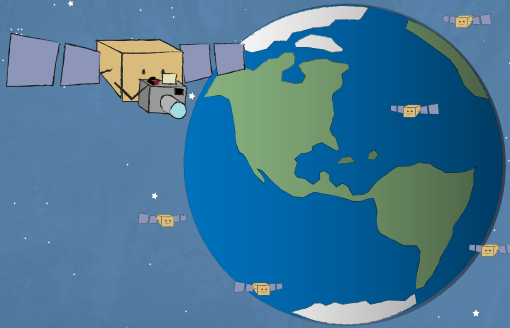
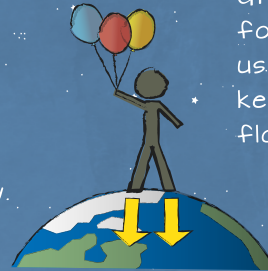




# WHY DON'T SATELLITES FALL OUT OF THE SKY?

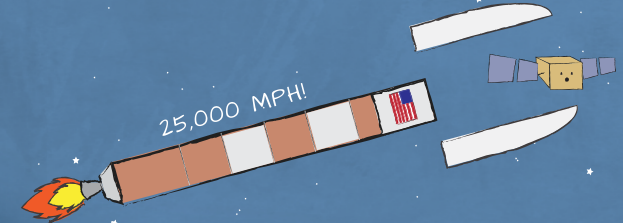


A satellite is a type of machine that orbits Earth, taking pictures and collecting information. There are thousands of satellites orbiting Earth right now. How do they all stay up there?

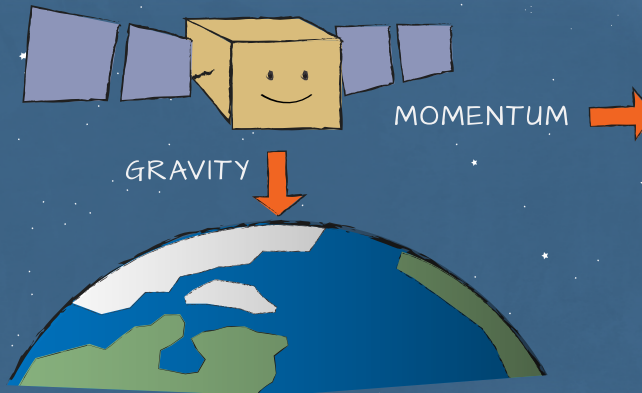


Gravity is the force that holds us on Earth and keeps us all from floating away.

To overcome the strong pull of gravity, satellites have to launch on a rocket. Once the rocket reaches the right location above Earth, it lets go of the satellite.

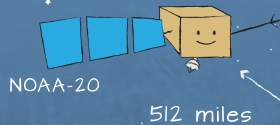


The satellite uses the energy it picked up from the rocket to stay in motion. That motion is called momentum. Even when a satellite is thousands of miles away, Earth's gravity is still tugging on it. Gravity, combined with the momentum from the rocket, causes the satellite to follow a circular path around Earth: an **orbit**.

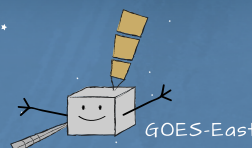


When a satellite is in orbit, it has a perfect balance between its momentum and Earth's gravity. Gravity is stronger the closer you are to Earth. And satellites that orbit close to Earth must travel at very high speeds to stay in orbit.

For example, the satellite NOAA-20 orbits just a few hundred miles above Earth. It has to travel at **17,000** miles per hour to stay in orbit.



On the other hand, NOAA's GOES-East satellite orbits 22,000 miles above Earth. It only has to travel about **6,700** miles per hour to stay in orbit.



Satellites can stay in an orbit for hundreds of years, so we don't have to worry about them falling down to Earth.

Phew!



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