Name:_____ Date:___ Block: __ **Metrics & Sig Fig 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?

   smaller

   152,000,000 km = 152,000 Mm

   10^3 10^6

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

   Bigger

   2.00 L = 2000 mL

   10^0 10^{-3}

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

   Bigger

   150 cm = 1500 mm

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

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 = 21.36363636 $\frac{m}{s}$ = 21 $\frac{m}{s}$

   3SF 2SF

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

   2SF 2SF

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

   3SF 1SF

   d. 0.00 50 m^2 x 0.042 m = 21000 m^3

   2SF 2SF

   e. 300.0 L / 180. s = 1.6666667 $\frac{L}{s}$ = 1.67 $\frac{L}{s}$

   4SF 3SF

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

   4SF 3SF

   g. 35 000 kJ / 0.250 min = 140,000 $\frac{kJ}{min}$

   2SF 3SF

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
(1SF, 2SF, 1SF)

b. 0.042 kg + 1.229 kg + 0.502 kg = 1.773 kg = 1.77 kg
(2SF, 3SF, 3SF)

c. 170 cm^2 + 3.5 cm^2 - 28 cm^2 = 145.5 cm^2 = 146 cm^2
(ØSF, 1SF, ØSF)

d. 0.003 L + 0.0048 L + 0.100 L = 0.1078 L = 0.1 L
(1SF, 2SF, 3SF)

e. 24.50 dL + 4.30 dL + 10.2 dL = 39.0 dL
(2SF, 2SF, 1SF)

f. 3200 mg + 325 mg – 688 mg = 2837 mg
(ØSF, ØSF, ØSF)

g. 14 000 kg + 8000 kg + 590 kg = 22590 kg
(ØSF, ØSF, ØSF)

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.
(3SF, 3SF, 2SF)

26 387 680 m^3 = 26,000,000 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)

$$\frac{|\overset{2SF}{9.82g} - \overset{2SF}{9.67g}|}{9.82g} \times 100 = \frac{\overset{2SF}{0.15g}}{\underset{3SF}{9.82g}} \times 100 = 1.5\%$$

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)

$$Q = mC\Delta T = 75.37g \cdot \frac{0.449J}{gK}(\overset{6K}{301K - 295K}) = 203 = 200J$$
(ØSF, ØSF)