**GO JUMP INVESTIGATION**

**Background**

Each planet in the solar system has a different mass and so gravity changes depending on which planet you are on. This means you can jump different heights on different planets. This assumes that the surface is solid!

**Purpose**

To calculate how high you could jump on another planet.

**Materials**

* Metre ruler
* Calculator

**Procedure**

1. Choose a safe and clear space, perhaps outside.
2. One of your laboratory partners needs to hold the metre ruler vertically, with the ‘zero end’ touching the ground.
3. Another needs to be crouched down, with their eyes level with the ruler.
4. Stand next to the ruler and jump as high as you can.
5. Your lab partner needs to measure the height your feet got to in the jump.
6. Repeat two more times and record your jump heights.

**Results**

1. Calculate you average jump height by:

= Average Jump Height

|  |  |  |  |
| --- | --- | --- | --- |
| **Jump 1 (cm)** | **Jump 2 (cm)** | **Jump 3 (cm)** | **Average Jump Height (cm)** |
|  |  |  |  |

1. Calculate the height you could jump on the moon and other planets by:

= Jump Height on Planet/Moon

|  |  |  |
| --- | --- | --- |
| Planet or Moon | Gravity compared to Earth’s (Earth = 1) | Predicted Jump Height (cm) |
| Earth | 1 |  |
| Moon | 0.16 |  |
| Planet or Moon | Gravity compared to Earth’s (Earth = 1) | Predicted Jump Height (cm) |
| Mercury | 0.38 |  |
| Venus | 0.91 |  |
| Mars | 0.38 |  |
| Jupiter | 2.36 |  |
| Saturn | 0.92 |  |
| Uranus | 0.89 |  |
| Neptune | 1.1 |  |

**Discussion**

1. Identify the celestial body/bodies on which you could jump:
   1. The highest
   2. The lowest
   3. About the same as on Earth
2. Astronauts on the Moon were able to jump higher than on Earth but not as high as you calculated above. Propose a reason why.
3. The current high jump world record was set by Javier Sotomayor in 1993. The Cuban jumped a whopping 2.45 m high. Calculate how high Javier could jump on each planet.