Physics Name: _____

Scientific Notation & Significant Figures

1. Convert each of the following into scientific notation.

_____ a) 12

_____ b) $123,453$

_____ c) 0.502

_____ d) 3100.0×10^{2}

_____ e) 0.0000455

_____ f) 2205.2

_____ g) 30.0×10^{-2}

_____ h) 1000×10^{-3}

2. Determine the number of significant figures in each of the following:

____ a) 3427

____ b) $123,453$

____ c) 0.000984

____ d) 0.502

____ e) 3100.0×10^{2}

____ f) 0.0114×10^{4}

____ g) 107.2

____ h) $40\underline{0}$

____ i) 30.0×10^{-2}

____ j) 0.982×10^{-3}

____ k) $650,502$

____ l) 1000×10^{-3}

3. Convert each into decimal form.

_____ a) 1.56×10^{4}

_____ b) 0.56×10^{-2}

_____ c) 0.00259×10^{5}

_____ d) 3.69×10^{-6}

4. Calculate the following. Give the answer in correct scientific notation.

_____ a) $\dfrac{3.95\times10^{2}}{1.5\times10^{6}}$

_____ b) $\dfrac{4.44\times10^{7}}{2.25\times10^{5}}$

_____ c) $\dfrac{1.05\times10^{-26}}{4.2\times10^{56}}$

_____ d) $(3.5\times10^{2})(6.45\times10^{10})$

_____ e) $(4.50\times10^{-12})(3.67\times10^{-12})$

_____ r) $(2.5\times10^{9})(6.45\times10^{4})$

_____ g) $(6.88\times10^{2})(3.45\times10^{-10})$

5. Round each of the following to 3 significant figures.

_____ a) 77.0653

_____ b) $6,300,278.2$

_____ c) 0.00023350

_____ d) $10{,}000$

_____ e) 10.2030

_____ f) 2.895×10^{21}

6. Calculate the answer, use the correct number of significant figures.

a) $(0.32)(14.50)(120) =$_____

b) $172 - 40.435 =$ _____

c) $(24.1)/(0.005) =$_____

d) $(3.9)(6.05)(420) =$_____

e) $(14.1)/5 =$_____

f) $15.1 + 61.26 + 171 =$ _____

(Express answers below in scientific notation with correct sig fig.)

_____ 7. What is the ratio of Milky Way radius to our solar system radius given that, the distance from Pluto to sun is 5.9×10^{12} meters and the Milky Way disk radius is. 3.91×10^{20} meters.

_____ 8. The speed of light is 2.9979 x 10^8m/s. If the sun is 1.5 x 10^{11} meters from earth, how many seconds does it take light to reach the Earth?

_____ 9. A scientist measures the change in speed of a car to be 54.2m/s and the time it took to be 7.5s. Determine the *acceleration* of the sample.

XC. Using the following data: *the volume of a sphere = $4/3\pi R^3$*
Radius of the earth= 6.38×10^6 m.
Mass of earth= 5.9742×10^{24} kilograms

Find the *density* of the earth in kg/m^3 (Note: this method will only yield an approximate value for the density of the earth).