Name:_____ **Period:** _____ **Date:** _____

Dimensional Analysis #1

Show all work in your notebook. Be sure to use the proper format for each problem. Mark your answer for each question. The answers are provided in parenthesis. Each problem is worth 5 points.

1) A blacksmith has to put new shoes on a stable of 25 horses. Each shoe requires 3 nails. Calculate the number of nails he has to bring to the stable. (300 nails)

2) Convert 384 centigrams to kilograms. (3.84×10^{-3} kg)

3) How many centimeters do you have in 7800 micrometers? (0.78 cm)

4) How many milliseconds are equal to 8.3×10^4 nanoseconds? (8.3×10^{-2} ms)

5) Determine the length in kilometers of a 500.0 mile automobile race knowing that 1mile is 1609 meters. (804.7 m)

6) A 100.0 gram sample of iron ore was found to contain 44.0 grams of iron. How many micrograms of iron are in a 452.55 gram sample of the ore? (1.99×10^8 µg Fe)

7) The average speed of a nitrogen molecule in air at 25 °C is 515 m/s. Convert this speed to miles per hour. (1.15×10^3 mi/hr)

8) The density of a material is 0.821 g/mL. How many cubic millimeters would you have with 71.3 g of this material? (8.68×10^4 mm^3)

9) I have a faucet that leaks at 1.0 cubic centimeters per minute. What is the amount in cubic meters per hour? (6.0×10^{-5} m^3/hr)

10) The fastest asteroid that has entered into our solar system was clocked at a speed of 1×10^8 meters per second. How fast is that in miles per hour? (2×10^8 mi/hr)