

Student Name _____

Date _____

Period _____

Dimensional Analysis Lab (35 pts)

1 greep 41 socks



41 socks 1 greep

Purpose: To get practice doing dimensional analysis, scientific notation, sig figs, rounding, problem solving, & **FOLLOWING INSTRUCTIONS!**

Materials: 1 calculator per person
6 index cards (5 c.f. plus one you'll make twice) per group
1 pen or pencil
1 sheet of additional paper to be attached to this sheet

c.f. = conversion factor!!

Procedure:

1. Make “dimensional analysis cards” for the 5 c.f. given below. (**one card shown above**)
2. Use the cards to do problems A through F on a **separate sheet of paper**.
3. **Show all work** to receive credit (yes, draw the c.f. cards).
4. All numbers should be reported in **SCIENTIFIC NOTATION**.
5. Proper **sig fig** rules apply. (Recall, Atlantic Pacific trick!)
6. **Units** must be shown to receive full credit. Canceling units is how you solve the problem!
7. Each problem is worth the point value shown.
8. Additional questions are required; work must be shown **using c.f. card method**.

Conversion Factors (c.f.) [yes, they are make-believe]:

0.05 fream = 75 nud²
1 greep = 41 socks
17 glor = 1 nud
1 glor² = 22 snaff
1 snaff = 0.16 socks

Helpful hint: The unit nud is one dimensional and nud ² is two dimensional in the same way that the unit cm is a unit for length and cm ² is a unit for area. You can multiply length x length (a.k.a. width) to get area or cm x cm to get cm ² (area).
--

Lab Questions (**answer on a separate sheet of paper**):

- A. How many nud in 1.00 glor? (1 pt)
- B. How many socks in 52.0 greep? (1 pt)
- C. How many greep in 1 x 10¹ snaff? (2 pts)
- D. How many snaff in 1.00 nud²? (3 pts)
- E. How many snaff in 10. fream? (3 pts)
- F. How many greep in 1.0 fream? (5 pts)

Application Questions:

Br₂ density => 31.1 g/mL
1609 m = 1 mi
1 in = 2.54 cm
1 mL = 1 cm³

1. What is the mass of 3.42g of Br₂ in kg? (2 pt)
2. What is the volume of 10.5 g of Br₂ in mL? (2 pt)
3. What is the mass in kg of 3.2 L of Br₂? (3 pts)
4. How many inches are in 2.0 miles? (3 pts)
5. What is the mass in kg of 2.0 m³ of Br₂? (5 pts)

Helpful hint: The Br ₂ density value is actually a c.f.!!! The “per” slash in the unit becomes the fraction bar in the c.f. => 31.1 g/mL Br ₂ is thus written as:
--

$\frac{31.1\text{g Br}_2}{1\text{ mL Br}_2}$
--

Hint: You will need to make a conversion factor between cm³ and m³ for question 5. This can be done by cubing (multiplying by itself 3 times) both sides of the 100 cm = 1 m conversion factor. You must remember to cube the number as well as the unit.

CONCLUSION: Write one sentence indicating the specific importance of dimensional analysis in chemistry and its broader application or relevance in another academic discipline or another part of your everyday life. (3 pts)