

Acid / Base Neutralization

Titration

Dilution
 Moles Start = Moles End
 $M \times V = M \times V$

Moles Acid = Moles Base
 $n_A \times M_A \times V_A = n_B \times M_B \times V_B$
 # moles H^+ Acid \rightarrow # moles OH^- Base

Oct 14-8:05 AM

Dilution
 50ml 3M HCl (Want)
 Have 12M concentrate
 Moles = Moles
 $M \times V = M \times V$
 $(12M) \underline{V} = (3M) (50ml)$
 $\underline{12.5ml}$ of 12M

Do what you "oughta"
 add the acid to the water

50ml
~~12.5ml Acid~~
 20ml H_2O

$50 - 12.5 = 37.5ml$
 H_2O

Neutralization

Moles A = Moles B
 $n M V = n M V$

Have 100ml 3M $Ca(OH)_2$
 How much 2M HCl are needed to neutralize?

Moles Acid = Moles Base
 $n M V = n M V$
 $(1) (2) (V) = (2) (3) (100)$

300ml 2M HCl needed

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24) $3.5 \times 10^{-4} M$ OA + 9 ml \rightarrow Soln A
 Pet ether

① Dilution
 $M \times l = m \times l$
 $(3.5 \times 10^{-4})(1ml) = M(10ml)$
 10 ml $3.5 \times 10^{-5} M$ Soln A

② 2 ml Soln A + 8 ml Pet ether \rightarrow B
 ③ Dilution
 $M \times l = M \times l$
 $(3.5 \times 10^{-5})(2ml) = M_B(10)$
 10 ml $7 \times 10^{-6} M$ Soln B = — g OA

7×10^{-6} Mole OA	0.01 L	= 7×10^{-8} Mole OA in 10 ml 3.5×10^{-6} Mole, out of 9 ml
l		

3.5×10^{-6} Mole OA	282 g OA	= 9.87×10^6 g OA
l	1 mole OA	

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② $\frac{21.4 \text{ g}}{cm^3} \times \frac{1 \text{ Kg}}{1000 \text{ g}} \times \frac{(100)^3 \text{ cm}^3}{1^3 \text{ m}^3} = 21400 \frac{Kg}{m^3}$
 $2.14 \times 10^4 \frac{Kg}{m^3}$

④ Sodium Bicarbonate

Na^{+1}

HCO_3^{-1}

↑ Covalent

↑ Ionic

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③

$8 \times 10^4 \text{ gal}$	$\overbrace{60 \text{ sec } 60 \text{ min}}^{3600}$	1 yr	1 ft	1 mile
sec	min	(hr)	2.54 cm	5280 ft

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⑥ 0.789 g ethanol, — ml, 39.6 g

$\left(\frac{\text{m}^3}{\text{ml}} \right)$

UNIT TO FIND ON TOP

1 ml	39.6 g ethanol	= 50.19 ml ETOH
0.789 g ethanol		

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③

Mass# \downarrow 57 Fe $+3$ \leftarrow Ion charge

P Atomic# \nearrow 26

Everything is NEUTRAL

except ions!

P = # e⁻
Neutral

26p, 23 e⁻, 31 n

Oct 14-9:17 AM

⑩ Magnesium Nitride

Mg⁺² N⁻³

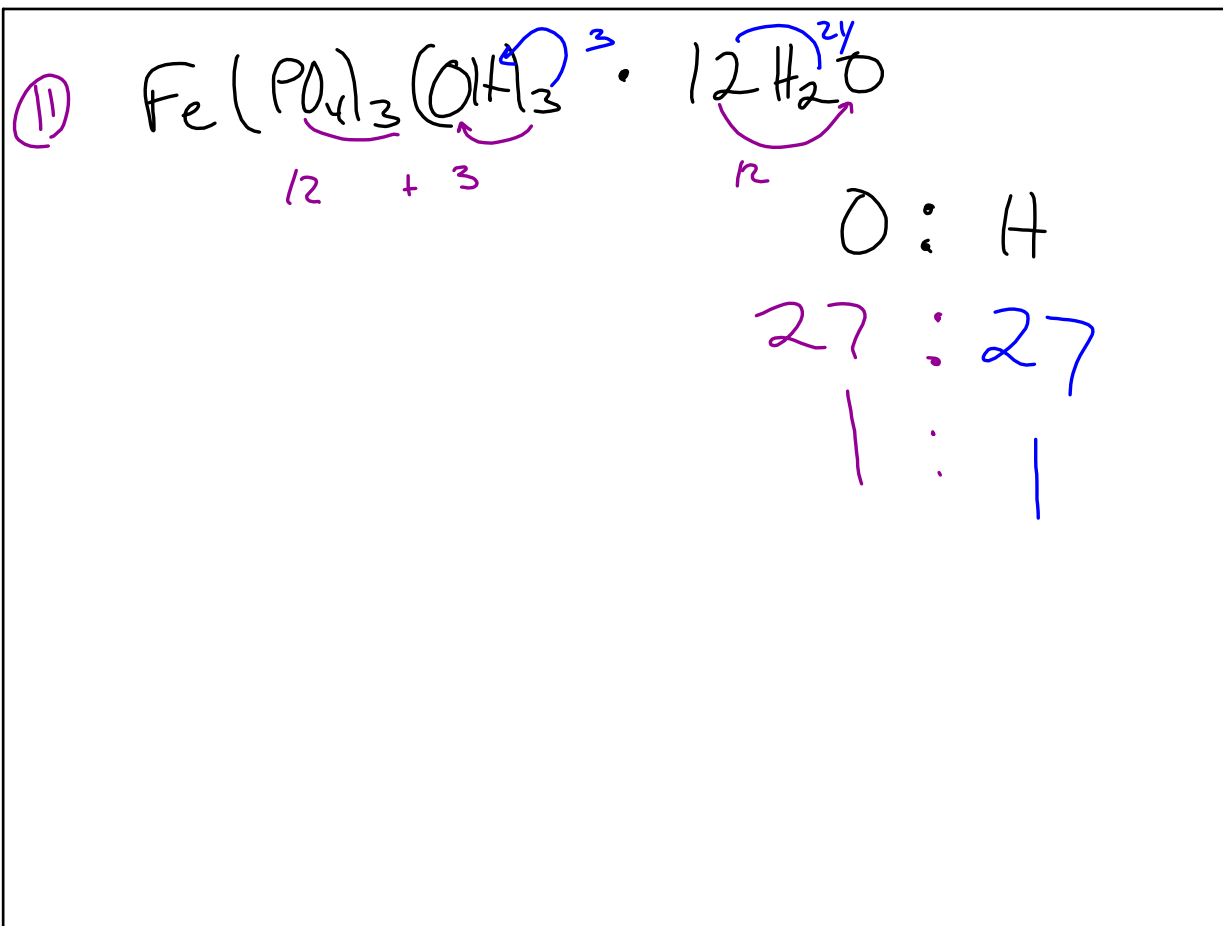
Mg₃N₂

Magnesium Nitrite

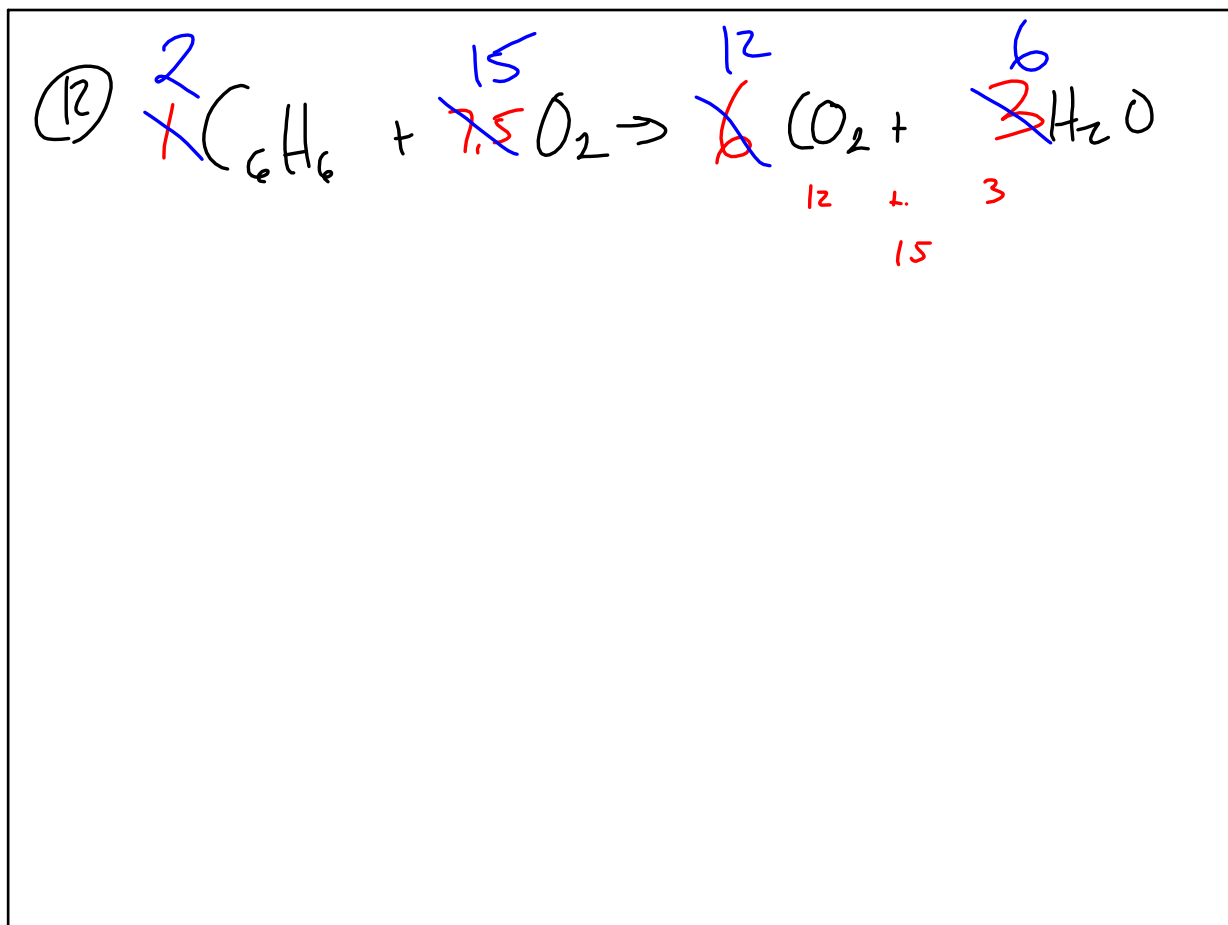
Mg⁺² NO₂⁻

Mg(NO₂)₂

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Oct 14-9:30 AM