

The **MAKESHOP** Show

Vortex Cannon

How it Works

The vortex cannon creates spinning rings of liquid or gas, also known as toroid vortices, and shoots them across the room! (These are sometimes known as "smoke rings.")



What Does That Mean?

Toroid – A toroid is the mathematical term for a ring shape.

Vortex – A vortex is a region in any fluid that is spinning around an axis.

Axis – An axis is an imaginary line around which things happen. It can be an axis of symmetry or an axis of rotation or both.

Fluid – A fluid is any substance that can flow. Air, water, oil, mud and many other things are fluids.

Tools

Scissors

Compass or Pencil with string attached

Fog Machine (optional)

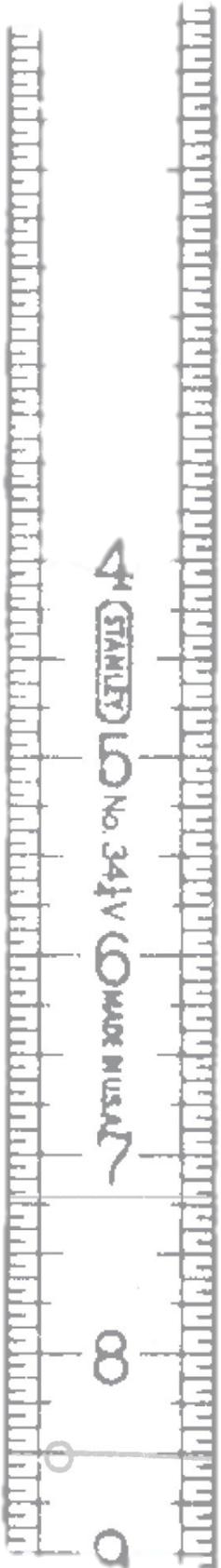
Materials

Cardboard Box

Tape

Flour, cornstarch or baby powder

Bowl



Directions

Step 1: Tape your box

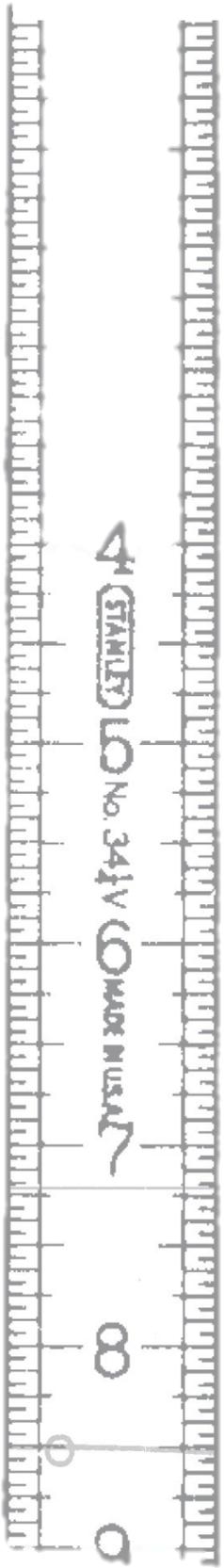
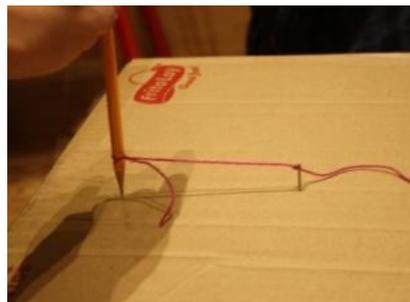
- Tape your box closed
- Make sure that all gaps are closed and all edges are closed covered with tape



Step 2: Measure the width of one side of the box

Step 3: Draw your circle

- Mark the center of the side of the box that you measured
- Use a compass to draw a circle with a diameter less than or equal to half of the width of the side of your box.
- If you don't have a compass, measure out a piece of string that is half of the diameter of the circle you will draw. Secure one end of the string to the pointed end of the pencil and the other end to a push pin that you push into the center of where you want the circle to be.
- Pull the string tight and draw the circle with the pencil.



Step 4: Cut a hole in the box

- Carefully cut out along the circle
- Remove any shredded or loose ends



Step 5: Test and play!

- Fill a bowl with flour, cornstarch or baby powder and place the bowl inside the box.
- OR use a fog machine to fill the box with fog.
- Slap both sides of the box at the same time to release a puff of air.
- Aim the box at an object, slap the sides and watch the puff of air move things



Keep Calm and Make On!

The MAKESHOP Show is a project of Children's Museum of Pittsburgh and the Schmutz Company.