

Flectron transfer

half poxidation (1055) DIL equation (gain) RIG

> $Na \rightarrow Na^{\dagger} + e^{-}$ oxidation

01+4e -> 102. reduction

4Na -> 4Nat + 4E

4Na+02+4/ -> 4Na++/ ++ +202-4Na+0, -> 2Na,0

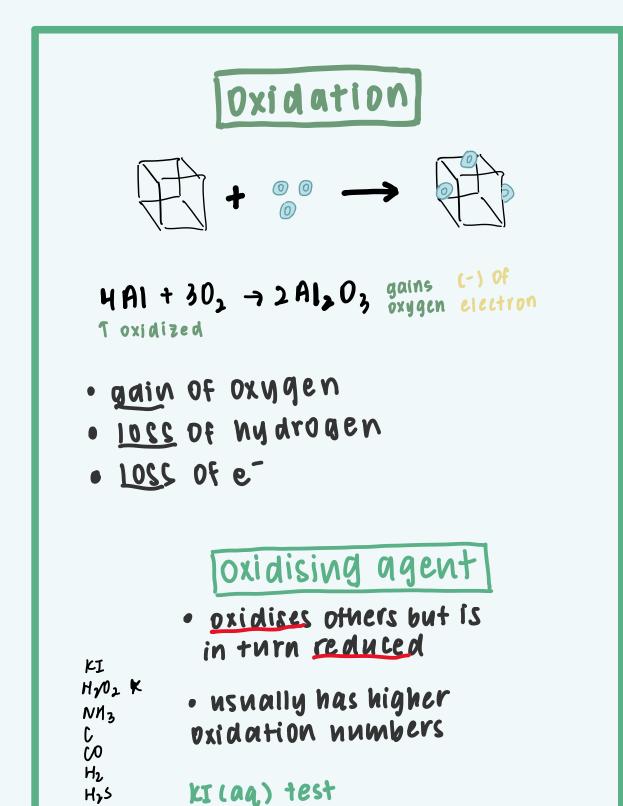
Oxidation Reduction Hydrogen transfer Loss Gain Oxygen transfer Loss Electron transfer Loss Gain always applicable

Comproporpination

Ag2+ Ag -> 2Ag+

(both reduced and oxidized)
Disproportion ation

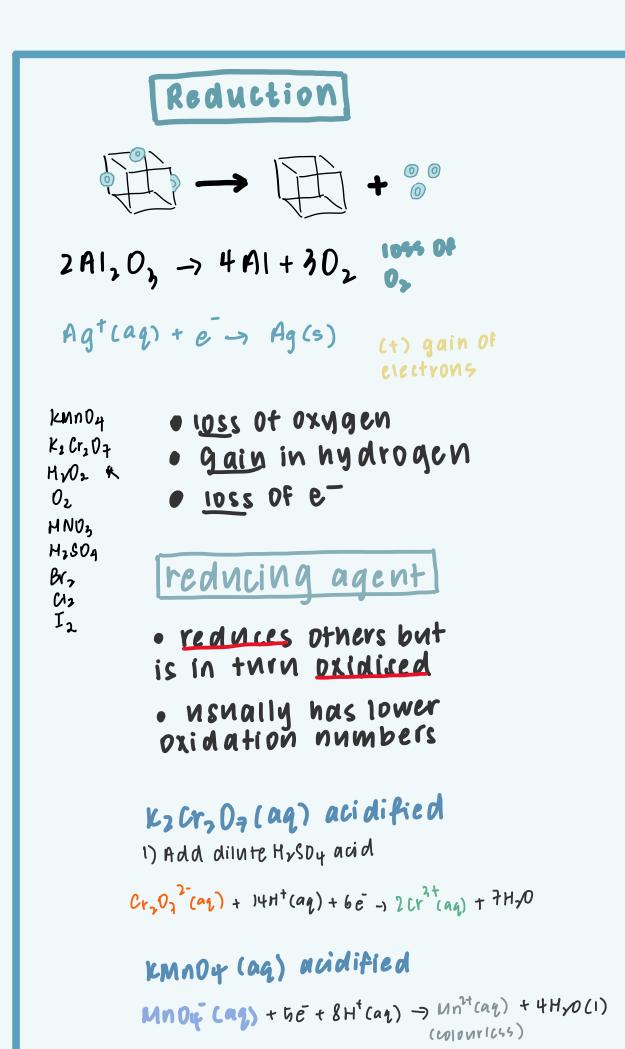
2Cut -> Cut + cu (middle ground)



2I (ag) -> I,(ag) + 2e

- Added to oxidicing agent - brown sol is formed when

I is oxidised to I,



## & oxldation # oxidation states oxidation 09 1 1) Oxidation state of atoms/monoatomic reduction ion is equal to its charge 09 of Hin H2 = 0 09 V 2) Charge of a molecule I compound is equal to sum of oxidation states that make up the identity H2504 X+4(-2)=-2, X=+6 $Cr_2O_7^{1-}$ 2x + 7(-1) = -2, x=+6 [ Cu (H,0)6]2+ Halogen displacement 05 of CU -> +2 C12(9) = 2 NOBr (04) -> 2 NOCT (04) + Br(04) 3) some clements have a fixed reduced oxidised ci is more oxidation state (more likely to gain e) A fractions Grp1 (+1) are possible 61P 2 (+2) L+1) Except NAH (-1) (-2) Except peroxides H,0,(-1) / OF, (+2) (-1) FXCEPT W DIF (+1) 1) # of atoms 2) charge Balancing half equations

## lonic

acidic

1) Work out change

in oxidation state

Cr2072 -> Cr3+

(+6) (+3)

menium

equation

1) conservation of mass · H of atoms on LHS= RHS

2) Balance of Charge . sum of charges on LHS= 12HS

b some half equations don't need to be balanced in charged medium

3) "Adde"

Fe2+ (aq) -> Fe3+ (aq) + e

4) Add Ht/OH depending on medium

alkaline

(+1) (-1) CIO -> CI

medium

(-1) (-2) (-1)

CIV + 2E -> CI

match Cl

balance

total charge

) balance equation

& enarge

5) And H,0 to valance

6) Add state symbols

Combining

unoy + 50 + 8H+ -> Mn2+ + 4 H20 503 + 20H -> 504 + 2e + H10 LCM: 5×2=10 -> make coeff of e the same as gain in e = loss in e 2MnOv + 10e + 16Ht -> 2Mn2+ + 8H>0

55032 + 100H -> 55042 + 10e + 5 H20 2Mn04++19e+16H++5503+100H-> 2Mn2+13HyO+5CO4+40E

combine to HyO

2Mn04 (aq) + 6H+ (aq) + 5504 (aq) -> 2Mn2+ (aq) + 3H,0(U) + 5504 (aq)

2) Balance ant of element so charge matches (-1) (-2) (-1) (-2) C10 + 2e -> C1 + 20H Cr, 07 -> 1Cr3+ (10 (aq) + 2 = + H20(1) -> ci (aq) + 20H (aq) 3) Adde Cr207+6e -> 1C3+ a) Add Ht Cr, 07 3+ 460+14H+ > 2cr3+ 5) AND HXO (1,0,2 + 6e+14H+ > 2cr + +1,0 6) State Symbols cr, 07 (05) + 60 + 14H (07) -> 200 3+ (07) + Hx0(1)