



Spring Loaded Parent Guide

Can a mousetrap be a battery? It might surprise you to learn that it can. Many people might immediately think of the ubiquitous Duracell AA or D when they think of a battery. Perhaps some think of a car battery or maybe even the batteries in electric vehicles (even though these are really just hundreds of AA-like cells connected together).



All of these are more accurately chemical batteries. Technically a 'battery' can be anything able to store energy. A brick on a shelf stores gravitational energy. Drop it on your foot to feel how much! Likewise, a dam can store the gravitational potential energy of water.

A set spring, therefore, can also be considered a battery. It stores the elastic potential energy of a twisted spring. It is this stored energy that can be used to power a simple vehicle, and it is such a vehicle, a mousetrap car, that your child will design and build in this challenge.

Their vehicle must have at least three wheels and should be able to cover a distance of about 10 m (33 ft) on a single 'charge'. No push starts are allowed.

This challenge can be deceptively tricky. Mousetraps snap shut very quickly, releasing all their energy in a split second. These young engineers will need to find a way to tap this energy more slowly and consistently, something they can do if they understand mechanical advantage. And then there is the problem all mechanical systems need to overcome – friction!

How you can support your child

The best way for you to encourage and support your child is to value, take an interest in and talk to them about what they are doing. Here are some questions you might ask.

- Ask about what they are learning about energy, the conversion of potential energy into kinetic energy, and energy storage.
- Ask about mechanical advantage. What is it? How does it work? Where is the concept used in everyday life?
- Ask about the effect of friction on the motion of their vehicle. Where is friction wanted and not wanted and how can it be increased or decreased?
- Ask about what the most difficult aspects of the challenge are or have been. Discuss ways in which they might approach or overcome these difficulties.
- Ask what it is like to work together in a team to creatively solve a real engineering problem.
- Ask what the most interesting things are they learning about engineering by doing this challenge.
- Ask if doing this challenge makes them want to be an engineer or not and why.



DID YOU KNOW

The total global grid battery storage capacity is estimated to be 55 GW. Sounds like a lot.

That is enough storage capacity for about 19 hours.

Your interest validates your child's interest in engineering (and STEM more broadly) and gives them the permission and freedom to explore.



LEARN MORE

Click the link below or scan the code to watch a video that explains the principle of mechanical advantage and how it can be most effectively applied to build a winning mousetrap car.

[1st place Mousetrap Car Ideas](#)

