REACTING MASS CALCULATIONS 1

1) Calculate the mass of aluminium that can be formed from 1020 g of aluminium oxide.

$2Al_2O_3 \rightarrow 4Al + 3O_2$

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2) Calculate the mass of oxygen needed to react 10.0 g of calcium to form calcium oxide.

$2Ca + O_2 \rightarrow 2CaO$

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3) What mass of propane could burn in 48.0 g of oxygen?

$C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

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4) What mass of ammonia can be made from 20.0 g of hydrogen?

$3H_2 + N_2 \rightarrow 2NH_3$

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5) What mass of sodium hydroxide is needed to neutralise 24.5 kg of sulfuric acid?

$H_2SO_4 + 2NaOH \rightarrow Na_2SO_4 + 2H_2O$

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6) What mass of carbon dioxide is formed when 7.41 g of copper(II) carbonate decomposes on heating?

$CuCO_3 \rightarrow CuO + CO_2$

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7) What mass of carbon monoxide is needed to react with 2.08 kg of iron oxide?

$Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$

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8) What mass of chlorine reacts with 20.0 g of iron to form iron(III) chloride?

$2Fe + 3Cl_2 \rightarrow 2FeCl_3$

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9) Hydrazine (N_2H_4) is used as a rocket fuel. It can be made by reacting ammonia with hydrogen peroxide. What mass of ammonia is needed to make 148 g of hydrazine?

$2NH_3 + H_2O_2 \rightarrow N_2H_4 + 2H_2O$

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10) 10.00 g of hydrated sodium sulfate decompose to form 4.40 g of anhydrous sodium sulfate on heating. Calculate the formula mass of hydrated sodium sulfate and the value of *x*.

$Na_2SO_4.xH_2O \rightarrow Na_2SO_4 + xH_2O$

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Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Can find moles from mass			Can convert units		
Shows suitable working			Can use reacting ratios in equations			Can find water of crystallisation		
Can work out M_r			Can find mass from moles			Gives units		