

# Acceleration of Gravity

## Acceleration of Gravity

### Objectives

Identify variables which affect the acceleration of gravity on a planet.

Calculate the acceleration of gravity on a planet.

Explain why Earth has an  $A_g$  of  $9.8 \text{ m/s}^2$ .

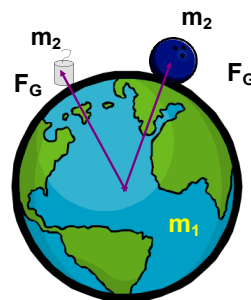


## Acceleration of Gravity

rate at which falling object speeds up

Unit:  $\text{m/s}^2$

constant for all objects in the same location  $9.8 \text{ m/s}^2$



## Force of Gravity

depends on mass

Unit: N

$9.8 \text{ N/1 kg}$

$$F_g = \frac{G \cdot m_1 \cdot m_2}{d^2}$$

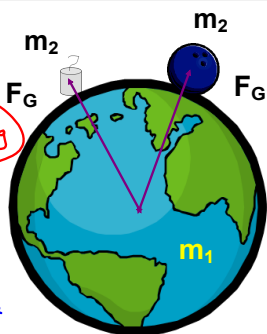
$$F = m \cdot a$$

$$a = \frac{F}{m}$$

$$\frac{10 \text{ N}}{1 \text{ kg}} = 10 \text{ m/s}^2$$

$$\frac{100 \text{ N}}{10 \text{ kg}} = 10 \text{ m/s}^2$$

10 N force every 1 kg



## Acceleration of Gravity

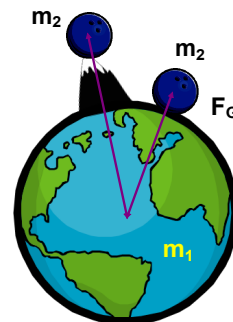
$$A_g = \frac{G \cdot m}{r^2}$$

$$F_g = \frac{G \cdot m_1 \cdot m_2}{d^2}$$

$$F = m \cdot a$$

$$\frac{G \cdot m_1 \cdot m_2}{d^2} = m \cdot a$$

$$a = \frac{G \cdot m}{r^2}$$



## Assignments . . .

- Complete Lab 12.1

