



Indoor Slingshot

1

Here's what you'll need to build your own Indoor Slingshot!

- 2 toilet-paper tubes (or 1 paper-towel tube, cut in half)
- Tape
- Single-hole punch (optional)
- Stubby pencil
- Pen or marker
- 2 thin rubber bands
- Scissors
- Marshmallow (or small ball)



2

Make the plunger (i.e., the inner tube)

- Cut a toilet-paper tube in half, lengthwise.
- Squeeze it so it's about half its original diameter and tape it.



3

Punch two holes

Punch the holes half an inch from the end, opposite each other.



4

Insert the pencil

- Gently push the pencil through the two holes, twisting as you push.
- *TIP: If the pencil holes tear... Punch two new ones. Punch about half an inch into the tube, away from the old holes. You want a good amount of cardboard supporting the pencil.*



5

Cut slits

- Take the second toilet-paper tube. Draw two short lines straight down from the rim, about as far apart as the width of your index finger.
- Make two slits by cutting each line.
- Do this again at the same end of the tube, opposite your first set of slits.



6

Attach the rubber bands

- Push a rubber band into one set of slits. Be gentle. Avoid bending the piece of cardboard between the slits.
- Do the same on the other side. (Thin rubber bands work best because they fit into the slits without bending the cardboard too much.)
- *TIP: If the rubber bands don't fit into the slits... Thin rubber bands work best because they fit into the slits without bending the cardboard too much.*
- *TIP: If the slits bend open... If the rubber band comes out of the slits because they bend open, tape the slits in place while the rubber band is wrapped around them. It's okay to tape over the rubber band.*



7

Assemble the blaster

Slide the plunger into the larger tube (called the "grip").



8

Power up

Hook each rubber band around a pencil end.



9

Ready!

- Load a marshmallow. It should rest on top of the plunger.
- *TIP: If the marshmallow falls into the plunger... If the plunger is so wide that a marshmallow falls into it, cut the plunger open, squeeze it narrower, and re-tape it.*



10

Aim!

- Hold the blaster's outer tube.
- Pull the pencil back to stretch the rubber bands. The marshmallow will drop into the blaster.



11

Fire!

Release the plunger. Watch your marshmallow blast across the room!



12

Did you know?

Ever jump on a trampoline? When you push the trampoline's surface down, you store energy in the springs. Stored energy is called **potential** energy. You go flying back up when the stored energy changes to motion energy (called **kinetic** energy). In your slingshot, pulling the plunger back increases the rubber band's potential energy. Let go, and the potential energy turns into kinetic energy—the marshmallow goes flying. Bows-and-arrows and shock absorbers on a bike use potential and kinetic energy to work.



13

Try this next!

- **Invent carnival games.** How many paper cups can you knock over? How quickly can you collapse a pyramid of paper cups? How accurate are you when launching marshmallows into a set of cups? How far apart can two kids stand and still play catch?
- **Increase the pushing power.** Instead of using a toilet-paper tube to make the plunger, use a paper-towel tube. This will give you a longer pull, which will stretch the rubber bands more, increasing their potential energy. How far can you shoot a marshmallow?
- **Supersize.** Get a long mailing tube, or tape two paper-towel tubes together. Use long rubber bands, or link two or more rubber bands together to power the plunger in this supersized version. What can you launch with a huge Indoor Slingshot?



PROJECT FUNDING

NORTHROP GRUMMAN
Foundation

S. D. BECHTEL, JR.
FOUNDATION
STEPHEN BECHTEL FUND

ADDITIONAL FUNDING

