

How to make your own seismometer (seismograph) at home

You will need:

- 1 x box (lid preferred)
- Blank paper (cut into long strips ~10 cm wide)
- Pencil and ruler
- Permanent marker
- Scissors or other cutting tools
- Rubber bands (string will also work)
- Glue and cello tape

Steps:

Step 1:

Take your box and rule an outline ~3 cm around the box lid, this can then be cut out

Step 2:

On opposing sides of the box near its base, rule out the location of the feeder slots which the paper will travel through when the seismometer is completed. Make sure these slots are measured slightly wider than the paper you will be feeding through (e.g. ~12 cm wide in this example for our 10 cm wide paper strips), and that these slots are measured out from the centre-line of the box to ensure they line up.

Step 3:

To make the feeder paper – take the long strips of paper and glue them end-on-end to make a single, continuous run of blank paper. This can be as long as you would like. In this example we have used standard A4 printer paper which has been cut in half to form ~10 cm wide strips.

Step 4:

If using rubber bands:

Make 2 rubber band chains by threading your rubber bands together (see photos) in order to hold the marker pen in place on the seismometer. Make sure these rubber band chains are long enough to cross the diagonals of the top of the box. Ensure you leave enough length to also allow for adjustments of the marker pen.

If using string:

Cut 2 lengths of string long enough to cross the diagonals of the top of the box. Ensure you leave enough length to allow for adjustments of the marker pen

Step 5:

Using your rubber band chains (or lengths of string), cross the diagonals across the top of the box and fix one end of each chain to a corner with cello tape. While making sure the diagonals remain in the centre of the box, thread the marker through the intersecting rubber band chains (or tie off the marker pen with the string). Make sure the marker pen is just able to touch the bottom of the box when it is in place. Fix the other ends of the rubber band or string lengths when the pen is in the correct position.

Step 6:

Feed the paper through each end of the slots cut out in step 2. Make sure the marker pen makes contact with the paper.

Congratulations, you now have a working seismometer! Place the seismometer on a table and try slowly pulling the paper through without shaking the table, what happens to the line? What happens to the line as you start shaking the table? Does the line change shape depending on what orientation you shake the table?