AQA GCSE Chemistry

Topic 1: Atomic Structure and the Periodic Table

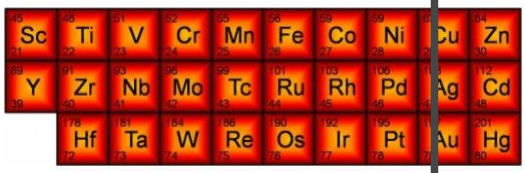
Properties of Transition Metals (chemistry only)

Notes

(Content in bold is for Higher Tier only)

Compared to group 1, the transition elements:

- Are harder and stronger
- Have higher melting points (except for mercury) and higher densities
- Much less reactive and don't react as vigorously with oxygen or water



element:	chromium	manganese	iron	cobalt	nickel	copper
properties: (to be compared to group 1)	lustrous, brittle, hard metal	hard and very brittle, difficult to fuse, but easy to oxidise	good conductor, rusts easily in air, strong, ductile malleable	brittle, hard, high melting point	hard, malleable, and ductile, fairly good conductor of heat and electricity	highly ductile and conductive. malleable and soft

Typical properties

- They have ions with many different charges
- Form coloured compounds
- Are useful as catalysts.

element:	chromium	manganese	iron	cobalt	nickel	copper
ion charges:	+2 +3 +4 +5 +6	+2 +3 +4 +5 +6 +7	+2 +3 +4 +5 +6	+2 +3 +4 +5	+2 +3 +4	+1 +2 +3
colours of compounds with transition metals having these charges:	+2 +3 +6	+2 +4 +6 +7	+2 +3	+2 +3	+2	+2
uses as a catalyst:		decomposition of hydrogen peroxide ($2H_2O_2 \rightarrow 2H_2O + O_2$)	for haber process ($N_2 + 3H_2 \leftrightarrow 2NH_3$)		manufacture of margarine (adding H_2 to double bonds)	