National Curriculum Supplementary material

Science activity 3

Light & Sound
Physical processes

Information for teacher

National Curriculum references:

Science Key Stage 2 - Programmes of Study

1. Systematic Enquiry

a ask questions related to their work in science;
b use focused exploration and investigation to acquire scientific knowledge, understanding and skills;
c use both first-hand experience and secondary sources to obtain information;

3. The nature of scientific ideas

a obtain evidence to test scientific ideas in a variety of ways;
b recognise that science provides explanations for many phenomena.

Experimental and Investigative Science

1. Planning experimental work

a to turn ideas suggested to them, and their own ideas, into a form that can be investigated;
b that making predictions can be useful when planning what to do;
d that changing one factor and observing or measuring the effect, whilst keeping other factors the same,allows a fair test or comparison to be made;

2. Obtaining evidence

a to use simple apparatus and equipment correctly;

3. Considering evidence

a to use tables, bar charts and line graphs to present results;
b to make comparisons and to identify trends or patterns in results;
c to use results to draw conclusions;
d to indicate whether the evidence collected supports any prediction made;
e to try to explain conclusions in terms of scientific knowledge and understanding

4. Communication

a use appropriate scientific vocabulary to describe and explain the behaviour of living things, materials and processes;

5. Health and safety

a recognise and assess the hazards and risks to themselves and to others when working with living things and materials;

1. Grouping and classifying materials

a to compare everyday materials, *eg wood, rock, iron, aluminium, paper, polythene*, on the basis of their properties, including hardness, strength, flexibility and magnetic behaviour, and to relate these properties to everyday uses of the materials

3. Light and sound

everyday effects of light

a that light travels from a source;
b that light cannot pass through some materials, and that this leads to the formation of shadows;
c that light is reflected from surfaces, *eg mirrors, polished metals*;

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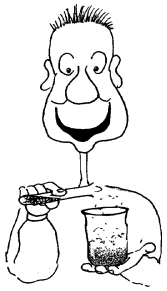
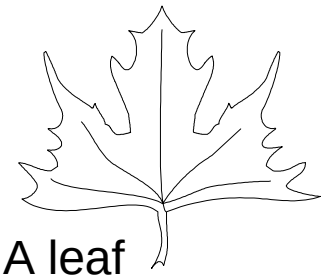
Instructions for you to follow

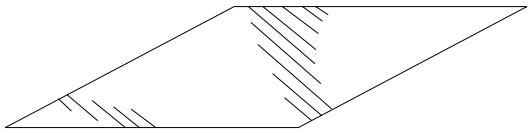


When a light shines on something, it makes a shadow. Let's investigate shadows.

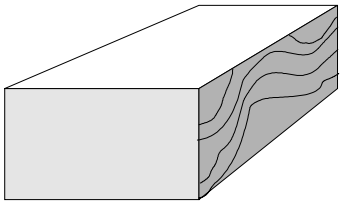
You will need to collect or make:



A leaf



A piece of glass



A block of wood

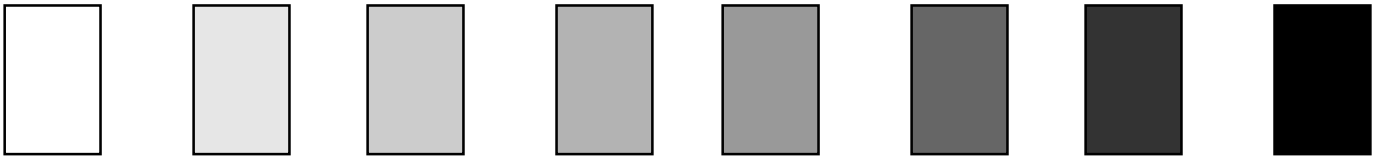
Coloured plastic

Tracing paper

White paper

Place the white paper in the sunshine. If it is not sunny ask your teacher if you may use the light bulb holder.

Place one object on the white paper and look carefully at its shadow. Look at the shades below and decide which is the closest shade to the object's shadow.



1 2 3 4 5 6 7 8

Make a record of your observations.

WARNING - do not look straight into the sun!

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Questions to think about

Once the experiment has been set up, consider the following:-

1) Make a record of your observations.

2) Which object makes the darkest shadow?

3) Which object hardly makes any shadow at all?

4) Do any of the objects make coloured shadows?
   If so, which ones?

5) What is a shadow? How is it made?

6) Why must you not look straight at the sun?

7) What difference do you think it would make if you had been further away from the light source, or if it had been a different time of the day?

8) Draw a diagram of your experiment and label the shadow clearly.

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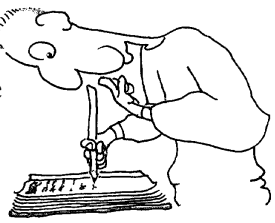


Complete the sheet 1 of 2

name..... class..... date.....

1) Here is a record of my observations.

leaf

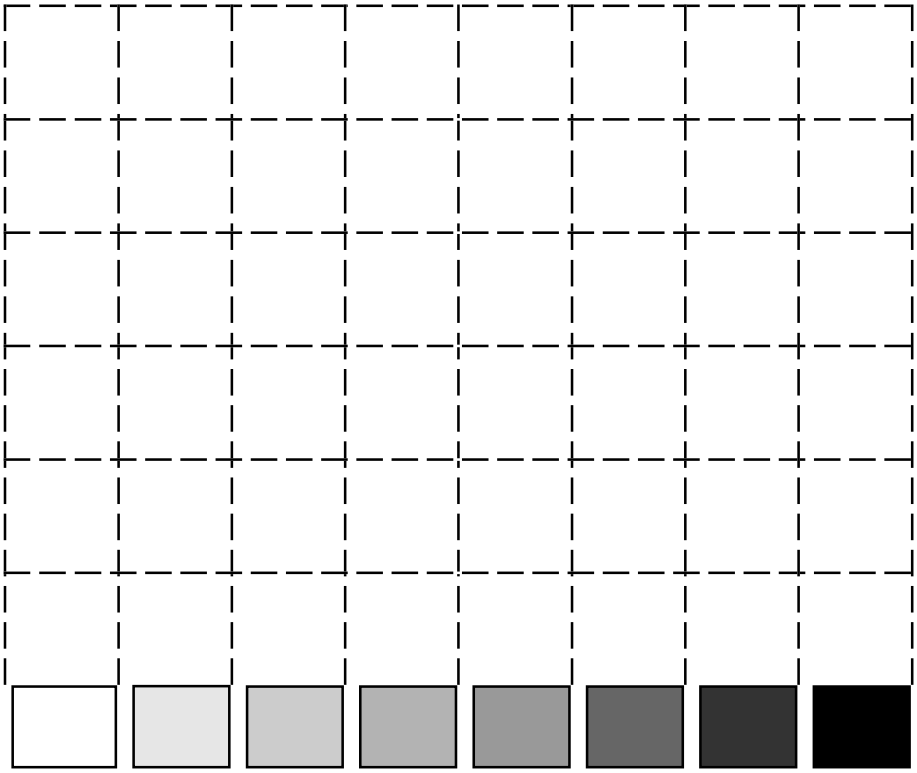
glass

wood

coloured plastic

tracing paper

white paper



2) Which object makes the darkest shadow?

.....

3) Which object hardly makes any shadow at all?

.....

4) Do any of the objects make coloured shadows? If so, which ones?

.....

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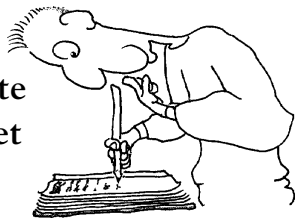
Complete the sheet 2 of 2



name..... class..... date.....

5) A shadow is....

.....

.....

6) This is why I must not look straight at the sun.

.....

.....

7) These are the differences I think it would make if I had been further away from the light source.

.....

.....

8) Here is my diagram.