

Periscope

On SCOPE's How things are made episode, Julia made a periscope.
Here's how you can do it at home:



What you need:

- 2 plastic mirrors (available from autocare shops)
- 2 empty milk cartons
- Scissors
- Pen
- Ruler
- Sticky tape

What to do:

1. Cut the top off a milk carton.
 2. Cut a small hole (about 4cm x 4cm) at the bottom of one side of the milk carton.
- Next, slits have to be made in the carton so the mirror can slot into position, behind the hole, at a 45 degree angle.
3. Draw two squares on the carton; one on the side to the left of the hole and one on the side to the right. Make sure the squares are as wide as the carton and, of course, that the sides are the same length.
 4. Draw a diagonal line through each square. Make sure the bottom end of each diagonal line is closest to the hole. You have just drawn a line that is at an angle of 45 degrees!
 5. Cut a mirror-width slit in the middle of each diagonal line.
 6. Slide a mirror into position through the two slits. Make sure you can see the shiny side of the mirror through the hole.
 7. Repeat steps 1-6 using the other milk carton and mirror.
 8. Make small cuts (about 2cm) in the top of the milk cartons, down the corners.
 9. Slide the cartons on top of each other and tape them together. Make sure the holes are on opposite sides of the periscope.
- Your periscope is now complete!
10. Try changing the position of the holes and even adding an extra milk carton to make a really long periscope!



What's happening?

Light can only travel in straight lines but the mirrors in the periscope reflect the light and allow you to see around corners!

The mirrors are positioned at 45 degrees because light reflects away from a mirror at the same angle that it hits the mirror. So, this ensures light hitting the first mirror reflects straight onto the second mirror and then straight out the other side of the periscope!

