Balloon Powered Rocket Car

https://www.bloodhoundlsr.com/run-report-run-34-hst-13-16-nov-19/

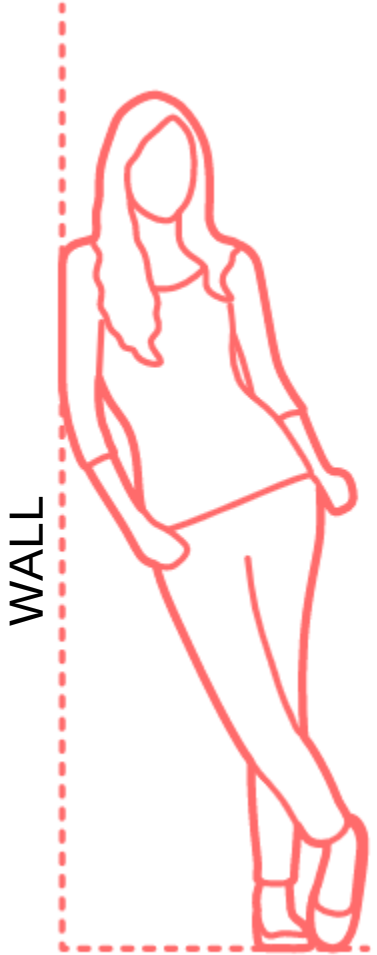
Rockets and Rockets Cars

Newton’s Third Law:

For Every Action there is an Equal and Opposite Reaction.

If you lean against a wall, you exert a force on the wall. The wall then exerts an equal and opposite force on you.

This way you don’t fall over and the wall does not fall over.

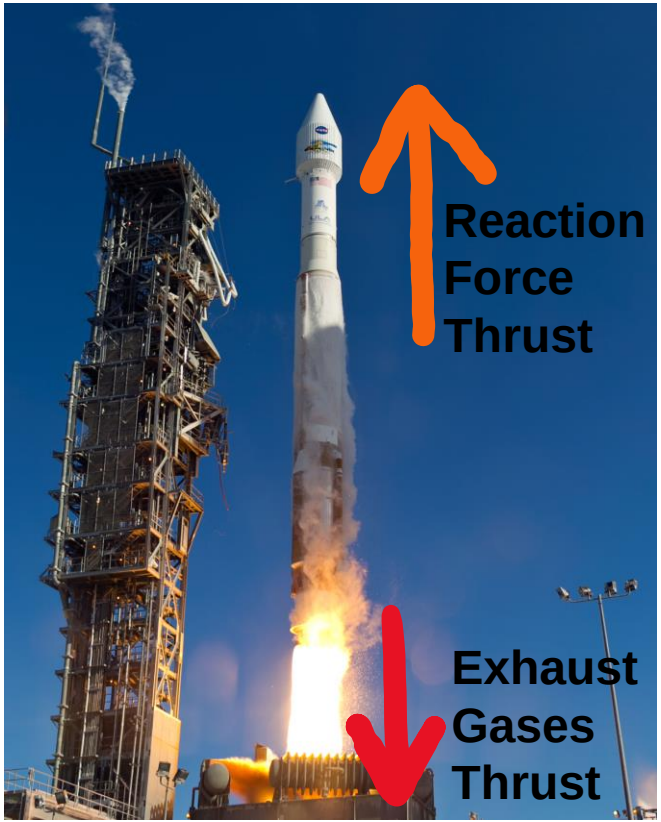


Rockets and Forces

Rockets produce thrust - this is from conversion of chemical energy into hot exhaust gases that exit the rocket through nozzle or tube.

Because the exhaust gases are pushed out of the back of the rocket and rocket car, there is an equal and opposite reaction force that forces the Rocket upwards or a Rocket Car forwards.

https://www.autocar.co.uk/car-news/industry/bloodhound-ssc-invites-sponsorship-land-speed-record-attempt



https://www.nasa.gov/multimedia/imagegallery/image_feature_2448.html

Balloon Powered Rocket Car

The inflated balloon releases the potential energy stored in the elastic balloon material

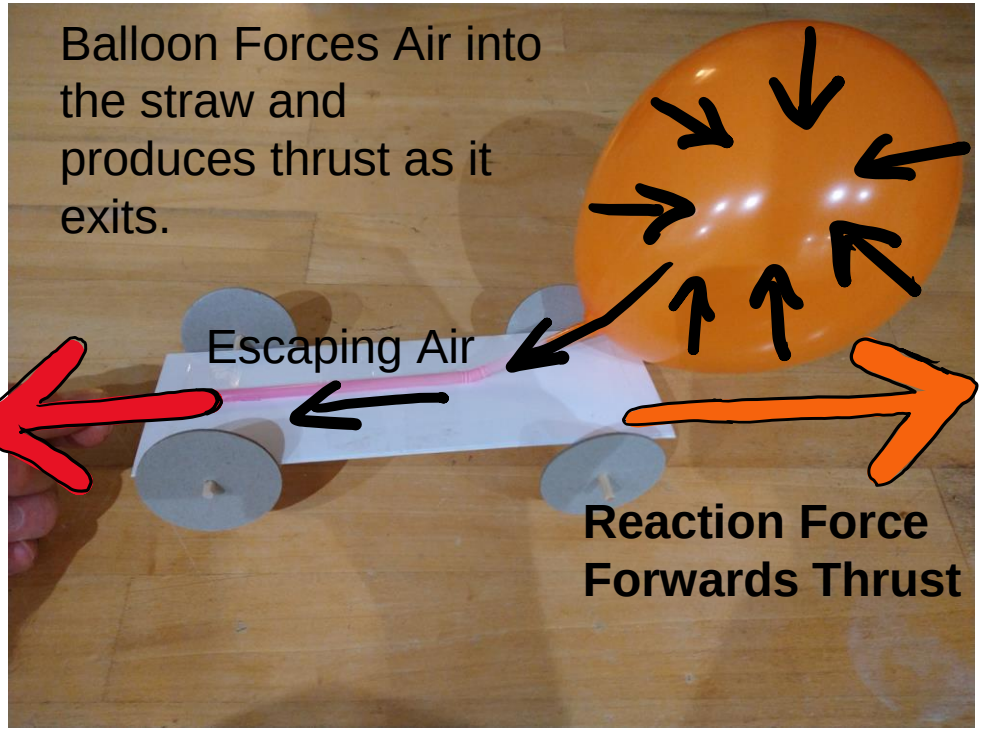
Newton’s Third Law applies.

Instead of using Chemical Energy, the balloon stores Potential Energy when inflated.

When the balloon deflates it forces air out of the straw.

This then produces an equal and opposite force to move the car forwards.

You are converting Potential Energy to Kinetic Energy (movement).



Rockets and Forces

Why might the car not move forwards?

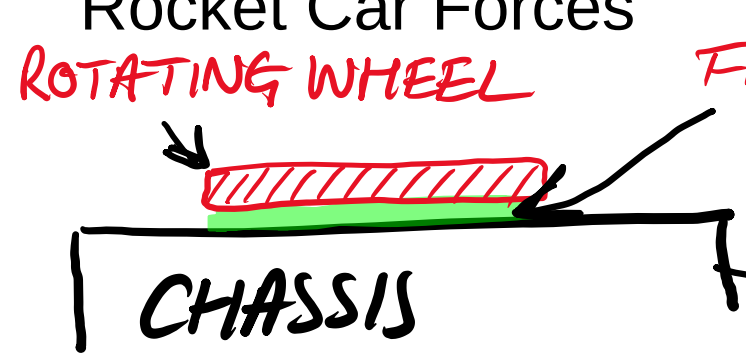
To move the car forwards, the force produced by the deflating balloon exiting the straw must be greater than the resistance forces trying to keep the car stationary.

The resistance forces are mainly from **Friction**. The force between two surfaces that are trying to slide, or being moved past each other.

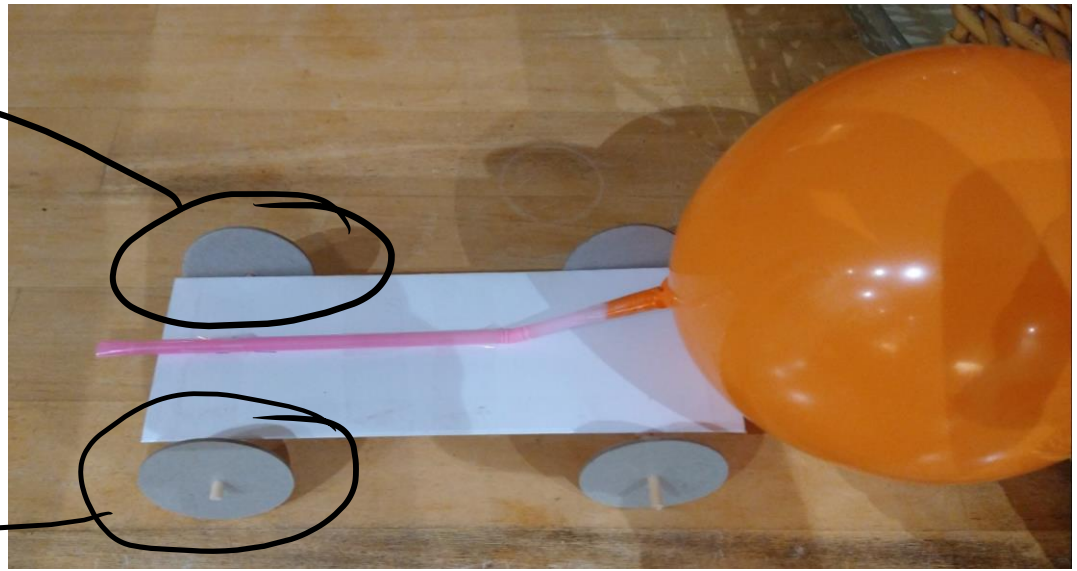
The force acts in the opposite direction to movement or intended movement, this means it will slow a body down.

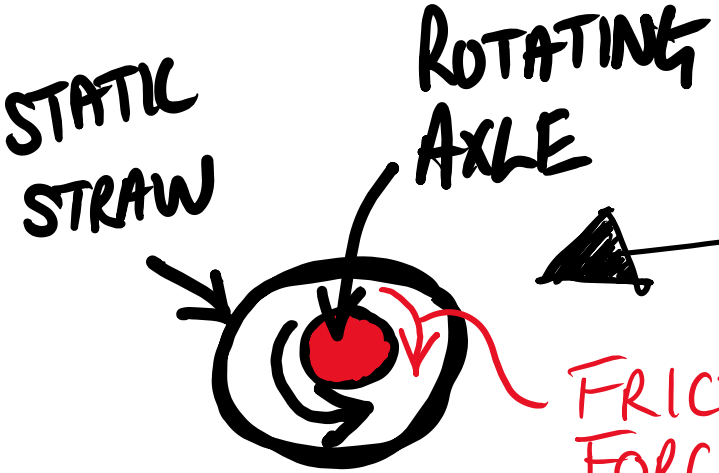
Where might this be on your Rocket Car?

Rocket Car Forces



FRICTIONAL FORCE WHERE ROTATING WHEEL TOUCHES CHASSIS





FRICTIONAL FORCE WHERE STRAW TOUCHES AXLE