

## Pushing & Pulling

Week #1 September 9

A leaf drifts to the ground, A soccer ball rolls past the goal. How do these motions occur? They are due to powers called **forces**. All forces either pull or push. Sometimes it is easy to tell where the force is coming from: *you* push the scooter, and it moves. Other forces, like **gravity** are invisible. You can't see **gravity**, but it is pulling you down to Earth all of the time. A popular story is that Isaac Newton watched an apple fall one day and figured there must be a force pulling the apple down, rather than up, horizontally, or diagonally. The name of this force is **gravity**. **Gravity** is the attraction between objects and it is constantly at work.



*soccer ball rolls past the goal*



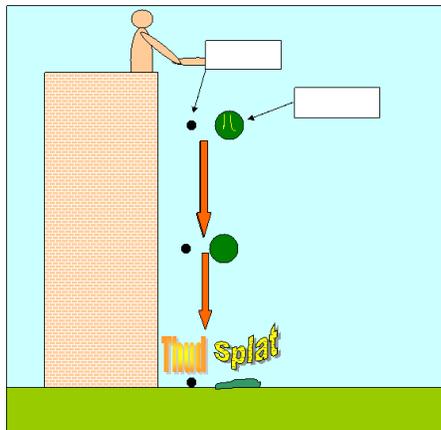
*apple falls down, not up*



*leaf falling to the ground*

### Drop it!

If you took a cannon ball and a watermelon and dropped them out of a six-story building, both would hit the ground at the same time. Back in the 1500's, Galileo did experiments trying to prove this point. He didn't use a cannon ball and watermelon, but he did climb the Leaning Tower of Pisa and dropped things to see how they fell. He discovered that **all things fall at the same speed**. The pull of the Earth's gravity, called G-force, moves everything toward the Earth at the same rate, no matter how much the object weighs!



*Small black dot=cannon ball & large green dot=watermelon  
Canon Ball and Watermelon hit the ground at the same time*

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