

## Periscope

### check list:

1. a big cardboard tube
2. 3 pieces of green Bristol board (same size)
3. 2 small rectangular mirrors (same size)
4. pencil
5. scissors
6. ruler
7. clear tape

# 1



Find a big cardboard tube and two green pieces of Bristol board. The Bristol board should be the same length as the cardboard tube and wide enough to wrap all the way around the tube, with a little bit of overlap.

# 2

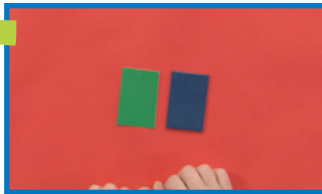


Lay one piece of Bristol board on the table (shorter edge should be horizontal). Place a small rectangular mirror along the shorter edge of the Bristol board, in the middle. Now move the mirror two fingers' width up from the edge. Outline the mirror with a pencil.

# 3

Follow Steps 2 and 3 for the second piece of Bristol board. Be sure the rectangles are in the same place on each piece of Bristol board!

# 4



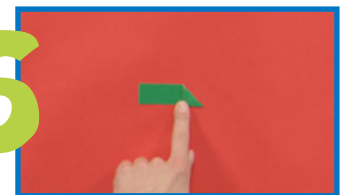
Take a third piece of Bristol board and cut out a rectangle the same size as the mirror.

# 5



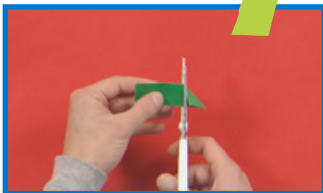
Fold the green rectangle in half lengthwise, then cut along the fold. This will give you two smaller rectangles.

# 6



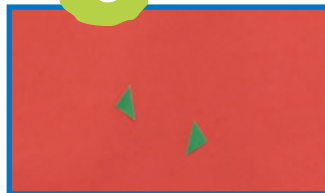
Fold down the top right corner of one of the rectangles until it meets the bottom edge of the rectangle, like in the photo. The fold looks like a triangle.

# 7



Cut along the left edge of the triangle. When you unfold the triangle, you have a small green square.

# 8



Cut along the diagonal crease in the square. This gives you two triangles the same size.

# 9



Lay the two triangles inside the traced-out rectangle you made on one piece of Bristol board (at the bottom corners of the rectangle). Position the triangles like in the photo.

# 10



Place a ruler along the top edge of the triangles and draw a line across the rectangle with a pencil.

# 11



Remove the ruler and trace a line along the long edge of each triangle.



Here is an example of what the lines should look like. Follow Steps 6 to 11 using the other piece of Bristol board and the second small rectangle from Step 5.

# 12



Cut out the rectangles on both pieces of Bristol board.

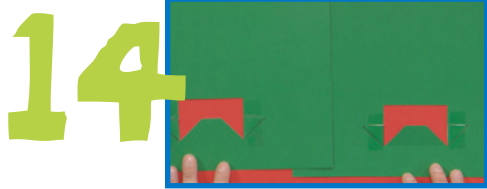
# 13



The next two cuts you need to make are along the triangle lines you traced in Step 11.

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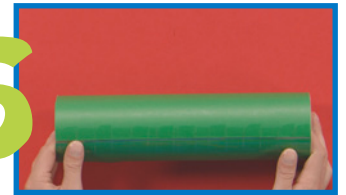
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Turn over each piece of Bristol board, fold down the triangle tabs, and tape them into place.



The next step is to roll one piece of Bristol board around the tube so that the taped triangles are on the inside, like in the photo.



Roll up the Bristol board tightly, then tape all along the edge.



Slide the tube out of the Bristol board.



Roll up the second piece of Bristol board by hand, making sure the taped triangles are on the inside. (This tube should be rolled tighter than the first tube green tube.) Insert the second tube into the first and let go of the inside tube so it expands a bit. You should be able to pull it in and out of the first green tube easily.



Put a piece of tape on the edge of the inside tube. Pull the tube out a little more and place another piece of tape along the edge. Now pull out the inside tube entirely and place tape all along its edge.



Fold down the flap on the inside tube so you have a cut-out rectangle.



Look inside the rectangle. See the triangle tabs you taped down earlier? Place the mirror in the opening, lining up the side of the mirror with the long side of the triangle. If you do it correctly, you should see a perfect square.

Tape the back of the mirror to the periscope.

Repeat Steps 20 to 22 with the second mirror and outside tube. Place the inside tube into the other tube.

**Tip:** The mirrors should be at either ends of the periscope.



Tape a green lid to the top of the inside tube to cover the circular hole. Doing this keeps the light out, making it easier to see through the periscope.



Artzooka your periscope any way you like! Paint neat designs or add stickers.



You're ready to use your periscope! Stretch out the inner tube. Look in the bottom mirror. Make sure the top mirror is pointing toward what you want to see!

### what can you see with your periscope?

Upload pictures of what YOU make at [cbc.ca/kids/games/artzooka](http://cbc.ca/kids/games/artzooka)