

## Dimensional Analysis Word Problems Day 2

You must use the formal method of dimensional analysis as taught in this class in order to get credit for these solutions (one point for each correct solution). Later in the course you may use any method of dimensional analysis to solve this type of problem.

1. Alisha is 16 years old how old is she in seconds?
2. The average American student is in class 330 minutes per day.
  - a. How many minutes are they in school a week?
  - b. How many seconds are they in school in a year?
3. There is a jar on the cabinet by the refrigerator. Savannah pours two hundred eight milliliters of water in the jar six times to fill it, how many liters of water does it take to fill the jar?
4. If one paperclip has the mass of 1 gram and 1,000 paperclips have a mass of 1 kilogram, how many kilograms are 8,000 paperclips?
5. Mrs. Lee has 8 jars that are filled with pennies. Each jar weighs 388,750 mg. On average a penny weighs 3.11 grams. How many pennies does Mrs. Lee have?

6. Every three times I clean my bedroom, my mother makes me an apple pie. I cleaned my bedroom 9 times. How many apple pies does she owe me? (What? Your mother doesn't reward you for cleaning your bedroom? Aren't there child labor laws? To make up for that injustice, you may have this very easy extra credit problem.)
7. A chemistry teacher working at a golf camp during the summer found a liquid, which caused him to slice ball after ball into the water without disturbing him at all. He thought that this was an important liquid to identify so he set out to determine its density. He found that a sample of the liquid had a mass equal to 455 golf balls and occupied a volume of 620 water cups that he obtained at the 7<sup>th</sup> hole. Each golf ball massed 50 g and the water cups at the 7<sup>th</sup> hole of the golf course held 45 mL each. What is the density of the unknown liquid?
8. A Wilton High School senior was applying to college and wondered how many applications she needed to send. Her counselor explained that with the excellent grade she received in chemistry she would probably be accepted to one school out of every three to which she applied. [*3 applications = 1 acceptance*] She immediately realized that for each application she would have to write 3 essays, [*1 application = 3 essays*] and each essay would require 2 hours work [*1 essay = 2 hours*]. Of course writing essays is no simple matter. For each hour of serious essay writing, she would need to expend 500 calories [*1 hour = 500 calories*] which she could derive from her mother's apple pies [*1 pie = 1000 calories*]. How many times would she have to clean her room in order to gain acceptance to 10 colleges? Hopefully you didn't skip problem No 1. I'll help you get started.... 10 acceptances [ ] [ ] etc.