Mastery Assignment for Dimensional Analysis

Rules about the Mastery Assignment & Test

You may put your answers on this sheet or another. Completing this assignment is your ticket to taking a mastery test. You may ask other students, consult the Internet, or ask the teacher or anybody else for help. When completed, show the assignment to your teacher. Your teacher will not grade it. Instead, you will use the answer book to check your own work and ask the teacher any further questions. The answer book is not to leave the classroom. The assignment is to be completed BY THE DUE DATE. Make arrangements with your teacher before the due date if you need an extension. Late assignments are not accepted.

The mastery test is a new set of test questions covering the same set of objectives. This means that while some topics/objectives may not have been covered on the original test, they could be on the mastery test.

The teacher will count the higher of the two scores between the original assessment and the mastery assessment.

Dimensional Analysis Mastery Assignment

1) The Eiffel tower is 300 m tall. How tall is this in "Sheppeys?"
2) The "Argentinosaurus" was the longest dinosaur. Its weight was 220 tons. What is the "weight" of this dinosaur in grams?
3) How many seconds are there in a millennium?

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4) The Indo-Pacific Sailfish is the fastest fish. It can swim at $38.6\ \frac{\text{walking paces}}{s}$. How many miles/hr is this?
5) A nearby dam had a hole that leaked 1.00 liters/s. How many gallons/day is this leak?

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6) A barrel can hold 208 liters. Can a person, whose volume is 2.5 ft^3, hide inside this drum without being seen? Prove or disprove it.
7) Albemarle county has an area of 726 $miles^2$. What is the area in acres?

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SOLUTIONS

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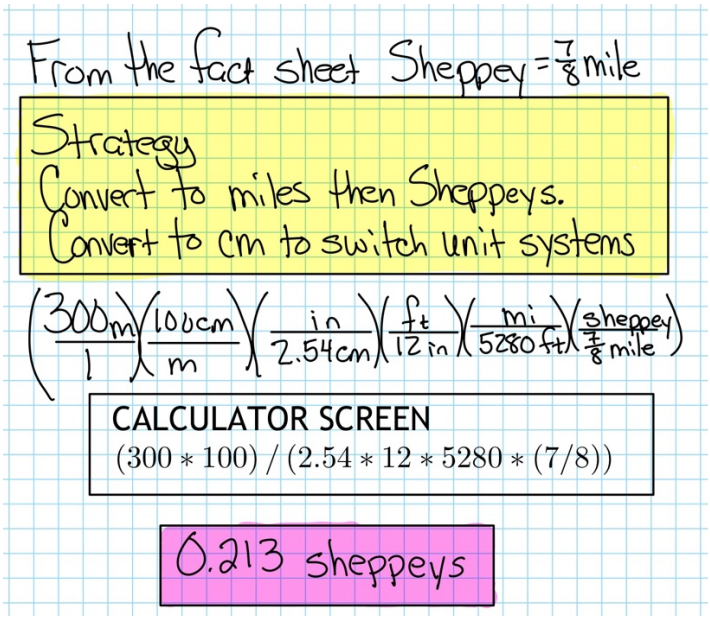
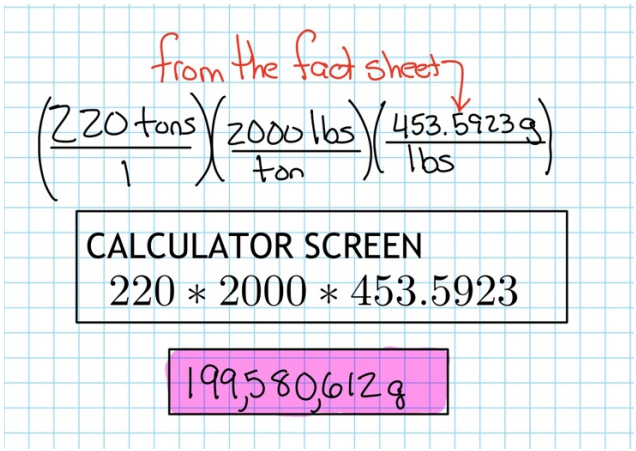
Dimensional Analysis Mastery Assignment …SOLUTIONS

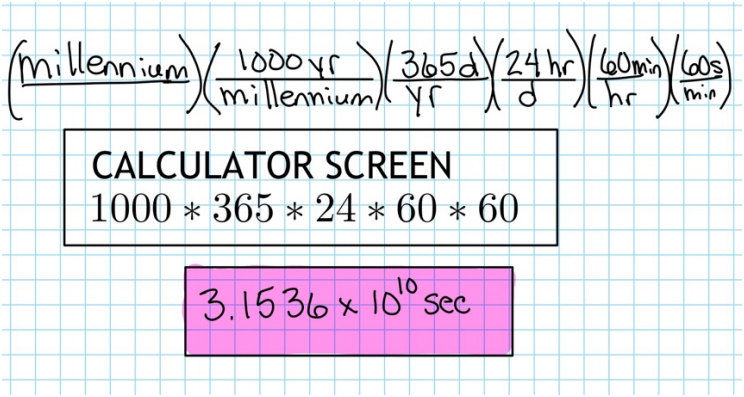
1) The Eiffel tower is 300 m tall. How tall is this in "Sheppeys?"



2) The "Argentinosaurus" was the longest dinosaur. Its weight was 220 tons. What is the "weight" of this dinosaur in grams?



3) How many seconds are there in a millennium?



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4) The Indo-Pacific Sailfish is the fastest fish. It can swim at $38.6\ \frac{\text{walking paces}}{s}$. How many miles/hr is this?

$$\left(\frac{38.6\ \text{paces}}{s}\right)\left(\frac{31\ \text{in}}{\text{pace}}\right)\left(\frac{\text{ft}}{12\ \text{in}}\right)\left(\frac{\text{mi}}{5280\ \text{ft}}\right)\left(\frac{60\text{s}}{\text{min}}\right)\left(\frac{60\ \text{min}}{\text{hr}}\right)$$

CALCULATOR SCREEN

$(38.6 * 31 * 60 * 60) / (12 * 5280)$

$67.99\ \frac{\text{mi}}{\text{hr}}$

Note how everything is one long calculation on one line.

5) A nearby dam had a hole that leaked 1.00 liters/s. How many gallons/day is this leak?

$$\left(\frac{1\ \text{l}}{s}\right)\left(\frac{67.63\ \text{oz}}{2\ \text{l}}\right)\left(\frac{\text{gal}}{128\ \text{oz}}\right)\left(\frac{60\text{s}}{\text{min}}\right)\left(\frac{60\ \text{min}}{\text{hr}}\right)\left(\frac{24\ \text{hr}}{\text{d}}\right)$$

CALCULATOR SCREEN

$(67.63 * 60 * 60 * 24) / (2 * 128)$

$22{,}825\ \frac{\text{gal}}{\text{day}}$

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