

Name: \_\_\_\_\_ Block: \_\_\_\_\_

## Universal Gravitation

For this worksheet, you will need planetary data from your reference tables.

1. Find the force of gravity between the earth and the sun.

$$3.52 \times 10^{22} \text{ N}$$

2. Find the acceleration due to gravity (the value of  $g$ ) on the planet Mars.

$$3.62 \frac{\text{m}}{\text{s}^2}$$

3. A person has a mass of 80. kg.

(a) What is the weight of this person on the surface of the Earth?

$$784 \text{ N}$$

(b) What is the weight of the same person when orbiting the Earth at a height of  $4.0 \times 10^6$  m above its surface?

$$296 \text{ N}$$

4. A mystery planet in another part of the galaxy has an acceleration due to gravity of  $5.0 \frac{\text{m}}{\text{s}^2}$ . If the radius of this planet is  $2.0 \times 10^6$  m, what is its mass?

$$3.0 \times 10^{23} \text{ kg}$$