



Year 3
Science
w/c 29.06.20



Overview

This half of term our theme for Science is LIGHT. You will be learning about different sources of light, the dangers of looking directly at the sun, how shadows are created and how they can change and finally conducting your own experiment.

We hope you will enjoy it all.



Science – Lesson 4 – Exploring shadows

LEARNING INTENTION:

- To recognise that shadows are formed when the light from a light source is blocked by a solid object.
- To understand how shadows change when the light source is at different distances from the object.

SUCCESS CRITERIA:

- I can explain how light travels.
- I know that shadows are formed because the light source is blocked.
- I can explore what happens to a shadow when I move an opaque object closer and further away from a light source.



Science – Lesson 4 – Exploring shadows

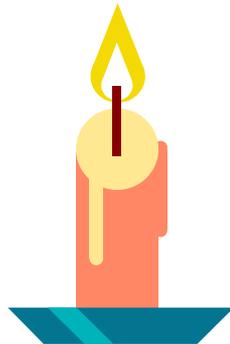
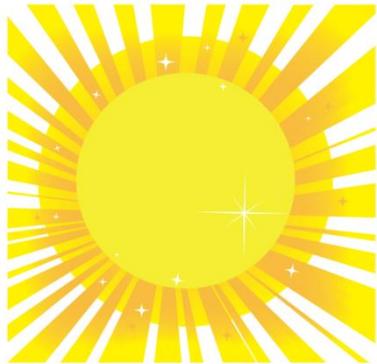
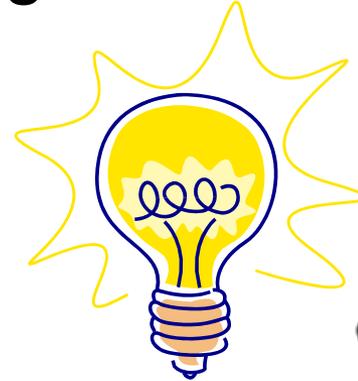
- Today we are going to be looking what shadows are, how they are formed and how you can change the size of a shadow.
- Can you remember some of the different **sources of light** we looked at in Lesson 1?
- Write a list of them on your whiteboard/in your book.

(Remember: a source of light is an object which gives out light)



Sources of light recap

Objects which give out light are called **sources of light.**



Which is the odd one out?

Which one is **not** a source of light?
(HINT: which one does not give out light but only reflects it?)



Making a shadow puppet 1

Today we are going to make shadow puppets and explore shadows that they make.

You will need:

- A Gruffalo character
- Some black card the same size as your Gruffalo character
- A large sheet of white paper
- Tape
- A lolly stick (or a pencil)
- A torch (LIGHT SOURCE)





Making a shadow puppet 2

- Cut out a Gruffalo character. Stick it onto some black card and cut it out again.
- Stick your character onto the top of a lolly stick or a pencil. You have now made a shadow puppet!
- Stick the large piece of white paper up on a wall.
- Turn out the lights and close the blinds or curtains.
- Turn on your torch, place your shadow puppet between the light from the torch and the white paper. What happens?





Shadow questions to investigate and think about

1. How are shadows formed? (*Remember: light always travels in a straight line.*)
2. What shape is the shadow?
3. What colour is the shadow?
4. How can you change the **SIZE** of a shadow?
5. How can you make the shadow **SMALLER**?
6. How can you make the shadow **BIGGER**?



Shadow questions (answers)

1. How are shadows formed? The light travels from the torch in a **straight line**. It shines on the puppet which **blocks** the light from reaching the paper. The puppet does not let light through because it is **opaque**.
2. What shape is the shadow? It is the same shape as the **puppet**.
3. What colour is the shadow? **Black (or a dark grey) - no light or colour is let through.**
4. How can you change the **SIZE** of a shadow? **Move the puppet closer or further away from the torch.**
5. How can you make the shadow **SMALLER**? **Move the torch further away from the puppet.**
6. How can you make the shadow **BIGGER**? **Move the torch closer to the puppet.**



Experiment

- Carry out an experiment to find out the different sizes of your shadow when you move the light source (your torch) different distances from the puppet.
- You will need a ruler or a tape measure for this bit.
- Record your findings on the worksheet and complete the conclusion sentences. *There is also a challenge sheet if you have time.*

LO: To recognise that shadows are formed when the light from a light source is blocked by a solid object
To understand how shadows change when the light source is at different distances from the object
SC: I know that shadows are formed because the light source is blocked.
I know that the size of a shadow changes depending how close to the light source it is.

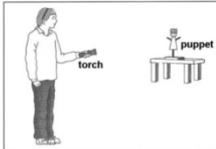
SHADOWS

Today I made a puppet and used a light source (torch) to shine onto it. I learned that when the puppet blocked the light, it created a shadow. I then changed the distance the puppet was from the light source and recorded my results.

Distance from light source	Size of shadow

Conclusion:
The shadow was created because the puppet _____ the light.
The shadow got bigger when _____.
The shadow got smaller when _____.

Challenge



2 marks

(c) When the light shines on the puppet, Emma can see a shadow of the puppet on the wall behind.

Why does a shadow form behind the puppet when the light shines on it?

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Plenary

Next week we will be looking at how our shadows change during the day.

When you are outside over the next few days (and the sun is shining), look at your shadow on the ground and see if you notice anything different about it at different times of the day.