# Make Your Own Seismograph Build Instructions

**Student Handout**

1. Cut the lid or flaps off the cardboard box. Stand the box up on one of the smaller sides.

2. Poke two holes opposite each other near the rim of the cup.

3. Tie a piece of string, slightly longer than the length of the box, to each hole.

4. Poke two holes in the top of the box, making sure they are the same distance apart as the holes in the cup.

5. Push the two pieces of string through the holes and tie them together on the top of the box, so the cup hangs down inside the box. The bottom of the cup should be about an inch above the bottom of the box.

6. Poke a hole in the center of the bottom of the cup. Remove the cap from the marker, and push the marker through the hole, so its tip just barely touches the bottom of the box.

7. Fill the cup with coins or other small weights, making sure the marker stays vertical.

8. Fold a piece of paper in half lengthwise, then fold it in half lengthwise again. Unfold the paper and cut along the folds to form four equal-sized strips. Tape the strips of paper together end to end, to form one long strip. If you have a long, printed receipt, you can skip this step.

9. Cut two slits on opposite sides of the cardboard box, as close as possible to the bottom edge. The slits should be wide enough to pass the paper strip through one side, across the middle of the box, and out the other side.

10. Make sure the marker is centered on the paper strip. You might need to poke different holes in the top of the box and re-hang the cup if necessary.

11. You are ready to use your seismograph! Stabilize the box with your hands as your helper slowly starts to pull the paper strip through the box from one side to the other side.

12. Now, shake the box back and forth (perpendicular to the paper strip, keeping the bottom of the box in contact with the table) as your helper continues to pull the paper strip through, doing their best to pull at a constant speed. How does the line on the paper strip change?

13. Pause your shaking for a few seconds (as your helper continues to pull the paper), then try shaking the box harder.

14. Pause for a few more seconds, then shake the box very gently.

15. Pull the paper strip all the way out of the box and look at the line.