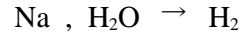


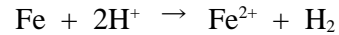
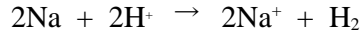
反応式の作り方 1

金属が溶けて、 H_2 を発生する場合

(例)



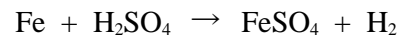
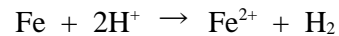
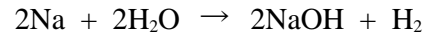
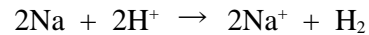
1. 金属と H^+ で考える。



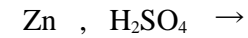
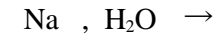
2. 水の場合は、 OH^- を両辺に加える。

2'. 酸の場合は、酸の陰イオンを両辺に加える。

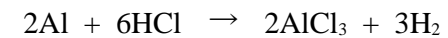
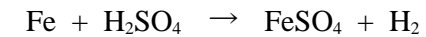
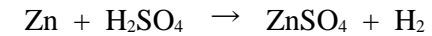
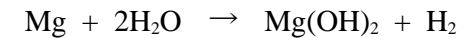
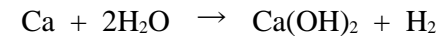
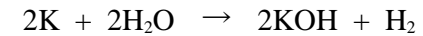
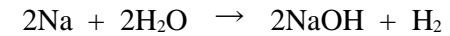
3. たし算をする。



(問)

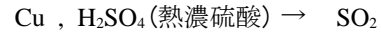
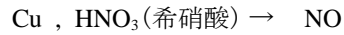
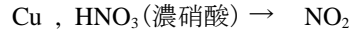


(解)

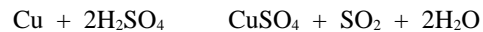
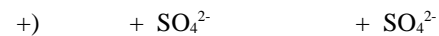
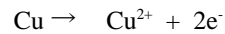
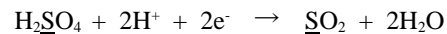
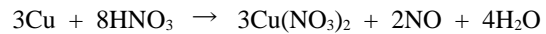
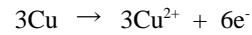
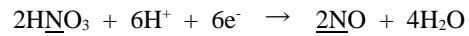
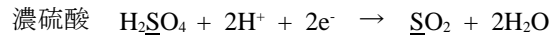
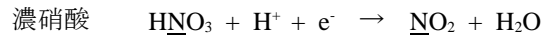
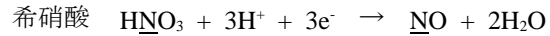


反応式の作り方 2

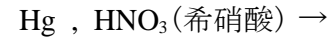
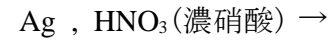
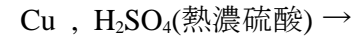
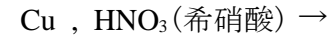
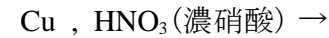
金属が溶けて、H₂以外の気体(SO₂,NO,NO₂)を発生する場合



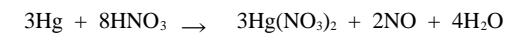
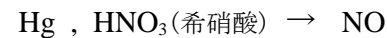
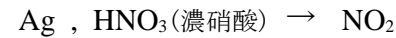
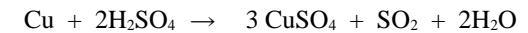
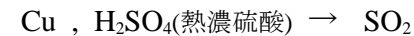
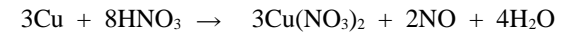
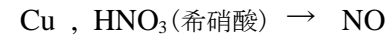
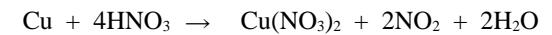
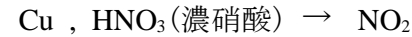
- 酸化・還元の半反応式を組み合わせる。
- H⁺がある場合は、酸の陰イオンを組み合わせる。



(問)



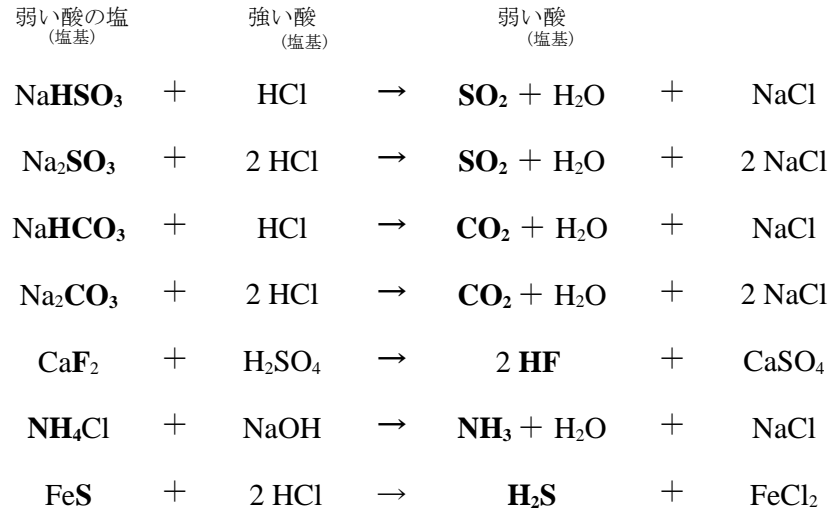
(解)



反応式の作り方 3

塩と酸（塩基）との反応で、気体(SO₂, CO₂, HF, NH₃)が発生する反応
強い酸(塩基)により、**弱い酸**(塩基)が遊離する場合

(例)



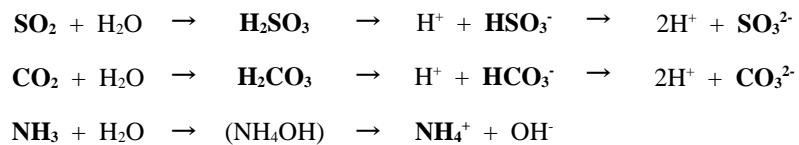
(SO₂, H₂SO₃, HSO₃⁻, SO₃²⁻)

(CO₂, H₂CO₃, HCO₃⁻, CO₃²⁻)

(NH₃, NH₄⁺)

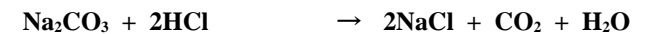
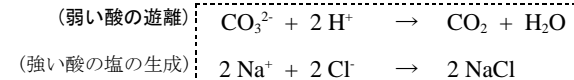
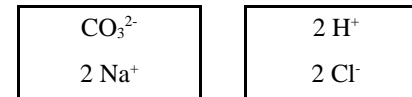
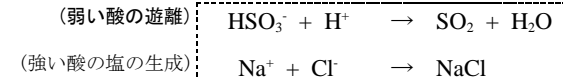
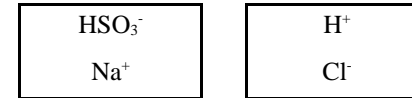
はそれぞれ同じものであると思え。

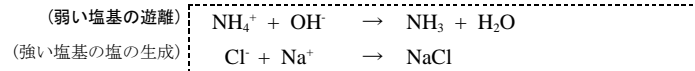
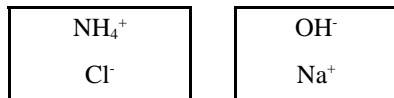
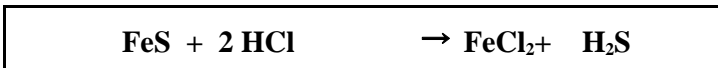
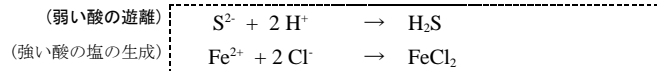
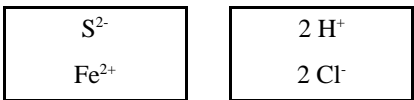
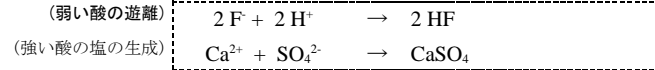
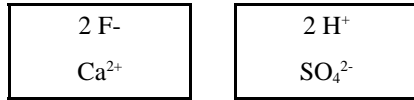
気体が水に溶けるときの反応



組み立て方

1. 塩と酸（塩基）の電離の式を書く。
2. 「気体が水に溶けるときの反応」の逆の反応が起こり、気体が発生する。

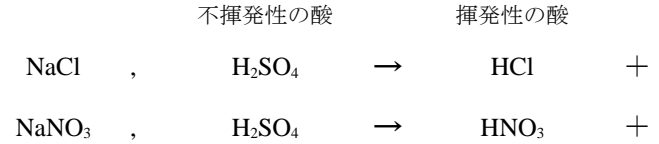




反応式の作り方 3'

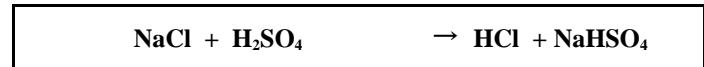
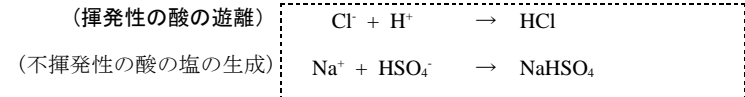
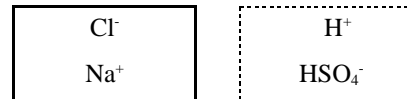
不揮発性の酸により、揮発性の酸が遊離する場合

(例)



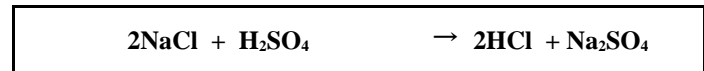
組み立て方

塩と酸(塩基)の電離の式を書く。

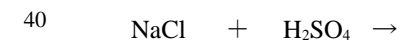
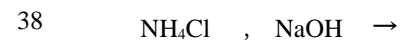
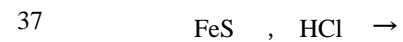
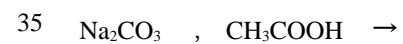
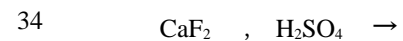
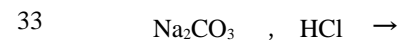


さらに高温にすると、HSO₄⁻ → H⁺ + SO₄²⁻ の反応が進み

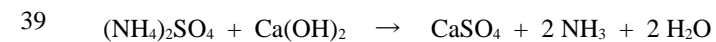
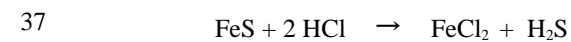
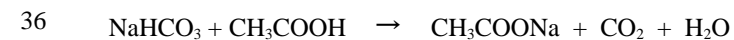
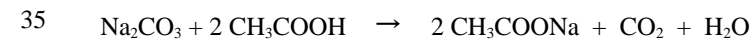
最終的には、下記ようになる。



(問)



(解)



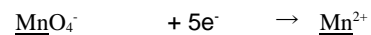
半反応式の作り方

0. 物質の変化と酸化数をかく。(これだけは覚えておく)
酸化数がわからない時は、やり方2を使う。



やり方1

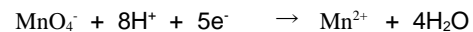
1. 酸化数の変化から、電子数を考える。



2. O の数を、H₂O で合わせる。



3. H の数を、H⁺ で合わせる。



4. 確認 (両辺の電荷を計算, 等しいはず)

$$-1 \quad +8 \quad -5 = +2 \quad +2$$

やり方2

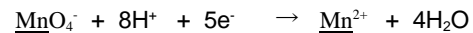
1. O の数を、H₂O で合わせる。



2. H の数を、H⁺ で合わせる。



3. 電荷を、e⁻ で合わせる。



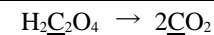
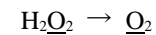
$$-1 \quad +8 \quad -5 = +2 \quad +2$$

半反応式をつくる

酸化剤

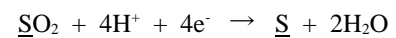
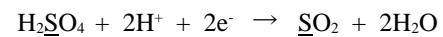
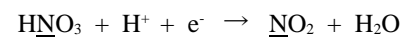
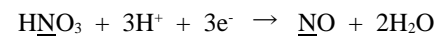
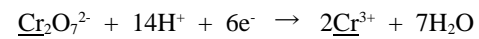
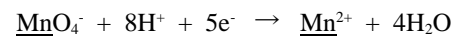
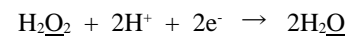


還元剤



半反応式をつくる (解答)

酸化剤



還元剤

