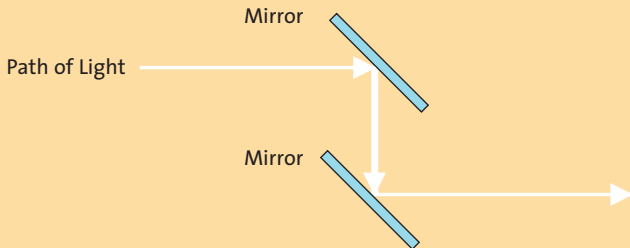




# Making a Periscope

## Preparation



<b>SKILLS</b>	Designing and Making
<b>CROSS-CURRICULAR LINKS</b>	<b>Maths:</b> – measurement, angles <b>SESE:</b> History – use in submarines, trenches
<b>CONTENT</b>	Light
<b>EQUIPMENT</b>	Cardboard (cereal packet) 2 small plastic mirrors (7.5 cm x 5 cm) for each periscope sellotape rulers protractors scissors  
<b>PREPARATION</b>	Collection of materials.  It's useful to make a periscope before you use the activity with a class. They have a model to use.
<b>BACKGROUND INFORMATION</b>	Mirrors can be used to help us see around corners. When light falls on a mirror at an angle it is reflected off the mirror at a similar angle. Therefore light falling on a mirror at an angle of $45^\circ$ will bounce off it at $45^\circ$ . So the total angle through which the light is turned is $90^\circ$ . This means we can see what's around a corner.  A periscope uses two parallel mirrors facing each other to bounce light between them so that people can see round corners or look at things that are too high for them to see.
<b>TRIGGER QUESTIONS</b>	<b>When you throw a ball against a wall at an angle, in what direction does it bounce off the wall?</b> (At the same angle).  <b>In what direction does light reflect off shiny surfaces?</b> (At the same angle as it hits the mirror, i.e. like the ball).  <b>How can you get to see the back of your head?</b> (By using two mirrors).  <b>How would you turn a beam of light through <math>90^\circ</math>?</b> (Using one mirror at an angle of $45^\circ$ ).  <b>How do sailors in submarines see above the surface of the water?</b> (Using two mirrors at angles of $45^\circ$ , i.e. using a periscope).
<b>SAFETY</b>	Care with scissors