C2 Moles Quiz Answers

What is a mole?

An amount of substance. Specifically, a mole represents the number 6.023×10^{23}

What is the mass of one mole of HCl?

36.5g

What is the mass of 2 moles of carbon?

Mass = Mr x mole
2 x 12 = 24g

What is an empirical formula by definition?

The simplest ratio of elements in a compound. For example if the molecular formula is C6H12O6, the empirical formula is CH2O

How do you work out the empirical formula from mass or % by mass data?

Divide each mass or % by the relative atomic mass of the appropriate element. Work out the simplest whole number ratio by dividing all answers by the smallest answer.

Why is the % yield rarely 100% in an experiment?

If the reaction is reversible, some product reacts back to the reactant. Reactants might be impure. Side reactions might occur, some product lost during filtration processes.

A company wants to make 6.8tonnes of ammonia from nitrogen and hydrogen. How much nitrogen and hydrogen do they need?

$N_2 + 3H_2 \rightarrow 2NH_3$
(Assume grams instead of tonnes then change it later!)
6.8 / 17 = 0.4moles
According to the equation for every 2 moles of NH_3 you need 1 mole of N_2 so:
0.4/2 = 0.2 moles 0.2moles x 28 (Mr of N_2) = 5.6g of Nitrogen
According to the equation for every 2 moles of NH_3 you need 3 moles of H_2 so:
(0.4/2) x 3 = 0.6 moles 0.6 moles x 6 (Mr of H_2) = 3.6g of Hydrogen
REMEMBER answers should have tonnes instead of grams, therefore:
Nitrogen = 5.6 tonnes and **Hydrogen = 3.6 tonnes**

How do you calculate percentage yield?

(Actual yield/theoretical yield) x 100

What is the relative formula mass on water?

18. H = 1, O = 16; H_2O = 2 + 16 = 18