

I. Fill in the data table below as you watch the lab on the video.

mass of empty test tube	33.05 g
mass of test tube with copper oxide (before reaction)	34.29 g
mass of test tube with copper (after reaction)	34.04 g

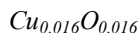
II. Calculations: SHOW ALL WORK IN THE SPACE PROVIDED.

- Use the data to calculate the mass of copper oxide.
- Use the data to calculate the mass of copper.
- Use the two previous calculations to calculate the mass of the oxygen that was driven off.
- Using molar masses, calculate the moles of copper and oxygen.

mass of copper oxide	$34.29 \text{ g} - 33.05 \text{ g}$	1.24 g
mass of copper	$34.04 \text{ g} - 33.05 \text{ g}$	0.99 g
mass of oxygen	$1.24 \text{ g} - 0.99 \text{ g}$	0.25 g
moles of copper	$? \text{ mol Cu} = 0.99 \cancel{\text{ g Cu}} \times \frac{1 \text{ mol Cu}}{63.5 \cancel{\text{ g Cu}}}$	0.016 mol
moles of oxygen	$? \text{ mol O} = 0.25 \cancel{\text{ g O}} \times \frac{1 \text{ mol O}}{16.0 \cancel{\text{ g O}}}$	0.016 mol

III. Conclusion Questions: Answer each question completely. SHOW ALL WORK!

1. Within bounds of experimental error, use the mole ratio to write the formula of the compound.



2. What is the name of this compound? (Hint: you need a Roman numeral in the name)

copper (II) oxide

3. A compound of calcium and bromine is analyzed in the lab. A 20.0 g sample contains 4.00 g calcium. What is the empirical formula of the compound?

$$20.0 \text{ g} - 4.00 \text{ g} = 16.0 \text{ g Br}$$

$$? \text{ mol Br} = 16.0 \text{ g Br} \times \frac{1 \text{ mol Br}}{79.9 \text{ g Br}} = 0.200 \text{ mol Br}$$

$$? \text{ mol Ca} = 4.00 \text{ g Ca} \times \frac{1 \text{ mol Ca}}{40.1 \text{ g Ca}} = 0.0998 \text{ mol Ca}$$



(remind students that the positive ion is always written first)

divide subscripts by smallest (0.0998)



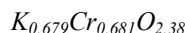
4. Find the empirical formula of a compound found to contain 26.56 % potassium, 35.41 % chromium, and the remainder oxygen.

$$? \text{ mol K} = 26.56 \text{ g K} \times \frac{1 \text{ mol K}}{39.1 \text{ g K}} = 0.679 \text{ mol K}$$

$$? \text{ mol Cr} = 35.41 \text{ g Cr} \times \frac{1 \text{ mol Cr}}{52.0 \text{ g Cr}} = 0.681 \text{ mol Cr}$$

$$100.00 - 26.56 - 35.41 = 38.03 \text{ g O}$$

$$? \text{ mol O} = 38.03 \text{ g O} \times \frac{1 \text{ mol O}}{16.0 \text{ g O}} = 2.38 \text{ mol O}$$



(divide each subscript by 0.679)



(need whole numbers so multiply all subscripts by 2)

