Physics 11

**Section 5.2: Little “g”**

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the magnitude of the gravity “force field” created by an object. It depends on how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the object is and how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ it is.

The formula for gravitational field strength is …

Calculate Earth’s gravitational field strength at its surface:

What are the units of “little g”?

Unsurprisingly, we also call little g the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Little g can make our life easier, because it turns

into

Notable values of little g

Surface of Earth: \_\_\_\_\_\_\_\_\_\_\_ Surface of Moon: \_\_\_\_\_\_\_\_\_\_\_

**Mass vs. Weight**

$F\_{g}$ is also called weight. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!!!

|  |  |  |
| --- | --- | --- |
|  | Mass  | Weight |
| Metric System Units |  |  |
| Imperial System Units |  |  |

Calculate your mass and weight on earth and the moon:

**g-forces**

g-force is not a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It is a measurement of how much \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ an

object has that is making it feel \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

But not all acceleration makes you feel squished. For example, during free-fall on Earth, an object does not feel squished, even though it has an acceleration.

So, in most situations on Earth, g-force is acceleration \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

expressed as a multiple of \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

This gives us slightly different situations horizontally and vertically…

**Example:** An average person can handle about 4 g’s upwards before blacking out. Astronauts and fighter pilots can handle about 9 g’s. What acceleration does each of these correspond to?