

# Shadow survey

## Learning intentions

Pupils will know that if their shadow is shorter than their height the sun is at its most dangerous.

## National Curriculum links

Key stage	Curriculum area	Strands: Pupils should be taught...
1	Maths	Ma3 4c: to estimate and measure objects; choose and use simple measuring instruments; reading and interpreting numbers and scales to the nearest labelled division
2	Maths	Ma3 4b: to recognise that measurement is approximate; choose and use suitable measuring instruments for a task; interpret numbers and read scales with increasing accuracy; record measurements using decimal notation
3	PSHE and Citizenship	3a: how to make simple choices that improve their health and well-being
4	PSHE and Citizenship	3e: to recognise the different risks in different situations and then decide how to behave responsibly
5	Science	Sc1 2f: to make and record observations and measurements Sc1 2g: to communicate what happened in a variety of ways
6	Science	Sc1 2f: to make systematic observations and measurements, including the use of ICT for data logging

## Organisation

Whole class introduction.

Class then splits into pairs to take the measurements.

Finally, all the measurements are gathered together and used to complete the class survey.

## Resources

Metre rules; measuring tape; table for results (if you don't have any metre rules then use another tall object or you could even make a tower out of cardboard boxes)

## Key vocabulary

Shade, burn, shadow, table, measure

## Introduction

Explain to the class that when their shadow is shorter than their height the sun is at its most dangerous. Help the pupils to realise that the length of their shadow will depend upon the position of the sun in the sky. Shadows will be shorter between 11am and 3pm. Use a tape measure and a pupil to show what this means.

Show the class the table. Say that you want to know which areas of the school are good to be in during playtimes. To do this the class is going to record the shadow lengths of the metre rules on sunny days.

## Activity

As a class, tour the school. Decide where pupils will take measurements. Ensure all the pupils know how to read the tape measure and where to place the metre rule. Demonstrate how to measure a shadow with one child holding the rule and one child doing the measuring.

Some areas may be in the sun at different times of day. It is important that children record which parts of the school are in the shade and when. When an area is in a shade the children will have no shadows. Encourage the children to predict which will be the shady areas and to say why.

Over a sunny week invite pairs of children to take the measurements. Ensure that the children wear sunhats whilst doing the measuring.

### **A note on class supervision:**

At Key Stage 1 an adult should accompany the pair carrying out the measuring.

At Key Stage 2 have mixed ability pairs.

## Plenary

Look at the results as a class. Were there any areas that always had shade? Were there any areas where it would always be necessary to wear sun protection? Did the lengths of the shadows vary over a day/week?

Discuss how you decide where to play at break time. Also discuss why PE lessons are held in certain places. Having done this exercise, when does the class think outdoor PE should be held and where? In practice, what might prevent this from happening?

## Extension

Once the class have completed the investigation, make maps of the school at different times of day. Colour in areas that were in the shade and display the maps around the school.

