V Year GCSE ISA
“Heating Cans”

This is the “Real” exercise…
…no longer a practice!
Setting the scene…

A Duke of Edinburgh Silver Group wanted to have a Hot Chocolate…

…at the top of the mountain…

…without needing to use their camping gas (it is far too windy!).

They decided to use a “self heating can” but wondered if it would get hot enough.
Researching the options…

• Clearly the reaction taking place in the can needs to exothermic…
• …producing heat quickly enough to warm the drink inside.
• You could investigate how the amount of substance used could effect the temp. change…
• …and make a HYPOTHESIS to test.
• Think of what your independent variable would be…
• …and your dependent one?
Research sources.

- **NB:** Don’t try to read articles that are based on Chemistry you don’t understand!!
- Note the details of TWO research sources, and remind yourself what info. you got from each one.
- Remember, you will need to comment on the usefulness of BOTH sources.
- **Suggestions:**
  1. Look at the Kerboodle web-site (unit 3).
  2. “hot-can.com”
  3. Guardian “Is self heating food the future?”
- You will be able to find better ones I’m sure!
You have some experience of this practical...

- Look up how you would do this type of reaction in your exercise book...
- ...this should help you decide the basic equipment...
- (...draw a diagram and list other equipment needed)...
- ...and give you an idea of quantities.
- What will be the range of the indep. variable?
- Intervals? Repeats? Remember, you will only have a double period for the practical work.
- Suggest two control variables.
Finally, returning to the context...

- Although you will be doing the experiment on a small scale...
- ...and hopefully determine a relationship between your variables...
- ...the evidence you collect could be extrapolated so that a recommendation could be made...
- ...to the manufacturers of “Self heating cans”...
- ...about suitable reactions and quantities to use to bring food and drinks up to suitable eating temperature.
Risk Assessment.

For any of the chemicals you plan to use...
...you must know if they are hazardous.
Use the PINK files available in the School library to help you look them up...
...and note them on your planning sheet.
Remember to clearly state how you would minimise the risk of a hazardous material.
e.g. ethanol is a flammable substance (hazard)...
...steps taken to reduce the risk are...
1. Keep away from naked flames.
2. Keep stopper in bottle when not in use.