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## Gravitational Forces Between Objects Activity for Kids

### Measure Your Height With Gravity DIY

 Duration: **20 min**

 Difficulty: **Medium**

 Cost: **\$0 to \$5**

Learn how to measure your height using the force of gravity!

### Material List

- 1 Pencil
- 1 Video camera or smart phone
- 1 Friend to film you

### Instructions

- 1 Hold the pencil in line with the top of your head.
- 2 Have a friend film you drop the pencil from that height.
- 3 Count how many video frames passed from the release of the pencil to the moment it hit the floor.
- 4 Divide that number by the number of frames your camera captures each second (most cameras capture 30 frames each second).
- 5 Multiply  $1/2$  times 9.8. Then multiply that by the number of seconds twice to find your height in meters.
- 6 You can then convert that number to feet and inches.

### How It Works

Due to gravity, all falling objects accelerate towards the center of the Earth at the same rate. Without air resistance, they speed up by 9.8 meters per second, each second. We can use that knowledge to calculate the height. To get more accurate results you could repeat the drop a few times and average the data.