

1. What is your height in meters? (Assume you are 6 ft 4 in tall.)
 - a. Convert feet into inches
 - b. Add inches to inches
 - c. Convert inches to centimeters
 - d. Convert centimeters to meters
 - e. Your work should look something like the following:

$$6 \text{ ft} \times \frac{12 \text{ in}}{1 \text{ ft}} = 72 \text{ inches}$$

$$72 \text{ inches} + 4 \text{ inches} = 76 \text{ inches}$$

$$76 \text{ inches} \times \frac{2.54 \text{ cm}}{1 \text{ inch}} = 190 \text{ cm}$$

$$76 \text{ inches} \times \frac{2.54 \text{ cm}}{1 \text{ inch}} = 190 \text{ cm}$$

$$190 \text{ cm} \times \frac{1 \text{ meter}}{100 \text{ cm}} = 1.9 \text{ m}$$

2. What is your height in centimeters? (Assume your height is 5 ft 2 in tall.)
 - a. Convert feet into inches
 - b. Add inches to inches
 - c. Convert inches to centimeters
 - d. Your work should look something like the following:

$$5 \text{ ft} \times \frac{12 \text{ in}}{1 \text{ ft}} = 60 \text{ inches}$$

$$60 \text{ in} + 2 \text{ in} = 62 \text{ inches}$$

$$62 \text{ inches} \times \frac{2.54 \text{ cm}}{1 \text{ inch}} = 160 \text{ cm}$$

3. What is the volume of a liter in mm^3 ?
 - a. Convert Liters to milliliters
 - b. Convert milliliters to cm^3
 - c. Convert cm^3 to mm^3
 - d. Your work should look something like the following:

$$1 \text{ liter} \times \frac{1,000 \text{ mL}}{\text{Liters}} \times \frac{1 \text{ cm}^3}{1 \text{ ml}} \times \frac{10 \text{ mm}}{1 \text{ cm}} \times \frac{10 \text{ mm}}{1 \text{ cm}} \times \frac{10 \text{ mm}}{1 \text{ cm}} = 1,000,000 \text{ mm}^3$$

4. Show that 1 cubic meter contains 1,000L

- Convert m^3 to cm^3
- Convert cm^3 to ml
- Convert ml to L
- Your work should look something like the following:

$$1 m^3 \times \frac{100 cm}{m} \times \frac{100 cm}{m} \times \frac{100 cm}{m} \times \frac{1 ml}{1 cm^3} \times \frac{L}{1000 ml} = 1,000 L$$

5. Water is sold in half-liter bottles. What is the mass, in kilograms and in grams, of the water in such a full bottle?

- Hint: 1 gram of water is 1 cm^3 of water is 1 ml of water
- Convert liters of water to g of water
- Convert g of water to kg of water
- Your work should look something like the following:

$$0.500 l H_2O \times \frac{1,000 ml}{l} \times \frac{1 g}{1 ml} = 500 g H_2O$$
$$500 g H_2O \times \frac{1 kg}{1,000 g} = 0.500 kg H_2O$$

6. A rectangle container measures 10 cm x 20 cm x 25 cm is filled with water. What is the mass of this volume of water in kilograms and grams?

- Calculate the volume of water
- Convert cm^3 to ml
- Convert ml to g
- Convert g to kg
- Your work should look something like the following:

$$10 cm \times 20 cm \times 25 cm = 5000 cm^3$$

$$5000 cm^3 \times \frac{1 ml}{1 cm^3} \times \frac{1 g}{1 ml} = 5000 g$$

$$5000 g \times \frac{1 kg}{1,000 g} = 5 kg$$

17. Compute the density in g/cm^3 of a piece of metal that has a mass of 0.500 kg and a volume of $63 cm^3$.

- a. Calculate density (kg divided by cm^3)
- b. Convert kg to grams
- c. Your work should look something like the following:

$$D = \frac{m}{V}$$

$$\frac{0.500 \text{ kg}}{63 \text{ cm}^3} \times \frac{1,000 \text{ g}}{1 \text{ kg}} = 7.9 \text{ g/cm}^3$$

19. Round off the following number to two significant figures:

- a. 95.6196
- b. 0.002080.0021
- c. 94389400
- d. 0.0003440.00034

20. Round off the following number to three significant figures:

- a. 0.0099950.0100
- b. 644.73645
- c. 0.0105990.0106
- d. 8429.558430

21. Round off the following number to three significant figures:

- a. 0.99961.00
- b. 7384.387380
- c. 0.017890.0179
- d. 47.64547.6

22. Round off the following number to four significant figures:

- a. 3.14159263.142
- b. 0.006907450.006907
- c. 483.5960483.6
- d. 0.02349730.2350