

1. Which of the Cr, I_2 , Al and Fe^{3+} will oxidize Co?

RA

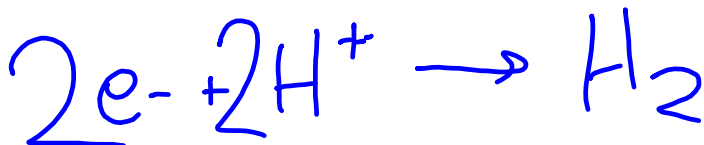
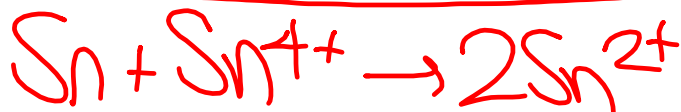
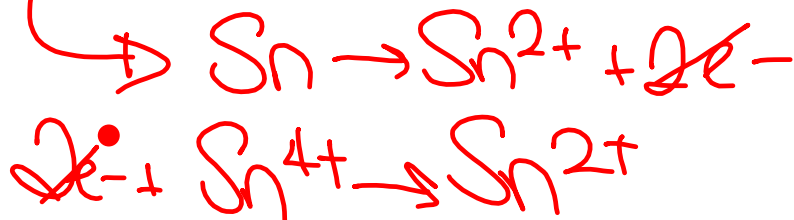
OA

2. Predict whether a spontaneous reaction is expected and state the products if spontaneous.

1. $Zn(s)$ and $H_2(g)$ - non-spont

2. $Sn(s)$ and Sn^{4+} - Spont

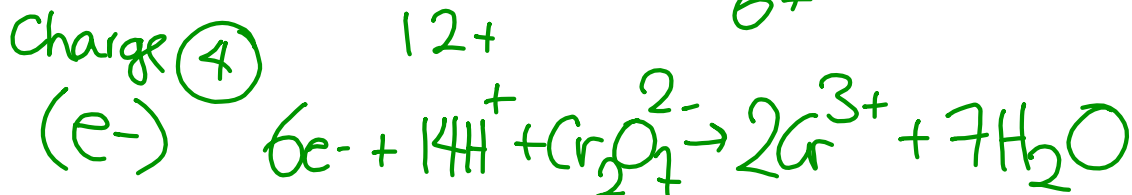
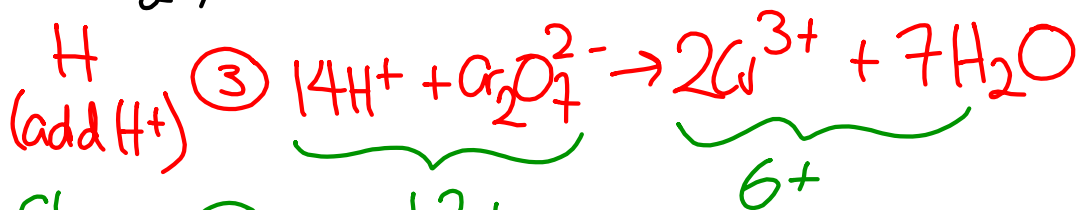
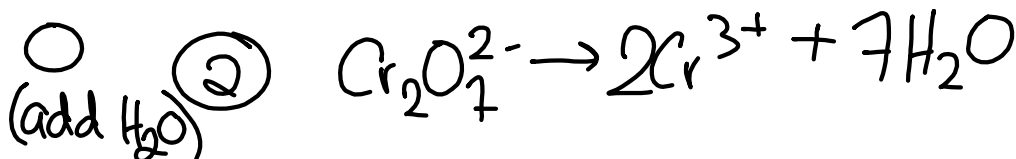
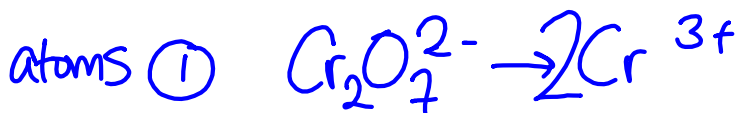
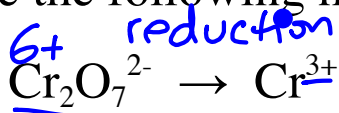
3. H^+ is added to $Mn(s)$



Balancing Half-Reactions

- half-reactions must be balanced for mass & charge
- steps to balancing a half-reaction:
 1. balance all major **atoms other than O & H**
 2. balance **oxygens** by adding water (H₂O) molecules
 3. assume solutions are acidic and balance **hydrogens** by adding H⁺
 4. balance the **charge** by adding electrons (e⁻)

ex. Balance the following half-reaction:



- in basic solutions . . . balance the equation as if it were acidic, then convert to basic by adding **equal numbers of hydroxide ions (OH⁻)** to **both sides** of the equation and **cancelling out the H⁺ as water**

ex. Balance the following half-reaction:

