



Directions: Show all work for full credit. Use dimensional analysis and label all units. All answers must show correct significant figures and proper scientific notation. BOX your answer.

1. A chemist has 5.70 moles of copper (II) nitrate.

a. Write the formula, then calculate the molar mass of copper (II) nitrate: Formula: _____

b. Given 5.70 moles copper (II) nitrate, how many molecules does she have?

c. Given 5.70 moles copper (II) nitrate, how many oxygen atoms does she have?

d. Given 5.70 moles copper (II) nitrate, how many grams does she have?

e. Given 5.70 moles copper (II) nitrate, how many total atoms does she have?

2. Ammonium chloride, also known as smelling salt, is used to revive people who faint from test scores!

a. Write the formula, then calculate the molar mass of ammonium chloride. Formula: _____

b. If a capsule has 25.6 grams ammonium chloride in it, how many moles are in the container?

3. A bottle of lye, sodium hydroxide, has 4.56×10^{24} formula units in the bottle.

a. Write the formula, then calculate the molar mass of sodium hydroxide. Formula: _____

b. Given 4.56×10^{24} formula units sodium hydroxide, how many moles are in the bottle?

c. Given 4.56×10^{24} formula units sodium hydroxide, how many grams are in the bottle?

4. Copper (II) sulfate is added to drains to kill tree roots that have grown into sewer pipes causing drainage issues. If there are 100 grams of copper (II) sulfate in one bottle:

a. Write the formula, then calculate the molar mass of copper (II) sulfate. Formula: _____

b. Given 100 grams of copper (II) sulfate in one bottle, how many moles are there?

c. Given 100 grams of copper (II) sulfate in one bottle, how many formula units of copper (II) sulfate are there?