

DENSITY OF THE HUMAN BODY

A. BODY VOLUME

You can get a rough idea of the volume of your body by treating each major subdivision as if it were a regular solid. For example, your arms are roughly cylindrical, your head is roughly spherical, etc.

Use the measuring tape to take the measurements (in **cm**) of all your major body parts. Remember that you have TWO arms, hands, legs, and feet! Add all the volumes together to get your total body volume in **cm³**.

<u>Volume Equations:</u>		Circumference = C	Measure in cm
rectangle	$V = L \times W \times H$	cylinder	$V = \pi \times r^2 \times H$
sphere	$V = 4/3 \times \pi \times r^3$	radius	$r = C / (2 \times \pi)$

1. Head (sphere)

Circumference = _____
 Radius = _____
 Volume = _____

2. Neck (cylinder)

Circumference = _____
 Radius = _____
 Length = _____
 Volume = _____

3. Torso (cylinder)

Circumference = _____
 Radius = _____
 Length = _____
 Volume = _____

4. Arm (cylinder) x2

Circumference = _____
 Radius = _____
 Length = _____
 Volume = _____

5. Hand (sphere, use a clenched fist) x2

Circumference = _____
 Radius = _____
 Volume = _____

6. Leg (cylinder) x2

Circumference = _____
 Radius = _____
 Length = _____
 Volume = _____

7. Foot (rectangle) x2

Length = _____
 Width = _____
 Height = _____
 Volume = _____

Add all volumes = _____ cm³

B. BODY MASS

Convert your weight in pounds to mass in **grams**:

454 x weight in pounds = _____ **g**

C. BODY DENSITY

Calculate your body density in **g/cm³**.
Show full solution.

D. HUMAN BODY DENSITY

For your final answer, simply change the units you got in Part C from **g/cm³** to **kg/L** (they mean the same thing but human body mass and volume are usually measured in kg and L).

FINAL ANSWER = _____ kg/L (1 g/cm³ = 1 kg/L)

(avg. human body density is _____ kg/L)