

Light: Bouncing Light

What to do in advance: You need a torch, a mirror (e.g. ~ 20 x 15 cm) and a tennis ball

What to do with pupils: Explain that you are going to bounce the tennis ball on the floor in a vertical position. Ask pupils to point in the direction that they think the ball will bounce back, then carry out the action. Now repeat, but bounce the ball on the floor at an angle from your right. Repeat again, but bounce the ball at an angle from your left.

Repeat the whole sequence again, but this time use a torch and a mirror, and as before ask the pupils to predict by pointing to where they expect to see the torchlight. First shine the light vertically down on to the mirror, then shine from the right and finally from the left.

Questions to stimulate pupils' thinking:

- Why were the pupils able to predict what would happen?
- Why did the light shining on a mirror behave in a similar way to a ball bouncing on the flat floor?
- What is special about a mirror?

The science behind it

Light travels in straight lines and when it reaches the smooth surface of the mirror, it reflects off the surface of the mirror rather like a ball bouncing off a flat surface. If light is shone vertically on to a mirror it will be reflected back the *same* way it came. If light is shone on to a mirror at an angle it will be reflected back at the *same* angle, but in the opposite direction to where it came. It is because a mirror is a very smooth surface that the light reflects off it in a predictable way and such that you can see the beam still focused as a spot of light.

