

Cornell Notes

Name Shelbi Brauh

Date 9/8/11

Topic LAB

Class/Subject Tam/chem/p. 4

11:15

What to have out..

Lab notebook
pen
calculator (if needed)

What must be completed?

PURPOSE
procedure
pre Lab questions
Data Table

Directions/
specifications
for this
Lab.

Must be done in order to do the lab!

@ top of "Density Lab" put unknown #, the #'s will be given out by ms. Tam - Required in order for lab to be graded.

Each group must have #1-4 pipettes.

weigh the pipette (empty) x3
fill a pipette w/water
subtract: water filled - empty pipette

* article due: tomorrow
* tomorrow we will do the calculations from today's lab

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density?

$$D = \frac{m}{V}$$

mass of water
volume in miniscus

volume?

squirt water into miniscus
+ read

unknown?

once done finding density
of pipette w/ water
see Ms. Tam for your unknown

Begin Lab
working in
Groups.

pour all liquids in the
waste. (unless completely
untouched)

Don't round your #'s.
2 #'s after the decimal
if you can.

Homework

pg. 14 critical thinking (#1)
analysis (on original lab handout)
answer in your notebook

+ #2 on page 15

all hw;
lab notebook
article

> Due Tomorrow!

Name _____

TABLE 3 Densities of Some Liquids

Liquid	Density (g/mL)
ethanol	0.789
isopropyl alcohol	0.786
methanol	0.791
corn oil	0.921–0.928
water	0.998
ethylene glycol	1.114
glycerine	1.261

2. Could your unknown be a liquid that is not listed in the table in Question 1? Explain. (*Making comparisons*) _____

3. Using the formula below, calculate the percent error for the average density of water that you determined in the investigation. Do the same for the average density of the unknown liquid. Your teacher will provide you with the accepted value for the density of each liquid. (*Interpreting data*)

$$\text{percent error} = \frac{|\text{measured value} - \text{accepted value}|}{\text{accepted value}} \times 100\%$$

Percent error for density of water _____

Percent error for density of unknown _____

4. Why do you think your measured values differ from the accepted density values for water and the unknown liquid? (*Evaluating*)

Name _____

5. What changes could you make in the procedure to increase the accuracy of your results? (*Designing experiments*) _____

Critical Thinking: Applications

1. Look again at Table 3. If your unknown had a density of 0.79 g/mL and you knew that it was one of the three substances listed in the table having a density close to your value, how would you go about determining which liquid was your unknown? (*Designing experiments*) _____

2. Ice floats on water. Is ice more or less dense than water? How do you think the density of ice affects the survival of water-dwelling organisms in environments where temperatures fall below the freezing point? (*Developing hypotheses*) _____

3. When stating the density of a liquid, why is it necessary to state the temperature? (*Applying concepts*) _____

4. The density of petroleum oil is less than the density of sea water. How would this property affect methods used to clean up an oil spill in the ocean? (*Making predictions*) _____

Going Further

1. Under your teacher's supervision, design and conduct an experiment to determine how the density of tap water compares to the density of salt water that contains a large amount of dissolved salt.
2. Describe the procedures you would use to measure the densities of a solid and a gas. Explain how these procedures would differ from those used to determine the density of a liquid.