Review Unit 1

1. Label each digit below, then say how many sig figs are present

404.0
✓ ↓ ↓ ↓
non Trp Non T/a

(4)

0.0031
✓ ↓ ↓ ↓
p H no no

(2)

37,000
↓ ↓   ↓
non   pH

(2)

700.
✓ ↓ ↓
non   Trp

(3)

2. Perform the following calculations. Answers must be in the correct number of sig figs and units.

a) 7.23 mL + 4.4 mL = __11.6 mL__

b) 57 cm X 30.0 cm = __1,700 cm²__

c) $\dfrac{6.02 \times 10^{23} \text{ particles}}{1.90 \times 10^{19} \text{ part/mol}}$ = __31,700 mol__

d) $\dfrac{1.000 \text{ g} - 0.944 \text{ g}}{1.000 \text{ g}}$ = __.056 g__

$\dfrac{.056 g}{1.000 g} =$

3. How many grams are in 2.0 kg?

$2.0 \text{ kg} \times \dfrac{1000 g}{1 kg} = = 2.0 \times 10^3 \text{ g}$ or   (2) g

4. How many joules are in 352 calories (1 cal = 4.184 J)

$352 \text{ cal} \times \dfrac{4.184 J}{1 cal} = 1470 \text{ J}$ or   (3) J

5. A person stands 1.88 m tall, how many centimeters is this?

$1.88 \text{ m} \times \dfrac{100 cm}{1 m} = 188 \text{ cm}$ or   (3) cm

6. Gold has a density of 19.32 g/cm³, what is its density in pounds per cubic inch?
(1 lb = 454 g) and (1 in = 2.54 cm)

$\dfrac{19.32 g}{cm^3} \times \left(\dfrac{2.54 cm}{1 in}\right)^3 \times \dfrac{1 lb}{454 g} = \dfrac{.6974 \text{ lb}}{in^3}$

$\dfrac{(4) \text{ lb}}{in^3}$

grams milliliters g/mL

g mL cm^3 g/mL

7. Give the units for mass, volume, and density. Given $D = \frac{m}{V}$, give the algebra equations for solving for mass, for volume.

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

$$m = V \cdot D$$

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

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

8. Calculate the density of an object with a volume of 21.65 cm³ and a mass of 57.7 g.

Given info: formula:

$$D = \frac{m}{V} = \frac{57.7\,g}{21.65\,cm^3}$$

$$V = 21.65\,cm^3$$
$$m = 57.7\,g$$

Solving for: answer: $\dfrac{2.67\,g}{cm^3}$

$$D =$$

9. What volume in liters will a 29.6 g sample of a metal occupy if it has a density of 5.15 g/cm³?

Given info: formula: $D = \frac{m}{V}$

$$m = 29.6\,g$$
$$d = \frac{5.15\,g}{cm^3}$$

$$V = \frac{m}{D} = \frac{29.6\,g}{\left(\frac{5.15\,g}{cm^3}\right)} = 5.75\,cm^3 \times \frac{1L}{1000\,cm^3}$$

$$\boxed{.00575\,L}$$

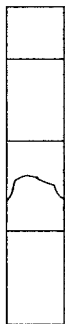Solving for: answer:

$$V = ?\,L$$

10. Give either the volume or temp readings with the correct sig figs and units

20   15. ___

10

0   -1   -1. ___

-2

19   19.5 ___

20