CALCULATIONS MIXTURE 1

1) Sodium reacts with oxygen as shown: $4Na + O_2 \rightarrow 2Na_2O$

Find the M_r of the following substances involved in this reaction.

a) sodium .....

b) oxygen .....

c) sodium oxide .....

2) a) How many moles in the following:

i) 21.3 g of chlorine, Cl_2 .....

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ii) 5.34 kg of aluminium bromide, $AlBr_3$ .....

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b) What is the mass of 0.25 moles of sulfur dioxide, SO_2? .....

3) What mass of bromine reacts with 2.3 g of sodium to form sodium bromide? $2Na + Br_2 \rightarrow 2NaBr$

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4) What mass of oxygen reacts with 280 g of iron to form iron oxide? $2Fe + 3O_2 \rightarrow 2Fe_2O_3$

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5) What is the percentage atom economy to make tungsten (W) from tungsten oxide in this reaction? $WO_3 + 3H_2 \rightarrow W + 3H_2O$

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6) a) What is the maximum mass of calcium hydroxide that can be formed by reaction of 2.8 g of calcium oxide with water? $CaO + H_2O \rightarrow Ca(OH)_2$

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b) In a reaction, 2.6 g of calcium hydroxide was formed from 2.8 g of calcium oxide. Calculate the percentage yield.

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7) 1.95 g of potassium is reacted with 5.08 g of iodine. Work out which is the limiting reagent and then calculate the mass of potassium iodide formed. $2K + I_2 \rightarrow 2KI$

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8) 1.20 g of hydrated tin chloride decompose to form 1.01 g of anhydrous tin chloride on heating. Calculate the value of *x*. $SnCl_2.xH_2O \rightarrow SnCl_2 + xH_2O$

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Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Can convert units			Use equation to find reacting moles		
Shows suitable working			Which numbers are part of formula			Can work out % atom economy		
Does not round too much			Can work out M_r			Can work out % yield		
Can use sig figs			Work out moles from mass			Understands limiting reagents		
Gives units			Can work out mass from moles			Water of crystallisation calculations		