **shorter / longer**

Diagrams

Year 3 shine their torches on a vase and it makes a shadow on the screen behind.

When they move the torch further away, the shadow gets smaller.

Draw the **beam of light** from each torch in the diagrams below, and **the shadow** it will create to show the different results year 3 will get.