

Create a Camera Obscura

Artists in the 17th and 18th centuries sometimes used a tool called a *camera obscura* (Latin for "dark room") to make precise drawings. With a camera obscura, an artist could project an image of a scene onto a piece of paper and trace over the projection to create a realistic, detailed drawing.

A simple camera obscura can be made with a box that contains an opening on one side where light can pass through. When light passes through the opening, an image is reproduced upside down on an opposite surface. Create your own camera obscura using the steps below.

Materials

- 7" x 7" x 7" boxes (available at Paper Mart, www.papermart.com)
- Black duct tape
- Templates A and B (cut out and ready to use)
- Pencil
- X-ACTO® knife
- Magnifying lens (2 ½" diameter)
- Masking tape or blue painter's tape
- Cutting pad (or a stack of old magazines or newspapers)
- Vidalon tracing vellum, cut into 6" squares
- Scissors
- Colored pencils

Steps



1. Fold down the flaps of one side of the box and tape them down using black duct tape. This taped side will be the bottom of your camera obscura.



2. Place template A on top of one side of the box and center it. Trace around the inside of the window of the template to create a 1 ½" square.



3. Cut out the 1 ½" square with an X-ACTO knife to create an opening. Place a magnifying lens over the opening and tape it to the box, securing the lens on all sides with duct tape.

Create a Camera Obscura



4. Use template A again by placing it on top of the side of the box that is opposite the lens. Trace around the *outer* square with a pencil. Cut out the square with an X-ACTO knife, following the lines of the square you drew. You should now have a cardboard square that is about $6 \frac{7}{8}$ inches. If needed, reinforce the sides and corners of your box with duct tape.



5. Place template B on top of the cardboard square you cut out in step 4 and center it. Trace around the template to create a 5" square. Use an X-ACTO knife to cut out the 5" square. You should now have a cardboard frame with a 5" square opening.



6. Take a 6" square of vellum and center it on top of the cardboard frame. Tape the vellum to the cardboard frame on all four sides using masking tape or blue painter's tape.



7. Place the framed vellum within the box with the vellum side facing away from the lens. Bring your camera obscura to a window and point the lens out the window. An image will appear on the vellum! Adjust the cardboard frame's position until the image on the vellum is focused.



8. Use a pencil to mark the best placement of the framed vellum. Make your marks close to the top of the edge on either side of the inside of the box.



9. Using your pencil marks as reference points, use scissors to cut slits in each of the side flaps towards the pencil marks. You should now have a total of six flaps.

Create a Camera Obscura



10. Push down the flaps closest to the lens and rest the cardboard frame against the edges of the flaps. Make sure that the vellum side is facing away from the lens.



11. Double check to make sure the image appearing on the vellum appears focused. Adjust as necessary and tape the framed vellum to the flaps with masking tape or blue painter's tape.



12. Tape down all remaining flaps with masking tape or blue painter's tape. Only use as much tape as necessary to keep the flaps closed. You will want to open the camera obscura later to remove the framed vellum. Your framed vellum may have shifted, so adjust as necessary.

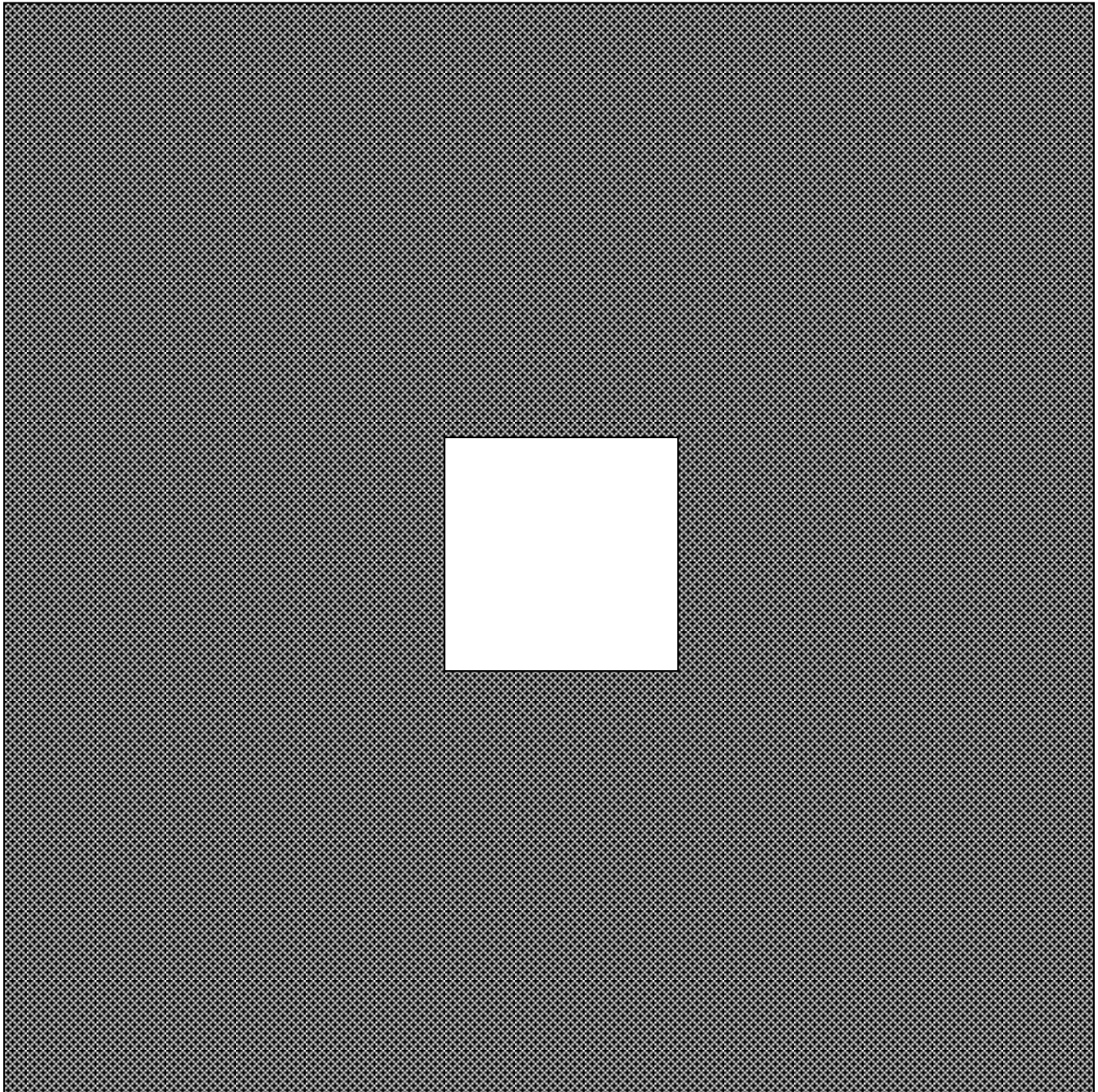
Your camera obscura is now ready for use. Look out of a window and through the vellum. Trace what you see through the screen onto the paper, paying particular attention to the lines and shapes found within the image.

13. After tracing the lines and shapes, remove the framed vellum. Carefully remove the piece of vellum from its cardboard frame and add details to your drawing with colored pencils.

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(Template A)

Cut out the template below, including the small square window.



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(Template B)

Cut out the template below.

