Build your own SEISMOGRAPH

<table>
<tr><td>Name of the object and creator</td><td colspan="5">Model of seismograph
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<tr><td>Recommended ages</td><td colspan="5">10-12</td></tr>
<tr><td rowspan="2">Thematic areas combined (STEAM)</td><td>Sciences</td><td>Technology</td><td>Engineering</td><td>Arts</td><td>Mathematics</td></tr>
<tr><td>☑</td><td>☐</td><td>☐</td><td>☑</td><td>☑</td></tr>
<tr><td>Materials needed</td><td colspan="5">• Cardbox (medium size)
• Paper or plastic cup
• String
• Felt pen or marker
• Scalpel or scissors
• Paper or long printed receipt
• Scotch tape or duck tape
• Coins, small rocks or other small heavy objects to use as weights
• Awl
• Meter or ruler
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Outline of the steps	1. Prepare all the materials. 2. By following blueprints, each group make their own seismogprah 3. Then each group simulate an earthquake to testing seismograph 4. At the end students compare results and make conclusion
References	(1) https://www.sciencebuddies.org/stem-activities/make-a-seismograph

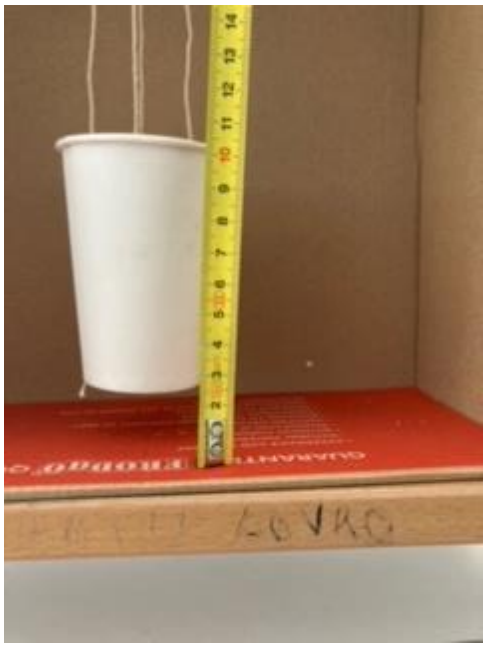
STEP BY STEP: How to build your own SEISMOGRAPH

Step 1: Making holes	Estimated time: 10 min

- Collect all the necessary materials
- Cut the lid or flaps off cardbox and stand the box up on one of the smaller sides
- By using an awl, poke four holes (as edges of the rhombus) near the rim of the cup
- Tie a piece of string, slightly longer than the length of the box, to each hole.

Step 2: Placing cup	Estimated time:10 min

- Poke 4 holes in the top of the bow, making sure they are the same distance apart as the holes in the cup.
- Push the two pieces of string through the holes and tie them together on the top of the box or use the duck tape, so the cup hangs down inside the box. The bottom of the cup should be about 2.5 cm above the bottom of the box (check with the meter).



Step 3: Placing marker	Estimated time: 15 min

- Poke the 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
- Fill the cup with coins or other small weights, making sure the marker stays vertically. (Maybe you should have to extend or shorten the string to adjust)

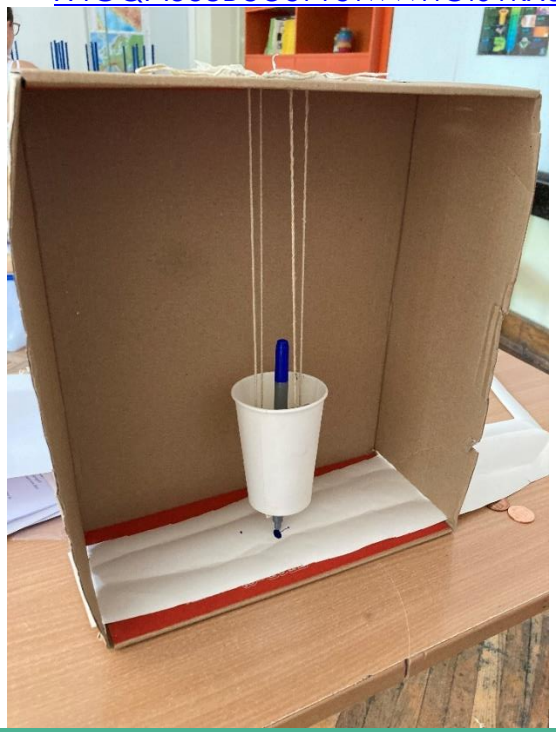
Step 4: Paper strips	Estimated time: 15 min

- 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 sizes 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
- Cut two slits on opposite sides of cardbox, 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 another side.
- Make sure the marker is centered on the paper strip.

Step 5: Try your seismograph	Estimated time:15 min

- Now your seismograph is finally ready to use!
- Stabilize the box with your hands as your helper starts to pull the paper strip through the box from one side to the other side. Then 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?
- Pause for a few more seconds, then shake the box very gently. (video : https://uciteljihr-my.sharepoint.com/:v:/g/personal/helena_ucitelji_hr/ETj_2XXJsCZFgOY

X4CQA338BecUFTUtwWnOl01kX3Jaksw?e=C3yUM5)



STEAM IN TIMES

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