

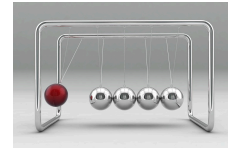
# Newton's Cradle

## NEWTON'S 3RD LAW

*For every action, there is an equal but opposite reaction.*

### What You Need:

- Newton's Cradle
  - Pick up directions at step 8

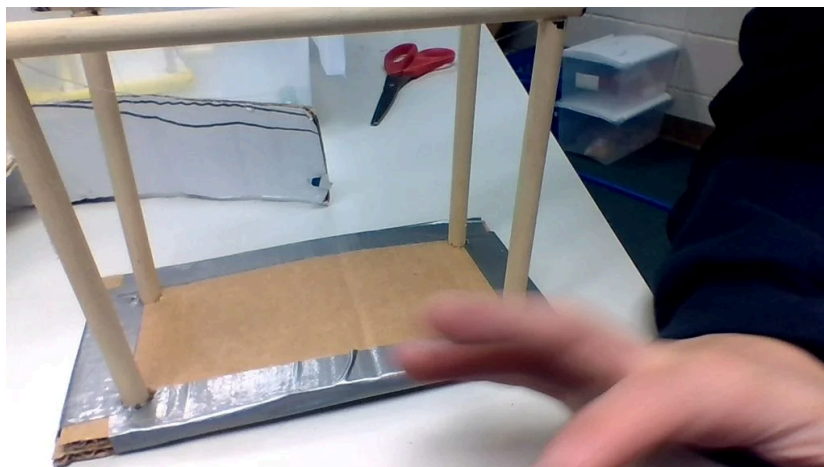


If you don't have a Newton's Cradle already assembled, here is what you need to build your own.

- (4) small dowel rods each cut to 5"
- (2) small dowel rods each cut to 7.5"
- (2) cardboard sections measuring 4.5"x8"
- (3-5) marbles of the same size
- Lots of string (kite string is perfect)
- Small saw (make sure your responsible adults know about this)
- Hot glue (this too)
- Duct tape (you only need to tell the adults if you plan to duct tape your siblings)
- Scissors

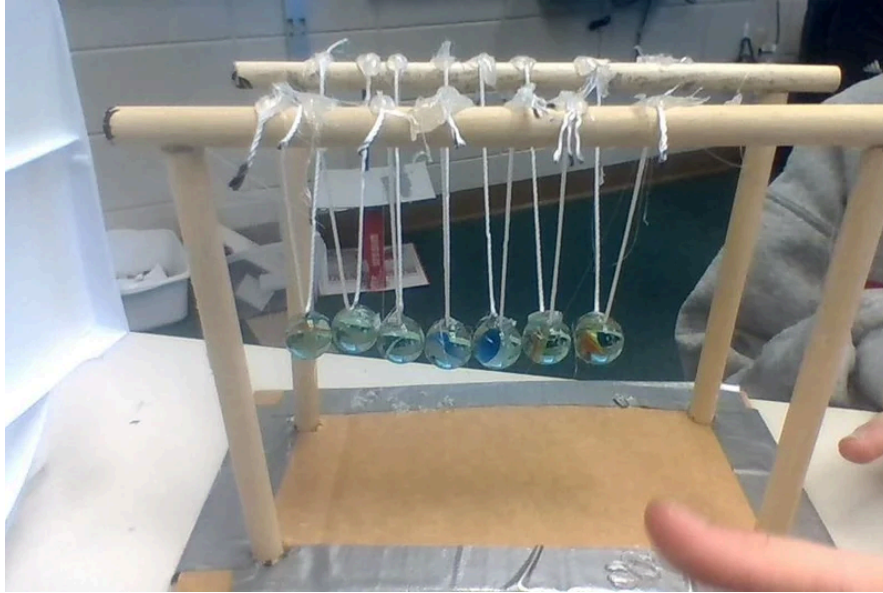
### Directions:

- 1) Cut your wood pieces to the correct lengths
- 2) Cut your cardboard to the appropriate lengths and tape them one on top of the other like you're making a sandwich and tape them together with duct tape.
- 3) Hot glue the frame together.
- 4) Using your scissors, "dig" small footers in one side of your cardboard to place the feet of the frame inside. Once you have this accomplished, hot glue the legs of the frame into the footers on the cardboard.



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- 5) Cut (3-5) 8" pieces of string (each marble needs 1 piece) and use a marker to label the 4" mark.
- 6) Use hot glue to attach one marble per string at the 4" mark.
- 7) Glue the strings in place. One side of the string on each marble should be glued to the top of the same long side of the frame. Repeat with the other side.



- 8) Once you are confident the glue is dry, gently pull back on one of the end marbles about 3".
- 9) Release the marble so it will smack into the marble hanging next to it.
- 10) Observe the reaction of each marble. This demonstrates Newton's 3rd Law of Motion.