



POM POM POPPER

MATERIALS NEEDED:

White Paper Cup
Balloon
Pom Poms
Markers

VOCABULARY:

Inertia	Kinetic Energy	Reaction
Gravity	Potential Energy	Tension
Newton's Laws	Motion	Velocity
Acceleration	Mass	Weight

DIRECTIONS:

1. Open the balloon and stretch the open end over the cut off end of the cup.
2. Draw designs on your cup using your markers.
3. Place a pom pom inside the cup so it rests in the balloon.
4. Hold the cup in one hand with the open end of the cup facing away.
5. Pull back on the tied part of the balloon and release. The pom pom should go flying out!



THE STEAM BEHIND THE EXPERIMENT:

This catapult model uses the same basic scientific principles from Newton's Laws of Motion, requiring force to be applied to overcome the inertia (tendency of an object to remain still) of the object – pulling back on the balloon – which adds tension to the balloon as it stretches, gaining potential (or stored) energy that is then transferred to the pom pom as kinetic energy when the balloon is released.

This activity demonstrates Newton's Three Laws of Motion:

1. An object at rest will stay at rest, and an object in motion will stay in motion, until an unbalanced force acts upon it. (For this experiment, the pom pom is not going to move by itself. We have to apply a force. In this case, we pull back on the balloon and release it. The pom pom does not stay in motion forever because of gravity and drag from air molecules).
2. Force = Mass x Acceleration. (For this experiment, the pom pom does not have a lot of mass, so it does not take lot of force to move it. The more we pull back on the balloon, the more force is applied, and the higher or further the pom pom will fly).
3. For every action, there is an equal and opposite reaction. (For this experiment, we pull back on the balloon to fling the pom pom forward!).

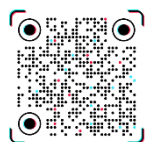
MAKE IT AWESOME:

Try using other items in your launcher – such as marshmallows!

EXTENSIONS:

1. Try setting up cups to use as targets. Can you make your pom pom land in a cup?
2. What other changes can you come up with for this experiment?

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