

ThinkTac™

Jumping Frog

Experience magnetic attraction and repulsion by inserting ring magnets in a straw with different orientations.

Written By: Vishal Bhatt



INTRODUCTION

Insert ring magnets in a stiff straw such that every alternate pair of magnets is repelling the previous pair. Place a frog at the top and enjoy it's jumping as you push the magnets downwards.


TOOLS:

- Scissors (1)

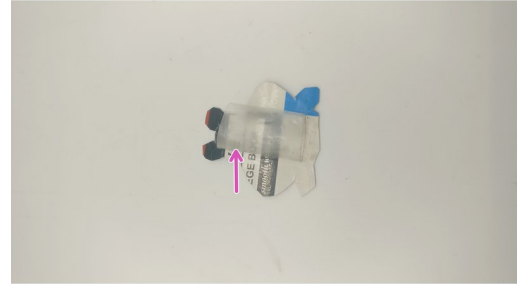
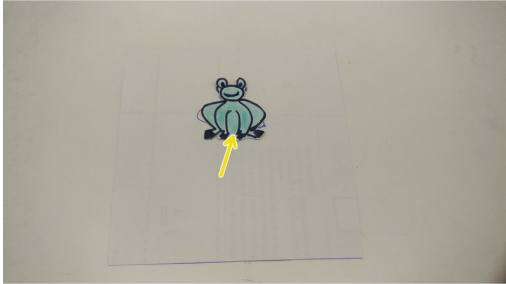
PARTS:

- Foam Piece (1)
4 x 4 cm
- Stiff Straw (1)
- Ring Magnets (12)
- Paper (1)
- Sketch pen (1)
- card sheet (1)
- Fat Straw (1)

— Precautions

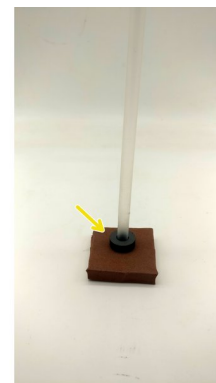
 Sharp edges of the scissor may lead to cuts, if used on body parts. Exercise caution while using it.

— Step 1 - Sketching Frog



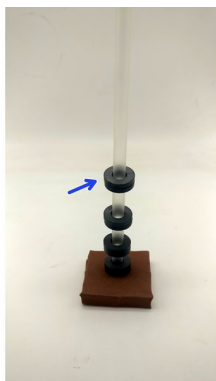
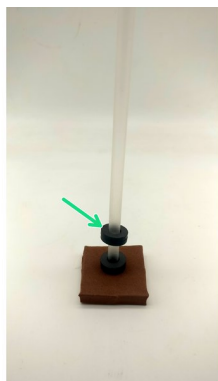
- Draw Frog on a sheet of paper and colour it .
- Paste the paper on a card sheet and cut out the frog using scissor .
- Roll a tape or piece of paper to form a cylinder with a diameter bigger than the stiff plastic straw.
- ① You may use another plastic straw instead of tape/paper. The straw needs to have a bigger diameter than the stiff straw.

— Step 2 - Fixing the Straw



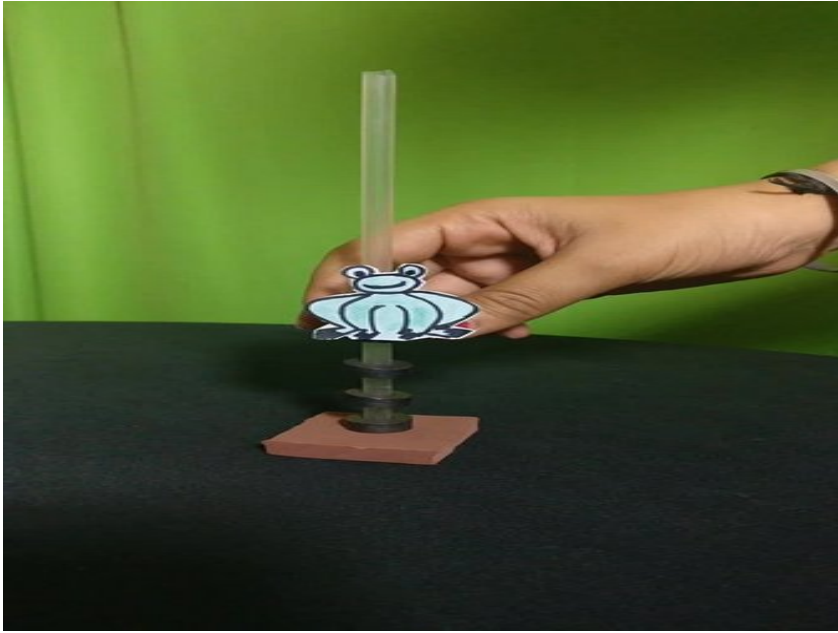
- Take 4 x 4 cm of foam and make a hole at the center using scissor .
- Insert a stiff straw in the hole made at center of the foam .
- Insert two ring magnets in the straw. Place the magnets such that they attract each other.

— Step 3 - Repulsion



- Now take another pair of ring magnets and insert in the straw such that these two magnets repel the two which are already in.
- Repeat the above step with two more pairs of magnets.
- Push the frog and the magnets downwards and release to see the frog bounce back.

— Play !!



- A glimpse of the jumping frog .

— Troubleshooting

- 🔧 The pair of magnets need to repel each other for the bouncing to happen.
- 🔧 Straw should be firm.
- 🔧 If the hole in the foam is bigger than the straw, the straw may not stand straight.

— Observation

- Measure and record the distance between magnet pair 1, 2, 3, 4.
- Push magnet pair number 2 and observe the height the frog jumps to. Now push pair number 3 and compare the height. Compare with pair number 4.
- Repeat the experiment with single magnet instead of a pair. Compare the behaviour.
- Add two more pairs and compare the behaviour with 4 pairs.