Ohio State University Extension Lorain County 4-H School Enrichment Outreach

Motion and the Balloon Powered Car

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Ever heard of Sir Isaac Newton?

- He was a scientist in the late1600's
- An apple fell from the tree he was sitting under and hit him... (maybe, anyway, it's a good story.)
- He explained, using math and physics, WHY things move the way they do based on 3 "laws" of motion.

LAWS of motion?

Not traffic or criminal laws, but a statement of *fact*.

A rule based on *scientifically consistent* observation.

Understanding Newton's laws is as easy as riding a bike.

Don't believe me? Check this out!

Newton's 3 Laws with a Bicycle by Joshua Manley TED-Ed
https://ed.ted.com/lessons/joshua-manley-newton-s-3-laws-with-a-bicycle#review

Today's activity – Balloon powered cars provide a perfect example of ALL three laws of motion.

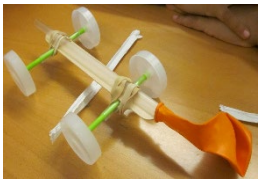
Once you build your car, we challenge you to:

1. Discover how **action – reaction** takes place?
2. See if you can spot the **Law of Inertia**.
3. How could you investigate how **mass affects the movement** of your car?

And I don't know about you, but I understand things better when I make them.

So, let's build it!!

Pieces and parts:



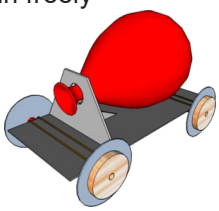
These cars need **a base**, **wheels** (and a way for them to turn easily) and **power**. You'll need scissors and tape and possibly other supplies depending on your design!

Base material ideas: (lightweight)

cardboard or foam core board, stiff foam, container or bottle, box, craft sticks, Legos, etc.

Wheels assembly ideas – axel and wheels plus means to spin freely:

- Straight straw to hold axels so they spin freely
- Axel material like wooden skewer or plastic rod
- Wheels – round cardboard, foam, wood, bottle caps, buttons, beads, spools, Lego wheels, etc.



Your balloon power assembly:

You'll need a balloon and a way to hook it onto the car. Attaching it to a straw i e i picture can work. Having the straw extend past the edge of the car body helps.
he diagram above with the red balloon i t er idea!

Ready, Set, Build, and REMEMBER:

- **Be creative** – there isn't a RIGHT way.
- **Be observant** – scientists learn about materials and techniques from every attempt.
- **Be willing to test and redesign** until it's just right for **YOU!**