

5.10 CLASS WORKSHEET – GALVANIC CELLS

Part 1 (this will be assessed as classwork)

1. [Watch this video](#) up to 14:35
2. Answer the following questions about the Daniell cell
You can either use the video to answer the questions, or the helpsheet for Lesson 5, or both

(a)	What is a Galvanic cell?	A device which generates electricity from a chemical reaction
(b)	What is another word for a Galvanic cell?	Voltaic cell
(c)	What happens when a wire is added to connect the two pieces of metal in the cell?	electrons move/ a current flows
(d)	What happens to the Zn atoms during the reaction?	Zn atoms are oxidised
(e)	What happens to the Cu ²⁺ ions during the reaction?	Cu ²⁺ ions are reduced
(f)	In which direction do the electrons move through the wire?	From Zn to Cu
(g)	Over time, what happens to the piece of copper?	It gets bigger/heavier
(h)	Over time, what happens to the piece of zinc?	It gets smaller/lighter
(i)	Write a half-equation to show what happens to the Zn. Is this oxidation or reduction?	$\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$
(j)	Write a half-equation to show what happens to the Cu. Is this oxidation or reduction?	$\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$
(k)	Write an overall equation for the reaction.	$\text{Zn} + \text{Cu}^{2+} \rightarrow \text{Zn}^{2+} + \text{Cu}$
(l)	What is the “cathode” in this cell?	Copper
(m)	What is the “anode” in this cell?	Zinc

Part 2 (this will be assessed as homework)

We study the Daniell cell because it is the easiest cell to understand.

In practice, however, it is not very useful and most modern batteries use different chemical reactions.

1. Use the helpsheet to answer the following general questions about batteries:

(a)	When a battery is being re-charged, which chemical reaction takes place?	The reverse reaction
(b)	Why you you think some batteries are non-rechargeable?	The reverse reaction cannot take place
(c)	Which type of chemical reaction forms the basis for all batteries?	Redox reactions

2. Complete the following table to answer questions about common batteries:

Use	Name of battery type	Advantage	disadvantage
cars	Lead-acid	Can withstand high current, re-chargeable	Heavy
flashlights	Alkaline	Light and portable	Non-rechargeable
cellphones	Lithium-ion	Light, rechargeable, powerful	Expensive chemicals