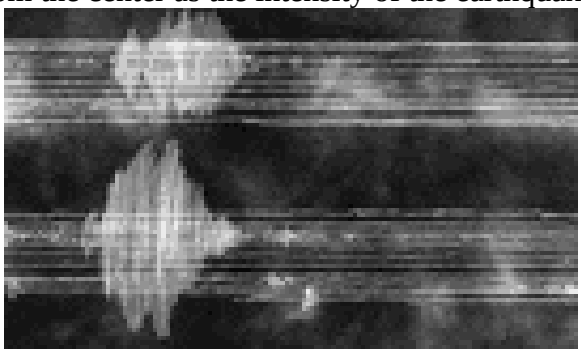
Make A Working Seismograph!

Suggested Age: 7-9
Time: 25 minutes

Earthquakes occur in many areas around the world. The strongest earthquakes cause vast amounts of devastation. The intensity of earthquakes is measured on the Richter scale using a seismograph. It measures the intensity by drawing lines on paper that diverge further from the center as the intensity of the earthquake increases.



In this activity we will:

- Construct your own working seismograph using materials you can find around the house.

Materials

- Empty cereal box
- Scissors
- Masking tape
- Fine tip marker or pen
- Ruler
- Plastic disposable cup
- Hole punch
- 2 Pencils
- String
- Hot glue gun
- 2 ¼ inch wide calculator paper

Safety

Be careful when pushing any sharp objects (i.e. pencils) through cardboard. Do not put your hand behind where the pencil will come through.

Pre-Activity

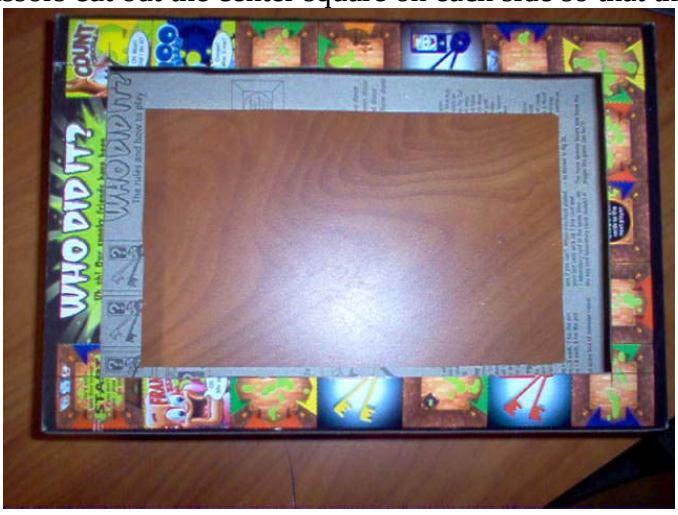
Discuss with the children how they think a seismograph works. Ask how it measures the strength of an earthquake and how they think this relates to the amount of damage that occurs.

Activity

If you have ever watched the news after an earthquake has occurred, you have probably heard the newscaster talking about how high on the Richter scale the earthquake was. The Richter scale measures intensity and places the intensity on a scale based on how destructive it was. A specific tool called a seismograph is used to measure the Richter scale. In this activity, you will be constructing your own working seismograph that you can use to make your own scale to base the intensity of vibrations on.

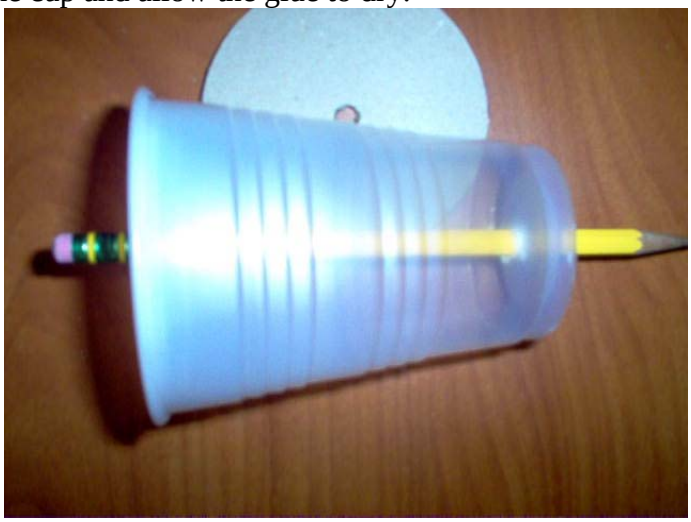
- On the front and back of the cereal box, measure one inch from the edge using the ruler at two places on each side and draw a line connecting the two. Do this for all four sides.

- Using the scissors cut out the center square on each side so that the box is hollow.

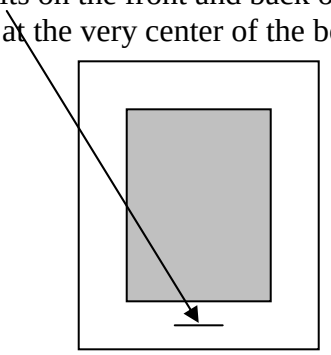


- Place a piece of masking tape across the top of the box to seal it shut.

- On one of the pieces of cardboard which was cut out of the box. Using the large open side of a plastic cup, trace a circle on one of the pieces of cardboard that you cut out of the cereal box.
- Cut out the circle.
- Using a hole punch, punch a hole though the center of the circle of cardboard and using a pencil, punch a hold through the center of the bottom of the cup.
- Punch two holes through opposite sides of the top of the cup
- Push the pencil up through the hole in the bottom of the cup with the sharpened tip facing down and leave part of it sticking out.
- Glue around the pencil at the bottom of the cup to seal any leaks between the pencil and the cup and allow the glue to dry.



- Pour a small amount of sand into the cup so that it fills about the bottom one inch of the cup.
- Thread the piece of string through the holes on the top of the cup, wrapping (and gluing if wanted) them around the pencil.
- Thread the string through the hole in the cardboard circle and push the cardboard circle onto the eraser end of the pencil while threading the pieces of string through and glue it to the rim of the cup.
- Poke a hole in the center of the top of the box.
- Cut slits on the front and back of the box ½ inch up from the bottom, 2 ½ inches wide, at the very center of the box.



- Thread the calculator printer paper through the slits such that only about 1 to 2 inches is through the back.
- Thread the string attached to the cup through the hole in the top of the box and tie around the second pencil such that the pencil that is glued inside the cup is touching the paper.

Extension Activity

1. Use your seismograph in the Earthquakes! Activity to measure the intensity of earthquakes that you create.
2. Take your seismograph around with you! Measure the intensity of vibrations on a car ride. How smooth are the roads? Put it on your bed and then sit down. What happens? Put it on the dryer while clothes are drying!

References

http://www.howstuffworks.com/question142.htm
http://cse.ssl.berkeley.edu/lessons/indiv/davis/hs/Seismograph.html
http://psn.quake.net/infoequip.html