

WKS 2-6 – Chem Honors
Dimensional Analysis WS 1

NAME _____
Period _____ **Date** _____

Use dimensional analysis (the “factor-label” method) to solve the following problems. **Show all work** and answer with the **correct sig figs** and **units**. Use any of the provided relationships as needed.

Part 1: Sols, Arks, meks etc....

Conversion factors

| | | | | |
|-----------------------|-------------------------|------------------------|-----------------------|-----------------------------|
| 1 sol = 5 nats | 36 sols = 1 dran | 12 sols = 1 mek | 1 sol = 3 arks | 10 arks = 1.20 freds |
|-----------------------|-------------------------|------------------------|-----------------------|-----------------------------|

- | | |
|--------------------------|-----------------------|
| 1) 15 sols = ? nats | 4) 24 meks = ? drans |
| 2) 0.50 drans = ? sols | 5) 6.5 freds = ? sols |
| 3) 7.84 arks = ? freds | 6) 18 arks = ? drans |
| 7) 60.0 freds = ? meks (| |

Part 2: Real Units

Use the following conversion factors, as needed. Do not look up any conversion factors use any other conversion factors not provided in the problem.

| | | | |
|-----------------------------------|------------------|---------------------|------------------|
| 1 mile = 1760 yds | 16 oz = 1 lb | 1 L = 1.057 qts | 1 day = 24 hours |
| 1 yd = 3 ft | 2000 lbs = 1 ton | 4 qts = 1 gal | 1 hour = 60 mins |
| 1 in = 2.54 cm | 1 oz = 28.35 g | 32 liquid oz = 1 qt | 1 min = 60 secs |
| 1 mile = 1.6093 km | 1 kg = 2.205 lbs | 1 qt = 2 pts | |
| 1 m = 6.214×10 ⁻⁴ mile | | | |

- 8) A runner competed in a 5.00-mile run. How many yards did she run?

- 9) In the Tour de France this year, cyclists rode 3,484.2 km 3,653.6 km in 21 days. How many miles did they go? [Hint: watch for unimportant information!]

- 10) Some steakhouses offer a 72-oz steak for free if you can eat it. How many pounds of meat would you have to swallow for a free dinner?

- 11) After eating your steak, perhaps you'd finish it off with a pound (1.00 lb) cake for dessert. What would the name of this cake be in grams?

- 12) If you go to school for 180 days each school year and you are in school 7.00 hours each day, how many minutes are spent in school in four school years?

- 13) A running back gained 225 yds in one game. How many meters did he go?

- 14) Soda is (used to be?) sold in 20-liquid oz bottles (1 bottle = 20.0 liquid oz). How many liters (L) would six of these bottles contain? [Be careful how you start this one!]

Answers: 1) 75 mats; 2) 18 sols; 3) 0.941 Freds; 4) 8.0 drans; 5) 18 sols; 6) 0.17 drans; 7) 13.9 meks; 8) 8.80×10^7 yds; 9) 2,165.0 mi; 10) 4.5 lbs; 11) 454 g; 12) 302,000 min; 13) 206 m; 14) 3.55 L