Professor Brainstorm's

A True Reflection

About this Activity

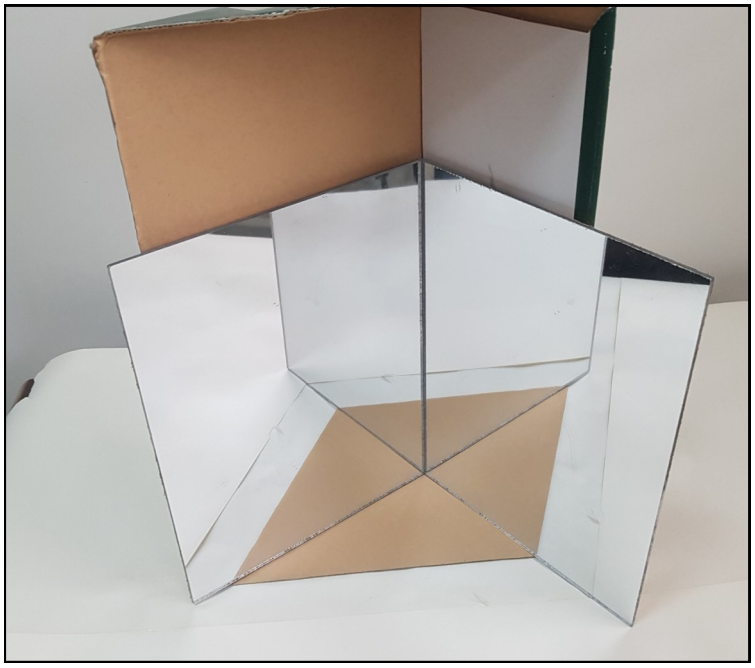
(Information for Parents and Teachers)

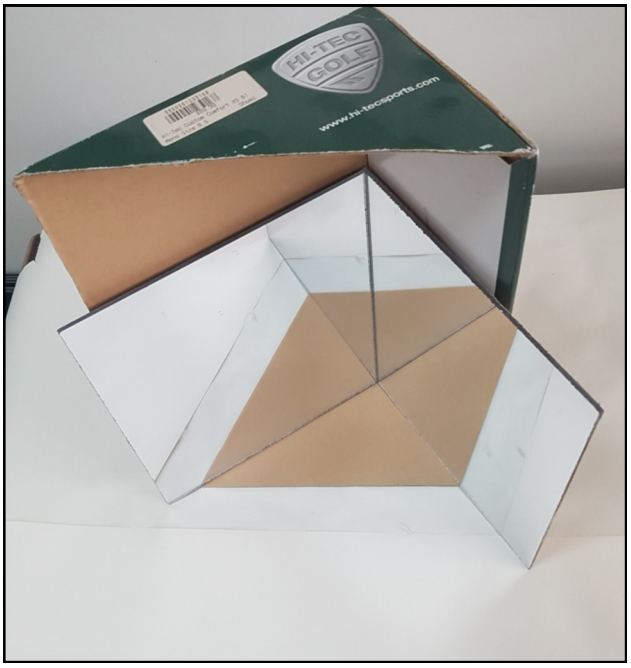
This experiment explores what happens when light reflects off a mirror..

This experiment is designed for children aged from 7 to11 years (Years 3 to 6).

What you Need

- Two mirrors. (Plastic mirrors are ideal. You can buy these from DIY stores or online. Mirror tiles would also work - but you have to handle these carefully as they can shatter. If you don't have either of these, then just any two mirrors will work - but again handle them carefully.)
- A rigid box - such as a shoe box.
- Blu tack.





How to make a True Reflection

- First of all cut your cardboard box in half along a diagonal - so that you have are left with two sides of the box making a right-angle (as shown in the pictures above).
- Now use your blu tack to fix the mirrors on to the two sides of the box so that the two mirrors are at right-angles to each other - and so that the mirrors touch along one edge. (This works fine with plastic mirrors. If you are using mirror tiles or ordinary glass mirrors, get someone to hold the two mirrors in place - as the blu tack may not be strong enough to hold them.)
- Sit in front of the two mirrors so that both mirrors are at an angle of about 45 degrees (as in the picture above left). Look straight in to the join between the two mirrors - so that your nose is aligned with the join in the mirrors. Now look at your reflection. If you have three eyes and two noses, or one eye and no nose, this means that your mirrors are not quite at right angles. Squash the blu tack slightly at one side or the other until you get a reflection with one nose and two eyes.

How to make a True Reflection - continued

(If your mirrors have a frame or a border around them, it won't be possible to get the mirror surfaces to touch each other - so it may be difficult to see the reflection of your nose. In this case just make sure that you can see the reflection of one of your eyes in one mirror and the reflection of your other eye in the other mirror.)

Now look into the mirror- or rather into both mirrors at the same time. Do you notice anything strange about your reflection? Your reflection appears to be the wrong way round! (Actually you are seeing yourself the right way round - the way that other people see you - but it is the opposite way round compared to the way that you normally see yourself when you look in to a mirror.)

How does it work? (This is the science bit)

When you look in to a normal mirror your reflection is reversed. So if you put a small sticker on your right cheek, when you look in the mirror your reflection will appear to have a sticker on their left cheek. Also, if you hold up some writing in front of a mirror, the writing in the mirror will appear to be back-to-front.

When you look into the mirror that you have made in this experiment, the reflection that you see has been reflected off two mirrors. The sticker on your right cheek will be reflected first in the mirror on the right, then in the mirror on the left - and then back to you. So the sticker is now on the right hand side of the face that is looking back at you.

And if you hold up some writing in front of the mirror ... Well why not try it? Is the writing in your new double mirror the wrong way round or the right way round?

Now try this ...

- Hold an object such as a pen or pencil in front of the mirror at an angle (as shown in the photo on the right). What happens to the reflection.
- Try this with a friend. Put a small blue sticker on one of their cheeks and a small blue sticker on their other cheek. (But don't tell them which colour you are putting on which cheek!) Now get them to look in the mirror - and tell them to touch the blue sticker. (They may be very confused when they see what their reflection is doing!)
- Make sure your mirrors are firmly stuck to the box - and then turn the box on its side - so the join between the two mirrors is now horizontal. (Only try this if you are using plastic mirrors!) What happens when you look in to the mirrors this time? Now your reflection is upside-down!