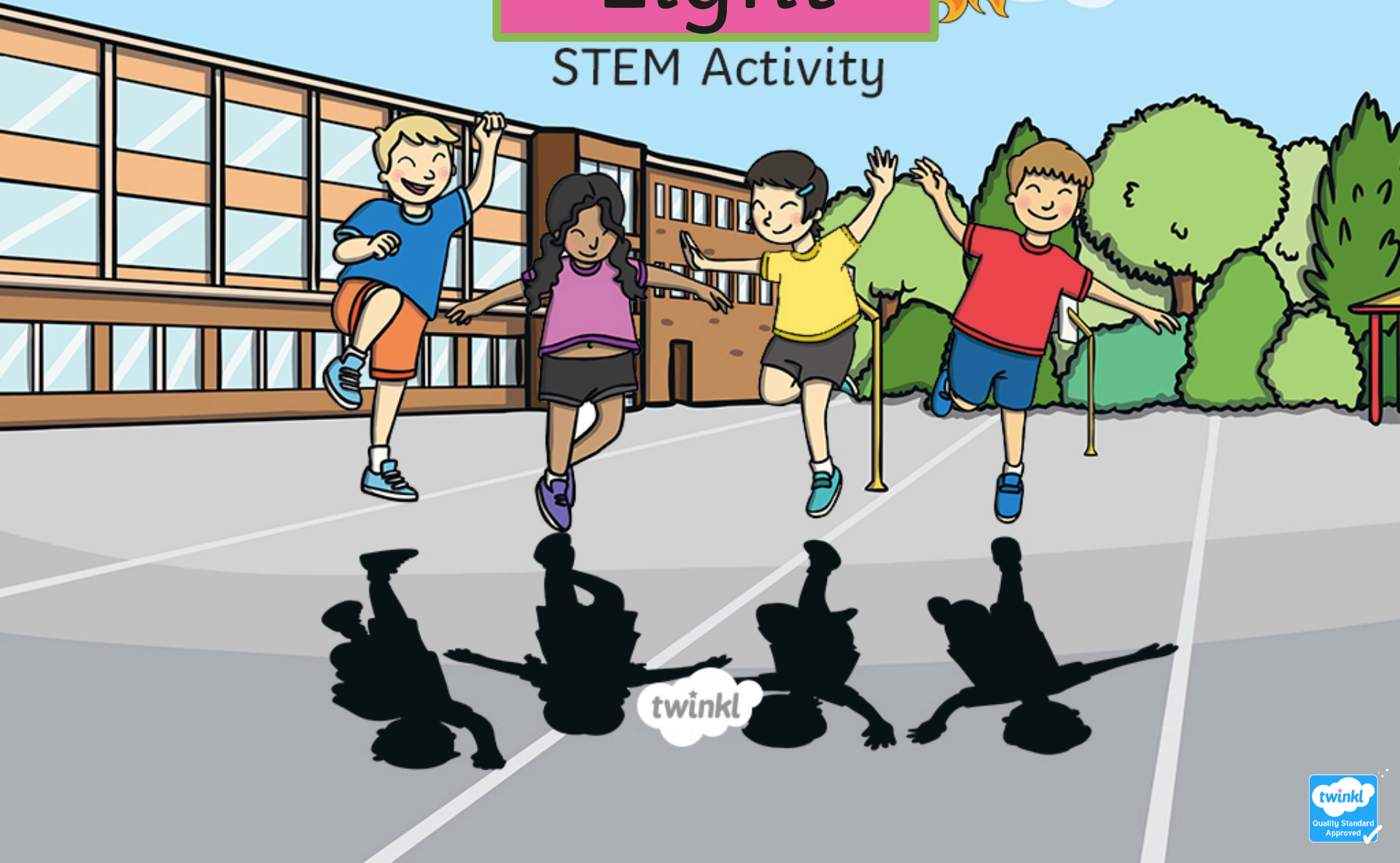


Light

STEM Activity



twinkl

A Riddle to Get You Thinking...

I follow you around in the light but I'll say goodbye to you at the night.

What am I?

That's right, I'm your shadow

When there is a light source you will nearly always have a shadow somewhere close by.

A shadow is made when an object blocks light.

The object must not be see through or the light will pass through and you will end up with no shadow.



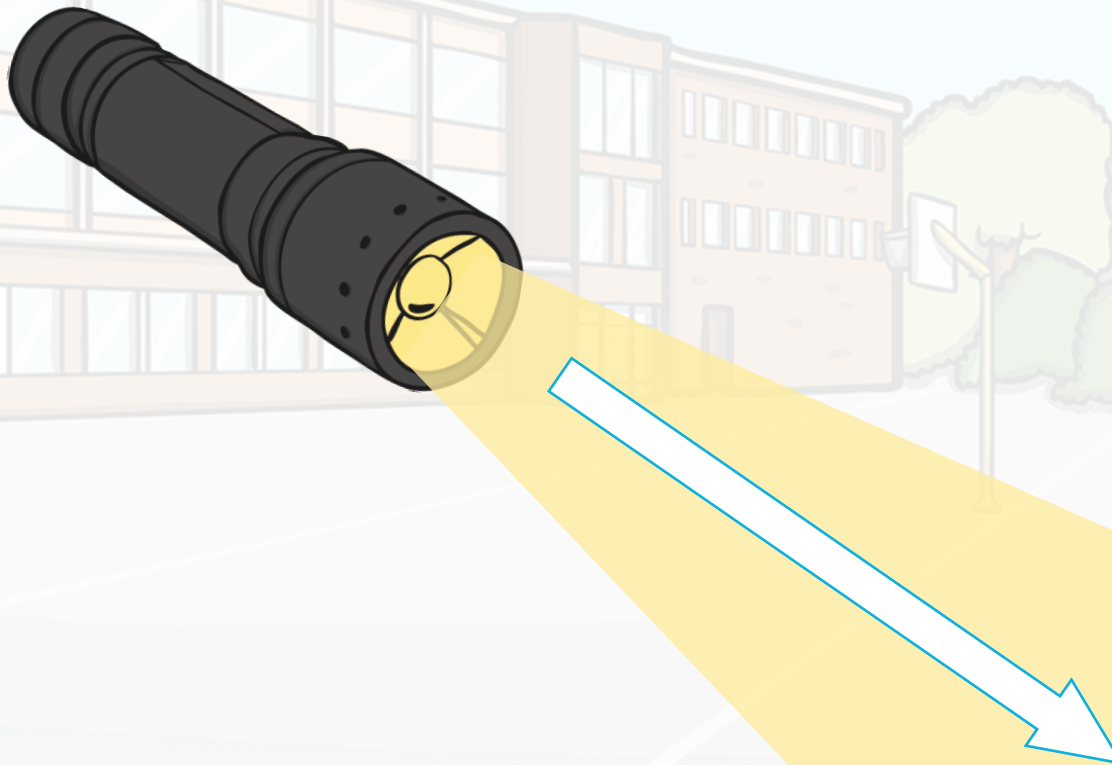
What Is a Shadow?

A shadow is formed when an object does not allow the light to pass through it.



What Direction Does Light Travel?

Light travels in straight lines.

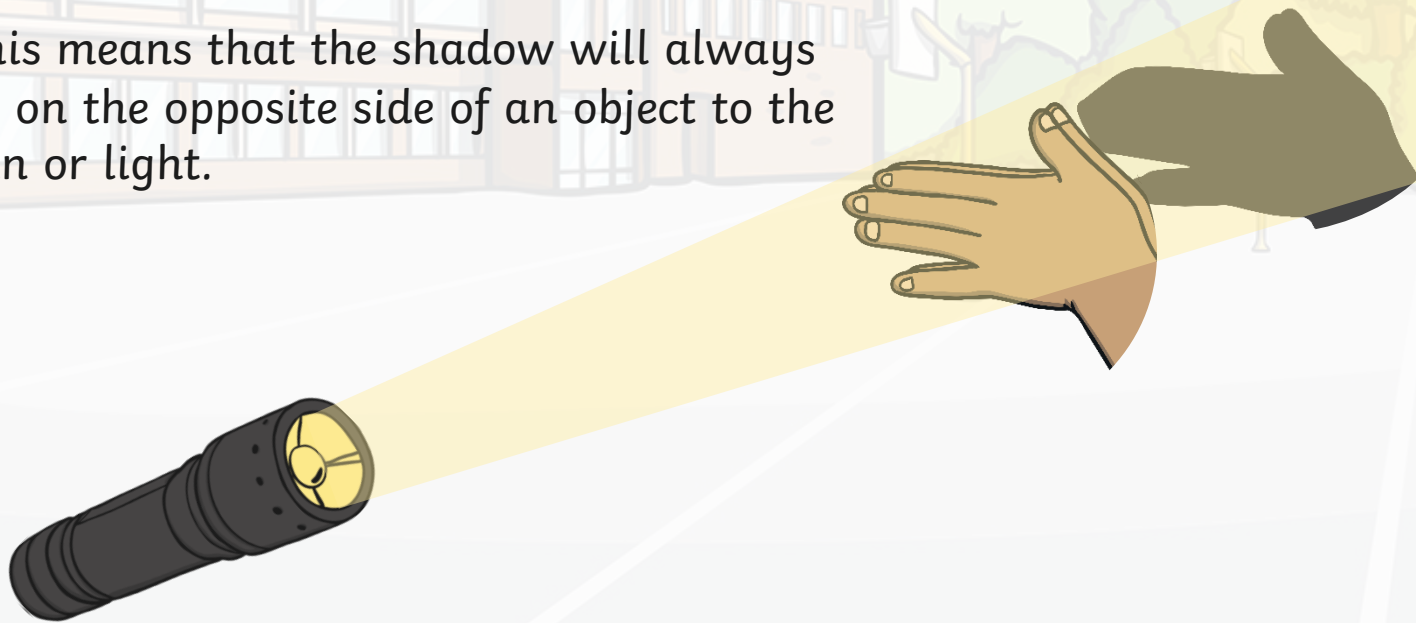


How Are Shadows Made?

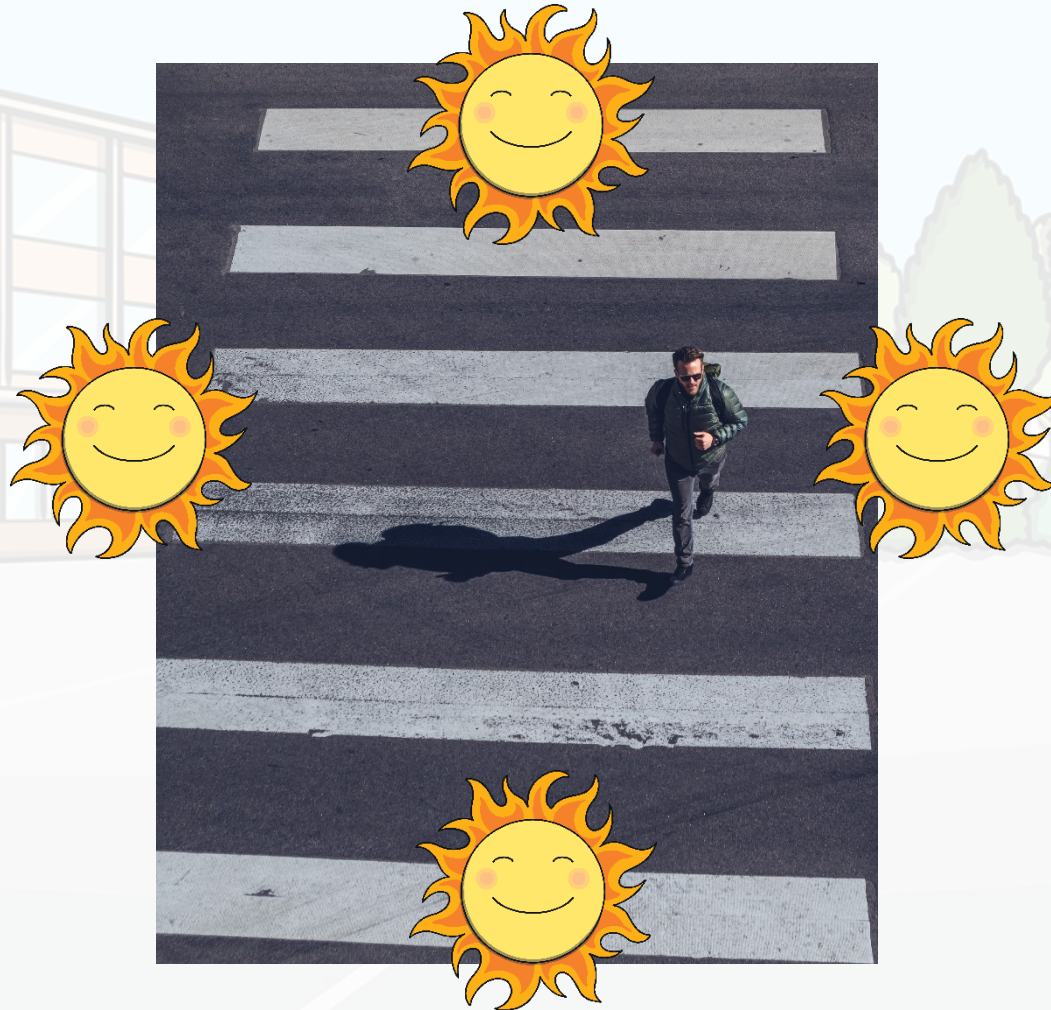
Shadows are made when there is an object blocking the light from hitting the surface.

The object needs to be a solid object. If it is clear then the sun will pass through it, whereas a solid object will block it.

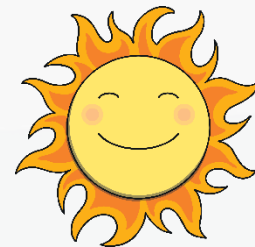
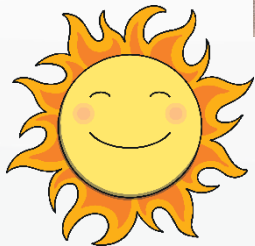
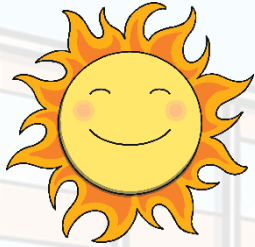
This means that the shadow will always be on the opposite side of an object to the sun or light.



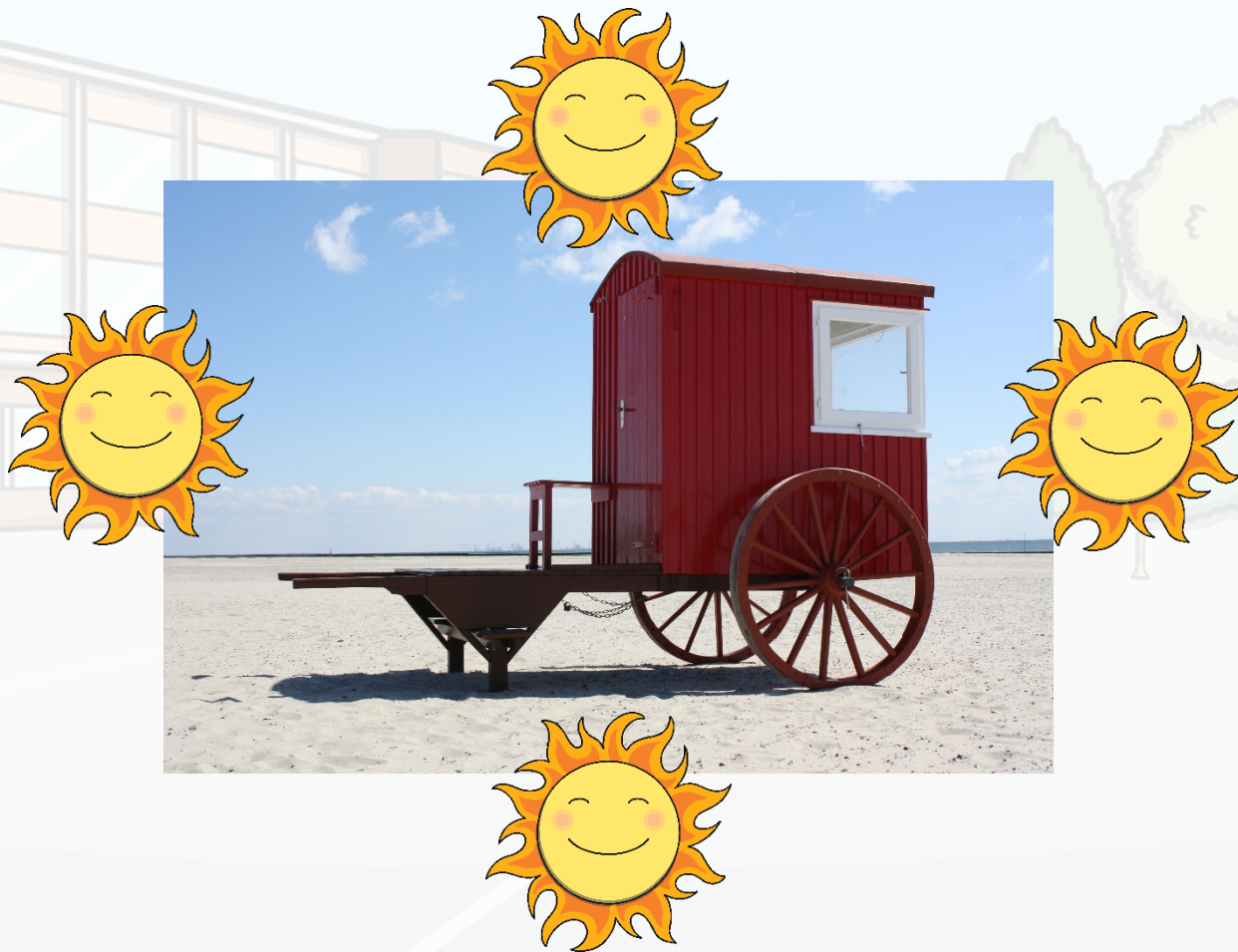
Which Direction Is the Sun?



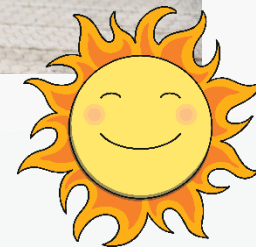
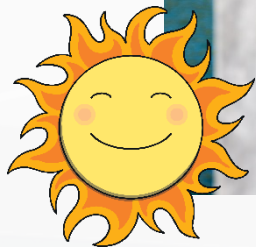
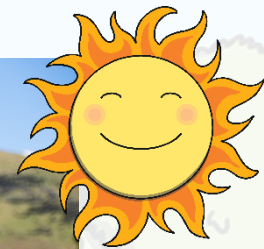
Which Direction Is the Sun?



Which Direction Is the Sun?



Which Direction Is the Sun?



Shifting Shadows

Take a look around and see what objects you can see that form shadows.

We are going to look a little closer at shadows and see if we can find out some other interesting things that happen when you have a light source and a shadow.

Let's
find out
more...



What You Need



- A pencil
- A piece thick card
- Felt-tips
- Glue
- Scissors
- Lolly pop stick
- Strong sticky tape
- A torch (or other light source)

What to Do

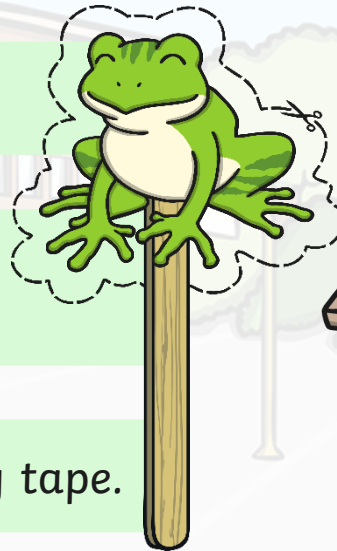
1 Draw a character – it could be a person, an animal or an object - onto a piece of thick cardboard.

2 Cut out your character.

3 Place the lollipop stick on the back of your character.

4 Stick it in place with the sticky tape.

5 Hold your puppet up next to a wall, preferably a white wall.

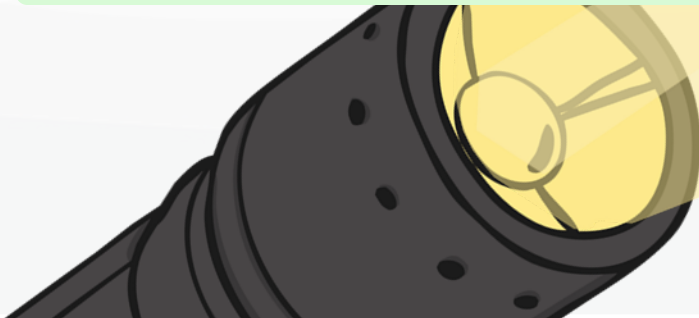


6 Shine the torch or whatever light source you are using onto your puppet. A large shadow of your puppet will appear on the wall.

7 Now, move your character towards the light.
What do you notice?

8 Move your character further from the light.
What do you notice?

9 Move the light source to one side whilst you hold the character still.
What do you notice?



A cartoon illustration of a school building with a large white text box in the foreground. The school building is a two-story structure with many windows and a central entrance. In front of the building is a paved area with white lines, possibly a playground or a path. There are several green trees and bushes in the background. The sky is blue with a few white clouds. The text "Pause the video and have a go yourself!" is written in a bold, black, sans-serif font inside the white text box.

Pause the video and have a go yourself!

Here's What's Happening...

When you move the character towards the light your shadow gets bigger.

This is because you are blocking out more of the light coming from the light source so the space with no light – the shadow - gets bigger.

When you move your character further away from the light source your shadow gets smaller.

This is because there is more light coming from the light source making the shadow from the character get smaller.

When you move the light source to one side and then another the shadow should move in the opposite direction. This is because light travels in straight lines towards the object so the shadow will always be behind the lines of light from the light source.

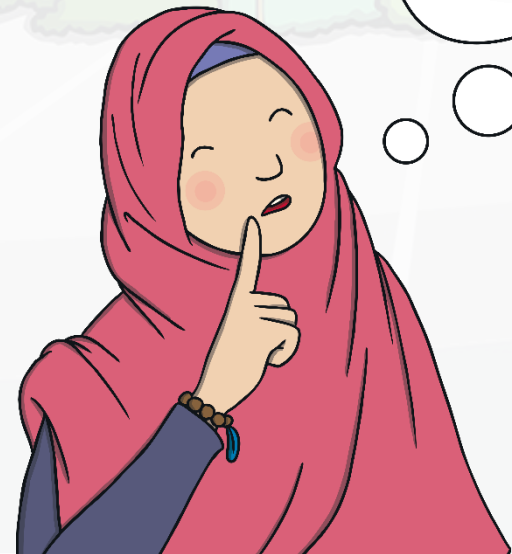
Reflection

Why was card a good choice of material to make your puppet?

Is card opaque, translucent or transparent?
What does this mean?

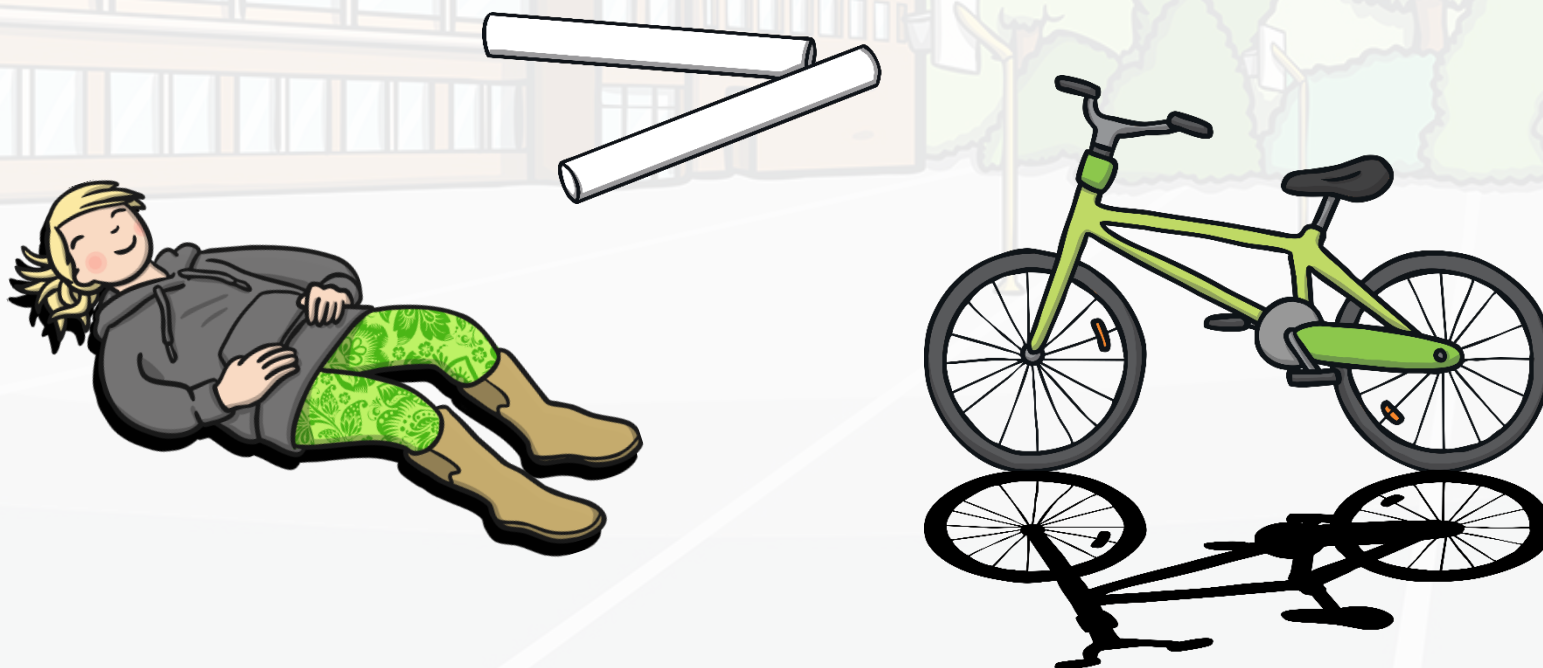
What happened to the shadow as you moved the puppet closer to the light source?

What happened to the shadow as you moved the puppet further away from the light source?



Extension activities

Have fun outdoors and use chalk to draw around the shadows made by different objects. Observe how the shadows change throughout the day. Are they the same in the morning and the afternoon? Why do you think the shadows change during the day?



Shadow Puppet Show

You might want to have a go at making a shadow puppet show using your puppet.

