



1 Give the full electron configuration of the following atoms and ions.

a V atom $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^3$ (1)

b V^{3+} ion $1s^2 2s^2 2p^6 3s^2 3p^6 3d^2$ (1)

2 Explain why copper is classed as a transition metal.

transition metals have an incomplete d subshell in either its atoms or a common ion

Cu^{2+} has incomplete d subshell

(2)

3 Complete the table about the following complex ions.

Complex	$[AgCl_2]^-$	$[Cr(C_2O_4)_3]^{3-}$	$[Cu(H_2O)_6]^{2+}$
Sketch of shape			
Name of shape	linear	octahedral	octahedral
Bond angles	180°	90°	90°
Ligand	Cl^-	$C_2O_4^{2-}$	H_2O
Co-ordination number	2	6	6
Oxidation state of metal	+1	+3	+2