



## How to make and use a pinhole camera

### Make the camera

- Download the template here: <http://bit.ly/RiCameraBox>
- Cut the shapes out of black card, and tightly assemble with dark tape, making sure there are no gaps for light to sneak in.
- For the pinhole, cut a 3-4cm square from the side of an aluminium can and smooth the edges with sandpaper. Rub it to remove any paint or coatings, and thin down the section. Poke a very small hole with a needle.
- Mount the pinhole on the box so it lines up with the middle of the cardboard box, and stick the shutter mechanism on top, so the hole can be covered and uncovered.

### Load the film

- Do this in a totally dark room. You can use a red bicycle light to work by, as this won't affect the paper.
- Cut the paper to fit in the box, touching only the edges so you don't leave fingerprints. Insert into the camera with light-sensitive side facing the pinhole.
- Close the lid and make sure the pinhole shutter is closed.

### Take a picture

- Put the camera on a stable surface, pointing at your subject (ideally something that won't move).
- Slide the shutter open and start timing. In bright sunlight you'd need 20-30 seconds; indoors up to 5 minutes.
- Shut the shutter, again without shaking the box, and don't let any more light hit the paper.



## Develop your film

- Developing solutions can be bought from any photographic suppliers and online (eg: [www.calphoto.co.uk](http://www.calphoto.co.uk)).
- We recommend:
  - Ilford Multigrade Developer
  - Ilford Ilfostop
  - Ilford Hypam Rapid Fixer
- Visit <http://bit.ly/LYSCPinhole> for details on how to use these solutions.

## Develop with homemade solution

- You can make developer solution from mint, coffee or basil – anything with caffeic acid. If using dried mint:
  - Stir 10g of dried mint leaves into 200ml hot water. Brew for 15 minutes, then strain through a coffee filter into a new container.
  - In a separate glass, add two 1000mg vitamin C tablets to 200ml cold water, then gradually add 10g of bicarbonate of soda while stirring.
  - Mix the two solutions together, and leave for 10 minutes so all the bubbles settle. Pour into a shallow container that will fit your paper.
- Make an acidic 'stop solution' to halt the chemical reaction. Mix 5ml of lemon juice with 200ml of water in a second container.
- In darkness, take the paper out of the camera and put it in the mint developing solution. After 2 minutes, use a red bicycle light to check for an image appearing.
- When it looks ready, take the photo out with kitchen tongs, and put it in the stop solution for 30 seconds. Then rinse in plain water and leave to dry.
- You now have your negative! The paper will be still be a little sensitive to light so may darken over the next few weeks. Save a scan or digital photo on your computer, and try using photo-editing software or an app to invert the colours and get a normal black and white image.