



TRY THIS OUT!



PERISCOPE

Time: 30 minutes
Difficulty: Hard

Have you ever wanted to see above something that was taller than you, maybe at a parade or a concert? In this activity, you'll find out how to use mirrors to help you see above it all by making a periscope.

WHAT YOU NEED:

- Empty, 1 L carton
- 2 small, flat mirrors (that roughly fit at a 45° angle inside the carton)
- Scissors
- Tape



Safety first! Adult supervision may be needed when handling scissors.

MAKE IT:

1. Prepare your carton by rinsing it out thoroughly.
2. Cut a square hole out of the back of the carton, about 5x5 cm. It should be about 2 cm from the bottom. Get an adult to help if you need it!
3. Cut a square hole out of the front of the carton, about 5x5 cm. It should be about 2 cm from the top.
4. On one side of the carton, cut along the top and sides – so you're left with a flap that's attached at the bottom.
5. Place your first mirror inside the bottom of the carton, reflective side up. One side of the mirror should be wedged in the bottom back edge of the carton, leaning against the front side of the carton. It should rest at a 45° angle. Tape it in place without covering too much of the mirror.
6. Place your second mirror inside the top of the carton, reflective side down. One side of the mirror should be wedged in the top front edge of the carton, and the other side should be attached to the back panel of the carton. Tape it in place without covering too much of the mirror.
7. Tape the side flap closed.

TEST IT:

Look through the bottom hole. The image you should see is whatever is in front of the top hole! Try hiding behind something, like a couch, and have just top of the periscope hanging over. You'll be able to see over the edge!

EXPLAIN IT:

When you look in the bottom hole, the light you're seeing has come in through the top hole. It then bounces off of the top mirror, which sends it to the bottom mirror, which reflects it back into your eyes. That's why you can see out – you're looking at a reflection of a reflection!





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OBSERVE IT:

Submarines often don't have windows at the front. Instead, they have a periscope attached to the top to see out. These periscopes have been used for everything from military purposes to observing marine life.

GO FURTHER:

Just like periscopes, telescopes change the direction of light coming to your eyes. There are two primary types of telescopes – refracting and reflecting. As the name suggests, reflecting telescopes make use of mirrors to reflect incoming light. Using what you've learned from your periscope, fill in the diagram below with where you think the lenses and mirrors might be found in a reflecting telescope. Make sure you draw in lines to represent the path of incoming light!

