

## Volume and Mass of the Solar System

The mass and radius of 10 of the heavenly bodies in our solar system are given in the table to the right.

<i>Planet</i>	<i>Mass (kg)</i>	<i>Radius (m)</i>
Mercury	$3.30 \times 10^{23}$	2,440,000
Venus	$4.87 \times 10^{24}$	6,051,000
Earth	$5.97 \times 10^{24}$	6,378,000
Moon	$7.35 \times 10^{22}$	1,738,000
Mars	$6.42 \times 10^{23}$	3,397,000
Jupiter	$1.90 \times 10^{27}$	71,492,000
Saturn	$5.69 \times 10^{26}$	60,268,000
Uranus	$8.66 \times 10^{25}$	25,559,000
Neptune	$1.03 \times 10^{26}$	24,764,000
Pluto	$1.31 \times 10^{22}$	1,160,000

1. Which of the bodies has the largest mass? The largest radius?

2. Which of the bodies has the smallest mass? The smallest radius?

3. Does there appear to be a relationship between the mass of a body and its radius?

4. Find the ratios between the masses of the following bodies and their radii.

a. Mercury      b. Venus      c. Earth      d. Moon

e. Mars      f. Jupiter      g. Saturn      h. Uranus      i. Neptune      j. Pluto

5. Based on #4, is there in fact a ratio-relationship between a body's mass and radius?

6. Find the volume of each of the bodies.

a. Mercury      b. Venus      c. Earth      d. Moon      e. Mars

f. Jupiter      g. Saturn      h. Uranus      i. Neptune      j. Pluto

7. The density of an object is defined as mass per unit volume. Find the density of each of the bodies.

a. Mercury      b. Venus      c. Earth      d. Moon      e. Mars

f. Jupiter      g. Saturn      h. Uranus      i. Neptune      j. Pluto

8. Which body is the densest? Which is the least dense?

9. What might cause any differences between ratios?