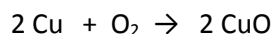


Chemistry of Copper Lab

In general: Be able to identify the type of reaction, predict products, write correct formulas, and balance equations. Know the colors of all the copper containing products.

Review the experiment and your results. Make sure you understand each step that you performed. For example, why was reaction 1 performed in the hood?

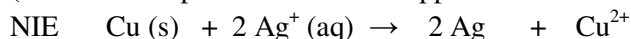
1. *Classify the type of reaction and balance the equation:* combination or synthesis



2. *Classify the reaction, predict the products, balance the equation and write the net ionic equation for*



(This reaction proceeds because copper is more active than silver.)



3. *Calculate the percent yield if you started with 1.56 g of copper wire and recovered 0.88 g of copper.*

$$\frac{0.88}{1.56} \times 100\% = 56.4\% \text{ rounds to } 56\%$$

Note: This question has been modified since I first posted the study guide.

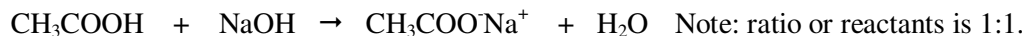
4. *What was the color of CuO?* Black

Titration of Fake Vinegar

In general: Be able to perform the four steps for the calculation of a titration. Review the experiment and your results. Know what was in the buret, what was in the titrating flask and in general how the titration was performed.

1. *During a titration of a 10.00 mL sample of acetic acid (CH_3COOH), the endpoint was reached after adding 15.67 mL of 0.100 M NaOH.*

- a) *Write a balanced equation for this titration*



- b) *How many moles of NaOH were added?*

$$(0.100 \text{ L}) (15.67 \text{ mL}) \left(\frac{1 \text{ L}}{1000 \text{ mL}} \right) = 0.001567 \text{ mol, rounds to } 0.00157 \text{ mol NaOH}$$

- c) *How many moles of CH_3COOH were present in the sample?*

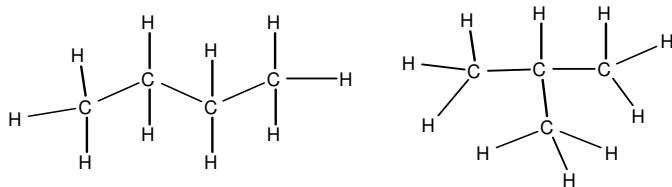
$$0.001567 \text{ mol NaOH} \left(\frac{1 \text{ mol acid}}{1 \text{ mol NaOH}} \right) = 0.001567 \text{ mol, rounds to } 0.00157 \text{ mol } \text{CH}_3\text{COOH}$$

- d) *What was the concentration (M) of the CH_3COOH in the sample?*

$$(0.001567 \text{ mol}) / 0.01000 \text{ L} = 0.1567 \text{ M, rounds to } 0.157 \text{ M } \text{CH}_3\text{COOH}$$

Representing Chemical Structures

1. Are the following compounds isomers, the same compound or neither? (Two compounds are isomers if they have the same molecular formula, but different structure.)

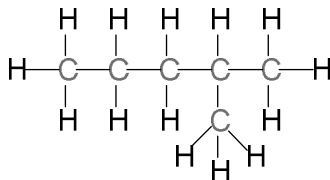
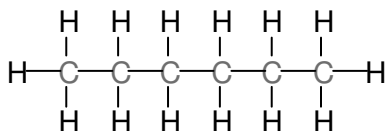


These are isomers. They have the same number of each type of atom. But they are connected in different ways to give different structures.

2. Draw a **flat** picture of a six carbon alkane with the longest possible chain of carbon atoms. Indicate the name and formula. Then rearrange the carbon chain to form an isomer.

longest chain

isomer

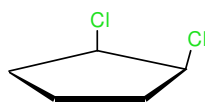
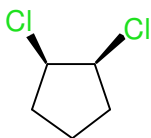


name: hexane

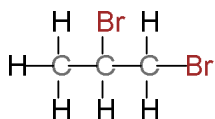
formula: C₆H₁₄

# of C in main chain	name
1	methane
2	ethane
3	propane
4	butane
5	pentane
6	hexane

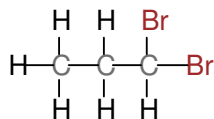
3. Draw a perspective line drawing and Haworth projection for *cis*-1,2-dichlorocyclopentane (question 3, postlab).



4. Draw **flat** structures for two isomers of dibromopropane (C₃H₆Br₂).



1,2-dibromopropane



1,1-dibromopropane

(How many more isomers are there?)

5. What is necessary for a carbon to be chiral?

There needs to be four different atoms or groups of atoms attached to a carbon atom for the carbon to be chiral.