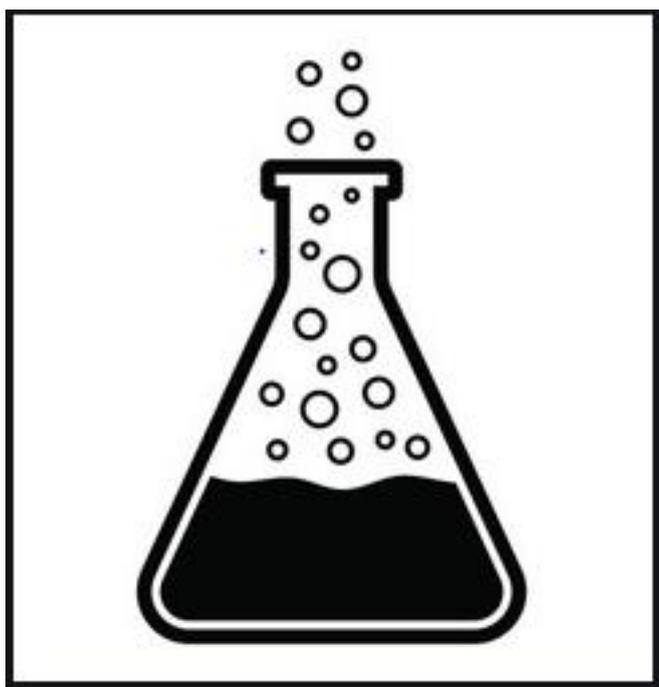
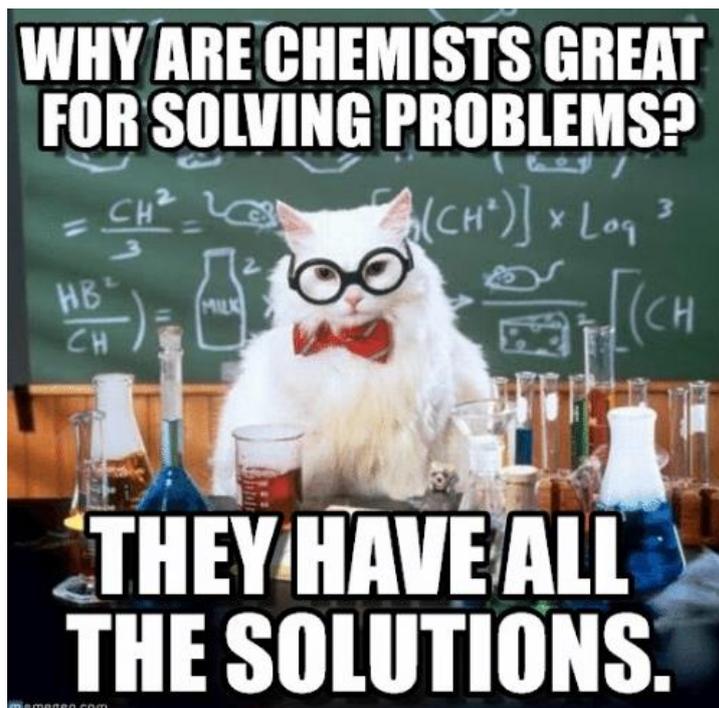




# Pre-IB Chemistry Transition Assignment 1





Chemistry is one of the pivotal science subjects of the IB Diploma Study Programme. That experimental science combines academic study with the getting laboratory and investigation skills. Chemistry is called the central science, as chemical principles underpin both the physical environment in which we live and all biological systems.

Chemistry deals with the very stuff of matter and affects all our lives. It brings great benefits to individuals and societies and contributes much to the quality of life. The impact of the study of chemistry is global, political, and includes environmental and political considerations.

Chemistry is subject worthy to study and is prerequisite for many other disciplines such as medicine, biological and environmental sciences, materials and engineering.

## AIMS

To develop:

- (a) A good understanding and appreciation for the process of science, an awareness of chemistry in today's society
- (b) Critical thinking and logical reasoning
- (c) Problem Solving skills
- (d) Lab skills including accuracy and precision in measurements
- (e) Use of lab equipment in gathering data, analysis of data/ sources of error and justification of results

## **Instructions**

You are required to do **TWO** tasks:

1. Review a book recommendation
2. Watch online videos
3. Carry out a research activity

You need to **do tasks 1 AND 3 or 2 AND 3**

You can submit tasks 1 or 2 as a 1-page summary word document or PowerPoint and task 3 as a 1-page using Cornell notes. Don't forget to include your name when you submit your work.

There are weblinks included to help you.

### **What are Cornell Notes?**

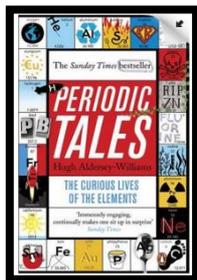
According to Miller & Veatch (2011), Cornell Notes are the process of "note making" as opposed to note taking. Note taking refers to notes being recorded while listening to a lecture, while note making is the process of summarizing a text in a note format.

YouTube link below shows you how to do it:

<https://youtu.be/WtW9IyE04OQ>

## **TASK 1: Book Recommendations**

**Periodic Tales: The Curious Lives of the Elements** (Paperback) Hugh Aldersey-Williams

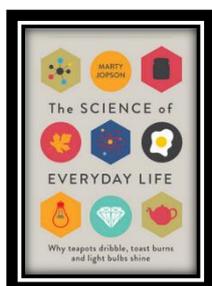


ISBN-10: 0141041455

<http://bit.ly/pixlchembook1>

This book covers the chemical elements, where they come from and how they are used. There are loads of fascinating insights into uses for chemicals you would have never even thought about.

**The Science of Everyday Life: Why Teapots Dribble, Toast Burns and Light Bulbs Shine** (Hardback) Marty Jopson

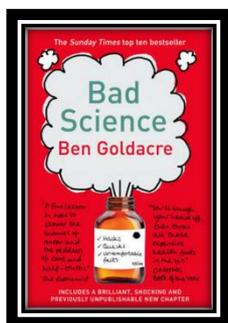


ISBN-10: 1782434186

<http://bit.ly/pixlchembook2>

The title says it all really, lots of interesting stuff about the things around you home!

**Bad Science** (Paperback) Ben Goldacre

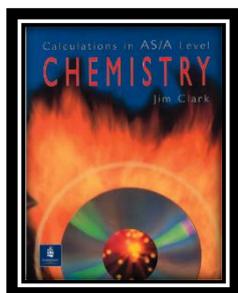


ISBN-10: 000728487X

<http://bit.ly/pixlchembook3>

Here Ben Goldacre takes apart anyone who published bad / misleading or dodgy science – this book will make you think about everything the advertising industry tries to sell you by making it sound 'sciency'.

**Calculations in AS/A Level Chemistry** (Paperback) Jim Clark



ISBN-10: 0582411270

<http://bit.ly/pixlchembook4>

If you struggle with the calculations side of chemistry, this is the book for you. Covers all the possible calculations you are ever likely to come across. Brought to you by the same guy who wrote the excellent chemguide.co.uk website.

**Salters' Advanced Chemistry: Chemical Storylines**

Do not feel you need to buy the latest edition (unless you are doing Salters chemistry!) You can pick up an old edition for a few pounds on ebay, gives you a real insight into how chemistry is used to solve everyday problems from global pollution through feeding to world to making new medicines to treat disease.

## **TASK 2: Videos to watch online**

### **Rough science – the Open University – 34 episodes available**

Real scientists are 'stranded' on an island and are given scientific problems to solve using only what they can find on the island.

Great fun if you like to see how science is used in solving problems.

There are six series in total

<http://bit.ly/pixlchemvid1a>

[http://www.dailymotion.com/playlist/x2igjq\\_Rough-Science\\_rough-science-full-series/1#video=xxw6pr](http://www.dailymotion.com/playlist/x2igjq_Rough-Science_rough-science-full-series/1#video=xxw6pr)

or

<http://bit.ly/pixlchemvid1b>

<https://www.youtube.com/watch?v=IUoDWAt259I>

### **A thread of quicksilver – The Open University**

A brilliant history of the most mysterious of elements – mercury. This program shows you how a single substance led to empires and war, as well as showing you some of the cooler properties of mercury.

<http://bit.ly/pixlchemvid2>

<https://www.youtube.com/watch?v=t46lvTxHHTA>

### **10 weird and wonderful chemical reactions**

10 good demonstration reactions, can you work out the chemistry of .... any... of them?

<http://bit.ly/pixlchemvid3>

<https://www.youtube.com/watch?v=0Bt6RPP2ANI>

### **Chemistry in the Movies**

Dantes Peak 1997: Volcano disaster movie.

Use the link to look at the Science of acids and how this links to the movie.

<http://www.open.edu/openlearn/science-maths-technology/science/chemistry/dantes-peak>

<http://www.flickclip.com/flicks/dantespeak1.html>

<http://www.flickclip.com/flicks/dantespeak5.html>

Fantastic 4 2005 & 2015: Superhero movie

Michio Kaku explains the "real" science behind fantastic four <http://nerdist.com/michio-kaku-explains-the-real-science-behind-fantastic-four/>

<http://www.flickclip.com/flicks/fantastic4.html>

## **TASK 3: Research activities**

Use your online searching abilities to see if you can find out as much about the topic as you can. Remember it you are a prospective A level chemist; you should aim to push **your** knowledge.

**You can make a 1-page summary for each one you research using Cornell notes:**

<http://coe.jmu.edu/learningtoolbox/cornellnotes.html>

### **Task 1: The chemistry of fireworks**

What are the component parts of fireworks? What chemical compounds cause fireworks to explode? What chemical compounds are responsible for the colour of fireworks?

### **Task 2: Why is copper sulphate blue?**

Copper compounds like many of the transition metal compounds have got vivid and distinctive colours – but why?

### **Task 3: Aspirin**

What was the history of the discovery of aspirin, how do we manufacture aspirin in a modern chemical process?

### **Task 4: The hole in the ozone layer**

Why did we get a hole in the ozone layer? What chemicals were responsible for it? Why were we producing so many of these chemicals? What is the chemistry behind the ozone destruction?

### **Task 5: ITO and the future of touch screen devices**

ITO – indium tin oxide is the main component of touch screen in phones and tablets. The element indium is a rare element and we are rapidly running out of it. Chemists are desperately trying to find a more readily available replacement for it. What advances have chemists made in finding a replacement for it?

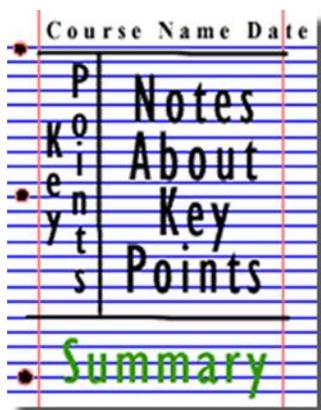


Figure 1: <http://coe.jmu.edu/learningtoolbox/images/noteb4.gif>