



taken in part from [littlebinsforlittlehands.com/make-snowball-launcher-winter-stem-physics/](http://littlebinsforlittlehands.com/make-snowball-launcher-winter-stem-physics/)

## SUPPLIES

- Balloons
- Small plastic cup
- Hot glue gun OR heavy-duty tape like duct tape
- Styrofoam balls (find other items to experiment with too including cotton balls, pompoms, balled up paper)

## INSTRUCTIONS

--Cut the bottom out of the plastic cup, but leave the rim for stability or else the cup will crumple. (make sure to trim off any jagged edges)



--Next, tie a knot in the neck of a balloon.



--Then cut the end off the balloon. (not the knotted end!)

--Once you have that done, either tape or glue the balloon to the bottom (where you have cut the hole) of the cup.

--Now to get ready for the snowball launching fun! Place the snowball in the cup. Pull down on the balloon's knot and release to watch the snowball fly. This is definitely a fun way to have a snowball fight indoors or even outside when there is no snow!



## The Science

There's a bit of fun physics in here. Kids love exploring Sir Isaac Newton's laws of motion.

The first law of motion states that an object will remain at rest until a force is placed on it. Our snowball isn't launching by itself, so we need to create a force! That force is the balloon. Does pulling the balloon further create more force?

The second law says that a mass (like the Styrofoam snowball) will accelerate when a force is placed on it. Here the force is the balloon being pulled back and released. Testing different objects of different weights might result in different acceleration rates!

Now, the third law tells us that for every action there is an equal and opposite reaction, the force created by the stretched balloon pushes the object away. The force pushing the ball out is equal to the force pushing the ball back. Forces are found in pairs, the balloon, and the ball here.