

The background is a solid teal color. In the center-left area, there are several overlapping, organic, blob-like shapes in a lighter shade of teal. These shapes are semi-transparent, creating a layered effect. The word "GRAVITY" is centered within these shapes.

GRAVITY

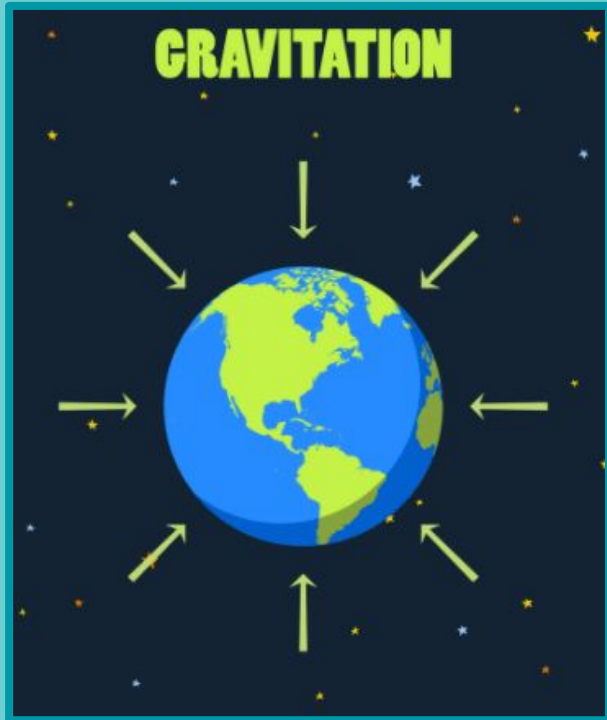
GRAVITY MAKES US FALL

Let's Think About It: What would happen if you jumped up into the air? Would you go flying off into the sky? While that would be incredibly cool to experience, that would not happen. After jumping up, we all fall back to the ground! This is due to **GRAVITY**!

- Gravity is the invisible force that makes everything fall down towards Earth surface, including you!



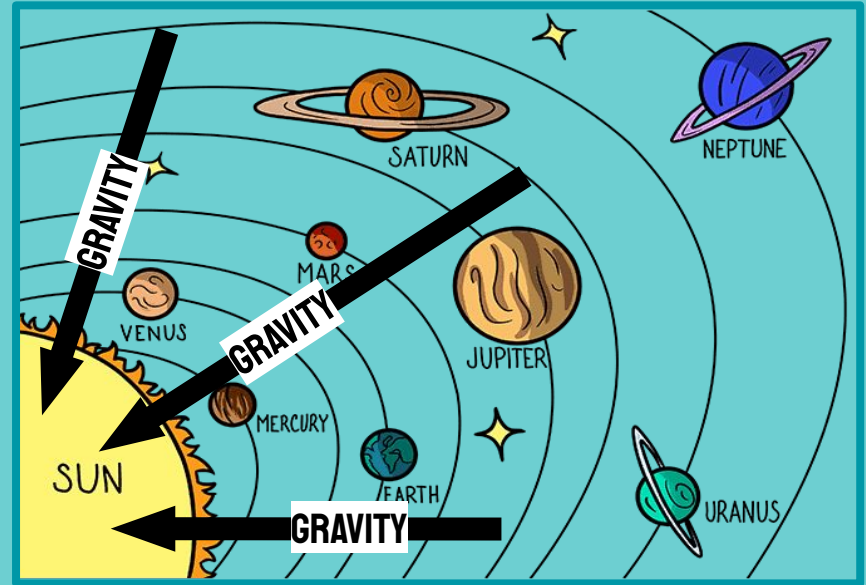
GRAVITY IS IMPORTANT



- Gravity is the invisible super glue that holds everything we love about our planet together!
- Without the force of gravity, life as we know it would be impossible!
 - There would be no humans or animals~ we'd all float away.
 - There would be no air or atmosphere~ as gravity is responsible for holding it in place.

GRAVITY AND OUR SOLAR SYSTEM

- More broadly speaking, gravity is the force by which a planet, like our Earth, attracts objects toward its center
- For example, the force of Earth's gravity keeps the moon in orbit around our planet! Additionally, gravity keeps all of the planets, including our Earth, in orbit around the sun!



GRAVITY & THE INTELLIGENT FILTER

- When water is poured into the top of the intelligent filter, it falls towards the ground due to **gravity**!
- If there was no gravity, the water being poured out of the cup would float away!
- Additionally, because of gravity, we can use the downwards flow of water through the filter to **clean the water**!
- As the water flows down the column, it first encounters a **sediment filter**, which is the taller column composed of separate pieces!



INTELLIGENT FILTER

GRAVITY & THE SEDIMENT FILTER

- Water is poured through the **sediment filter** and falls to the bottom of the filter due to gravity
- As the water falls through multiple filter layers, tiny particles are separated from the water! This is because the particles are bigger than the holes in the filters!
- We will talk about the specific particles filtered out in our third module!



SEDIMENT FILTER



**LAYERS OF
SEDIMENT FILTER**

ENERGY CAN DO WORK

- Energy is the ability to do work or cause change!
- Big cities and small towns exist before people learned how to change energy from it's different forms and use it to do work
- People also use energy to walk, bike, play fútbol, cook food, and even more!



ENERGY HAS DIFFERENT FORMS

Energy comes in many different forms!

- **Heat**
- **Light**
- **Motion**
- **Electrical**
- **Chemical**
- **Gravitational**



These forms of energy can be grouped into two general types of energy for doing work

1. **Potential energy**
(stored energy)
2. **Kinetic energy**
(working energy)

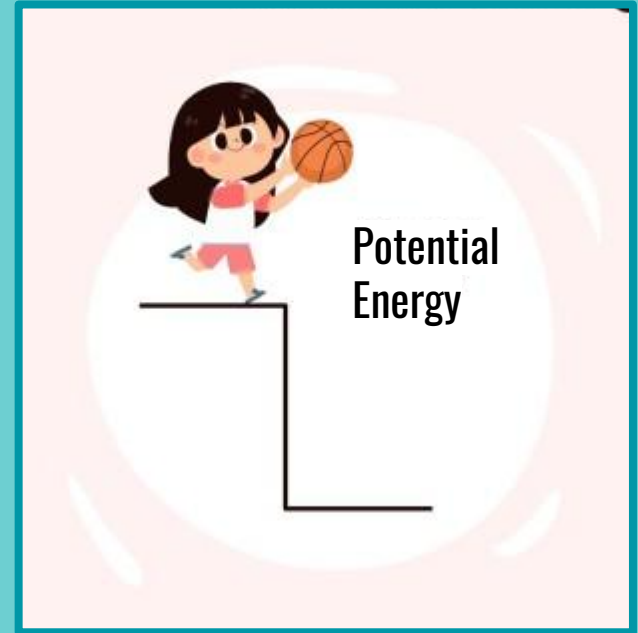


POTENTIAL ENERGY

Imagine This: “You all have so much potential,” says a coach to his futbol team. The coach says this because he knows that his team can do something that haven’t haven’t done yet! They can win their game!

Potential energy is energy that is stored or has yet to be used!

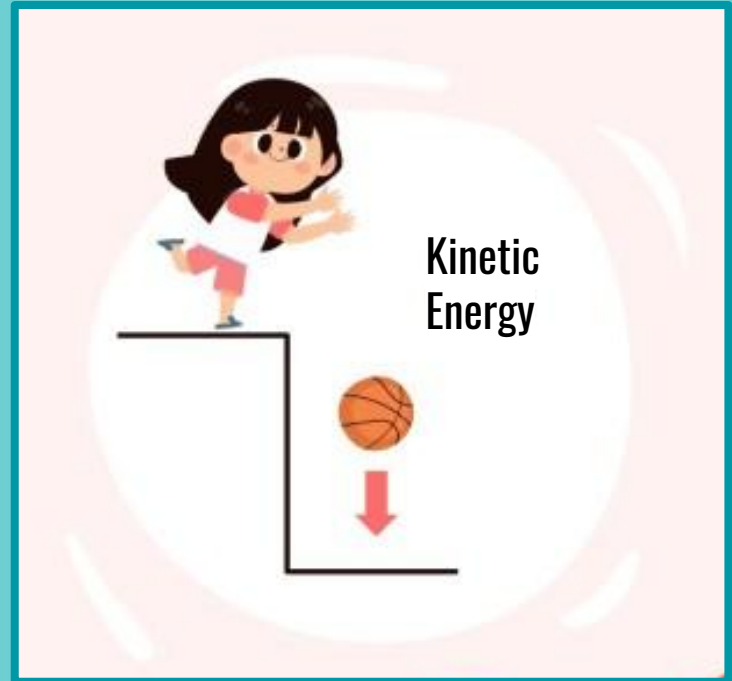
- The stored energy an object has because of its position or state. For example, a ball held off the ground, a bicycle on top of a hill, and a stretched spring all have potential energy!



KINETIC ENERGY

Meanwhile, kinetic energy is the energy an object has because of its motion!

- Whenever something or someone is moving, they have kinetic energy!
- For example, a ball being dropped off of a ledge, you running on a field, a moving bike, or the wind blowing all have kinetic energy!



ENERGY & THE INTELLIGENT FILTER

- Now let's track the path of water and its energy as it travels through our intelligent filter!
- When water is positioned at the top of the filter but hasn't been released yet, it has **POTENTIAL ENERGY**!
- As the water falls through the intelligent filter, it has **KINETIC ENERGY**!

