

Catapult Engineering Challenge

Construct a catapult and a projectile catcher.

Assignment:

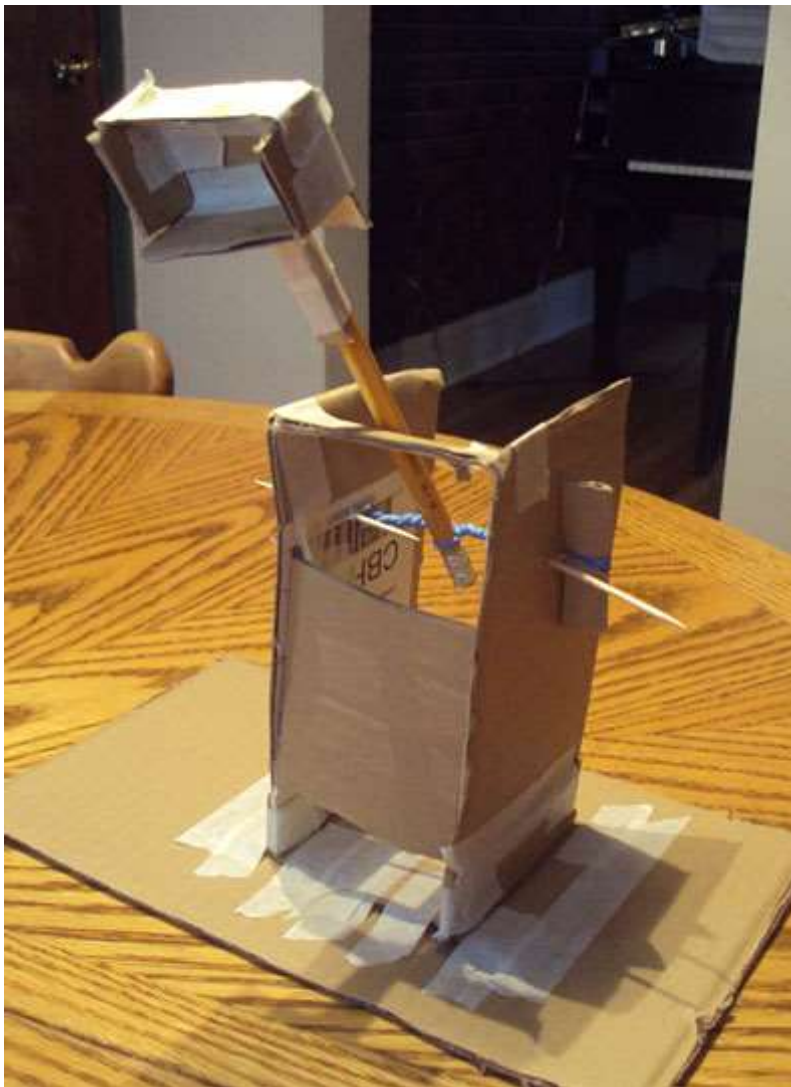
- You will construct a catapult, using only the materials listed below, that will launch a ball of aluminum foil.
- You will also use or construct a catcher to catch the aluminum foil ball.
- Your goal is to launch and then catch the ball as great a distance as possible.



Catapult – you may use only the materials listed below to construct your catapult:

- One only: 12" ruler, wooden paint stirrer, or strip of wood no wider than 1" and no longer than 14";
- Cardboard, poster board, file folder and/or paper – no limit on the number of pieces, but no one piece can be larger than 12" x 12";
- There is no limit to the number of any of the items below:
 - Pencils, pens and/or markers;
 - Toothpicks;
 - Paper clips;
 - Rubber bands;
 - String;
 - Twist ties;
 - Paper or plastic cups;
 - Toothbrushes;
 - Plastic spoons, forks and/or knives

- Tape, any kind;
- Glue, any kind, including hot glue;
- Plastic tabs from bread bags.



Projectile:

Your projectile will be a piece of aluminum foil wadded up into a ball. The ball must be at least as big as a marble but no bigger than a golf ball.

Projectile Catcher:

The aluminum foil ball must land and stay in your projectile catcher. If the ball bounces into or out of the catcher, that launch does not count.

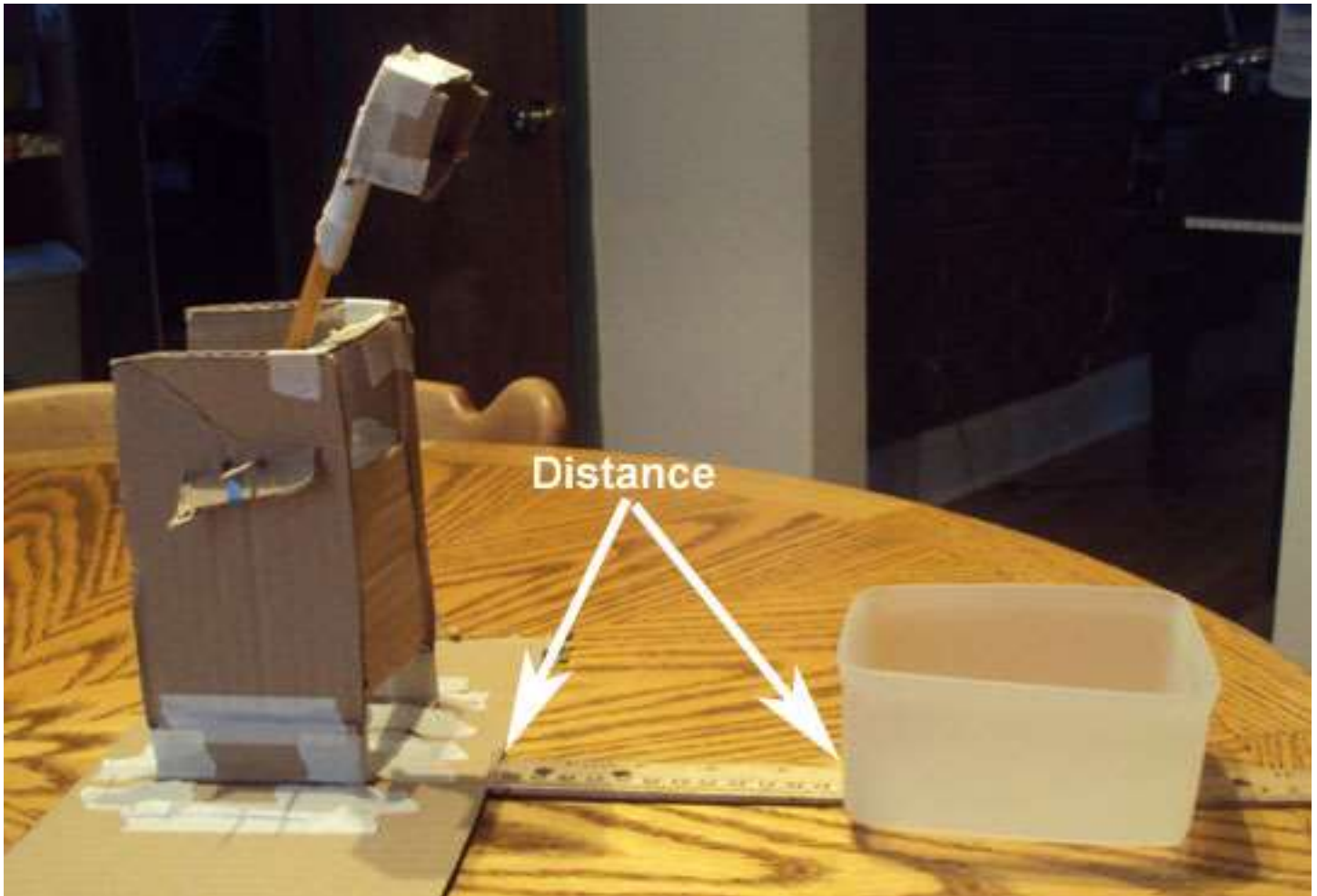
You may use anything around your home, or you may construct your own projectile catcher, but it can not be larger than 8" x 8". You may use any materials you wish to construct or modify your catcher. For example, you could use an empty soup bowl or a soup bowl filled with Jell-O to catch your projectile as long as the bowl is not larger than 8" x 8".

Distance:

Your goal is to launch the ball and successfully catch it as great a distance as possible. You need to catch the ball two times in a row at the same distance in order for that distance to count. Even if your first three attempts at a certain distance are unsuccessful, if the next two attempts at that same distance are successful, then that distance counts.

You will measure the distance from A) whichever point of the *base* of your catapult is closest to the catcher to B) whichever point of your catcher is closest to the catapult

base—in other words, the shortest distance from the base of the catapult to the catcher. It does not matter if the arm of the catapult extends beyond the base. Not does it matter whether the ball lands in the front or the rear of the catcher.



Remember:

In order for a distance to count, the ball must land and stay in the catcher two times in a row. The ball cannot bounce into or out of the catcher. It is okay if the catcher moves when the ball hits it as long as the ball stays in the catcher. The distance is measured from the point where the catcher was when the ball first hit it, not where the catcher winds up.

Keep in mind that you are competing with yourself, not with anyone else. Try to improve upon your first attempts. Change your launch angle. Modify your design. If you don't like your first design, start over with a different approach; there's no hurry. Don't try to go from start to finish in one session. Take your time and have fun with this challenge.