Name:_____ Date:___ Block: __ **Sig Fig Calculation HW**

1. The greatest distance between Earth and the sun during Earth's revolution is 152, 000, 000 kilometers. What is the distance in megameters?

10^3 10^6

152 000 000. Left 3x = 152 000 Mm

2. How many milliliters of water will it take to fill a 2.00 L bottle?

10^{-3} 10^0

2.00 → Right 3x = 2000 mL

3. A piece of copper wire is 150 cm long. How long is the wire in millimeters?

10^{-2} 10^{-3}

150. → Right 1x 1500 mm

4. Perform the following calculations, and express the result in the correct units and number of significant figures.

a. 47.0 m / 2.2 s = 21.3636 $\frac{m}{s}$ = 21 $\frac{m}{s}$ 2 Sig Figs

b. 140 cm x 35 cm = 4900 cm^2 2 Sig Figs

c. 5.88 kg /200 m^3 = 0.0294 $\frac{kg}{m^3}$ = 0.03 $\frac{kg}{m^3}$ 1 Sig Fig

d. 0.00 50 m^2 x 0.042 m = 2.1 x 10^{-4} m^3 2 Sig Figs

e. 300.0 L / 180. s = 1.666666 $\frac{L}{s}$ = 1.67 $\frac{L}{s}$ 3 Sig Figs

f. 33.00 cm^2 x 2.70 cm = 89.1 cm^3 3 Sig Figs

g. 35 000 kJ / 0.250 min = 140 000 $\frac{kJ}{min}$ 2 Sig Figs

5. Perform the following calculations and express the results in the correct units and number of significant figures.

a. 22.0 m + 5.28 m + 15.5 m = 42.78 m = 42.8 m (1 decimal place)

b. 0.042 kg + 1.229 kg + 0.502 kg = 1.773 kg = 1.773 kg (3 dec. places)

c. 170 cm^2 + 3.5 cm^2 - 28 cm^2 = 145.5 cm^2 = 146 cm^2 (zero dec. places)

d. 0.003 L + 0.0048 L + 0.100 L = 0.1078 L = 0.108 L (3 dec. places)

e. 24.50 dL + 4.30 dL + 10.2 dL = 39 dL = 39.0 dL (1 dec. place)

f. 3200 mg + 325 mg – 688 mg = 2837 mg (zero dec. places)

g. 14 000 kg + 8000 kg + 590 kg = 22590 kg (zero dec. places)

6. What is the volume of a region of space that measures 752 m x 319 m x 110 m? Give your answer in the correct unit and with the proper number of significant figures.

$V = lwh = (752\ m)(319\ m)(110\ m) = 26387680\ m^3$

$= 26000000\ m^3$ or $2.6 \times 10^7\ m^3$

7. A student measures the mass of a sample as 9.67 g. Calculate the percentage error, given that the correct mass is 9.82 g. (show your work)

$$\%\ error = \left| \frac{Accepted - Experimental}{Accepted} \right| \times 100$$

$$\%\ error = \left| \frac{9.82\ g - 9.67\ g}{9.82\ g} \right| \times 100 = \left| \frac{0.15\ g}{9.82\ g} \right| \times 100 = 1.5\%$$

(2 dec. places; 2 sig figs)

8. How much energy would be absorbed as heat by 75.37 grams of iron when heated from 295 K to 301K? The specific heat for iron is 0.449 J/g•K (show your work) OMIT