Name: …… Section: ……. Date: ……..

HW 5.4A – DISPLACEMENT REACTIONS AND THE REACTIVITY SERIES

1. **Net ionic equations**

Write the **net ionic equations** for reactions 1a, 1b, 1d, 1e and 1g in the space below:

Reaction	Net Ionic Equation
1a	$Cu^{2+} + Zn \rightarrow Zn^{2+} + Cu$
1b	$Zn^{2+} + Mg \rightarrow Mg^{2+} + Zn$
1d	$Ni + 2H^{+} \rightarrow Ni^{2+} + H_2$
1e	$Cu + 2Ag^{+} \rightarrow Cu^{2+} + 2Ag$
1g	$Cl_2 + 2I^{-} \rightarrow I_2 + 2Cl^{-}$

2. Extraction of Metals

Answer the following questions:

	Question	Answer
(a)	Identify three metals which cannot be produced by heating their oxides with carbon:	Anything above C (eg K, Na, Ca, Mg or Al)
(b)	Identify three metals which can be produced by heating their oxides with either hydrogen or carbon:	Anything below H (eg Cu, Ag, Au)
(c)	Identify three metals which can be produced by heating their oxides with carbon but not by heating their oxides with hydrogen:	Anything between C and H (eg Zn, Fe, Sn, Pb)

3. Behaviour of aluminium

Aluminium is above zinc in the reactivity series, but when granules of aluminium and zinc are added separately to hydrochloric acid, the zinc produces a steady stream of bubbles and gradually dissolves, but the aluminium does nothing visible. Why is this?

Answer	Al is very reactive but forms a stable layer of aluminium oxide on its surface This layer protects aluminium from reactants such as oxygen, water and acids and makes it appear unreactive

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Extra Credit Questions

	Question	Answer
(a)	How is aluminium extracted from its main ore (Al_2O_3)?	By electrolysis
(b)	We have carried out the displacement reaction between zinc and copper sulfate on two separate occasions in the lab. We were investigating different aspects of the reaction each time. On each occasion, what were we investigating?	4.2 – Determining the enthalpy change of a reaction 4.6 – Investigating the effect of particle size on rate of reaction
(c)	One of the formulas shown in the video was incorrect. Which formula was it, and what should the formula have been?	$CuNO_3$ is incorrect Should have been $Cu(NO_3)_2$