

Shadow Drawing - Light and Shadow Experiment

active time: 45 minutes

total time: 45 minutes

Materials

- several toys
- paper
- marker or pencil

Tools

- sunglasses
- sunscreen
- adult supervision

Instructions

1. Choose a time to do this experiment. Do this in early morning or late afternoon.
2. Put on sunscreen and wear sunglasses.
3. Place the toys on the paper.
4. Using the pencil, trace the outline of the shadows on the paper.

The steps above are all you need to try out this fun shadow activity. But, if you'd like to learn more about shadows and light, here are a few extra notes and one more experiment for you to try!

Guiding Questions:

Does the shadow stay the same? How do they change with time?

Are the shadows larger, the same size or smaller than the toys

When you rotate the toys, what happens to the shadows?

Answers:

Light travels in a straight line (as far as our eyes can tell) until it hits an object. When an object is placed in the light's path, the part of the light that reaches the object will be blocked while the rest of the light keeps going. The blocked part becomes a shadow on another object (in this case, the paper).

Mini-Experiment:

Here is a mini-experiment to prove that light really travels in a straight line.

Try the following with a *light source* such as a lamp (or other mild artificial lights), *NOT with the sun*.

Warning: Looking at the sun directly can permanently damage your eyes.

Stand in the shadow of a large object such as a statue trying to look back towards the light source.

You will not see a light source behind it.

But if you move a little so that you can just see the light, you can actually draw a straight line from your eye, past the edge of the statute, and on to the light.

EXPLANATION OF THE MINI-EXPERIMENT:

In this light and shadow experiment, the shadows look different when you move the farm animal toys because the outline edges of the toys change as they move.

If you take your time to do this project, you will find that the shadow also changes slightly with time.

This is because the sun's position changes across time.