

THINGS TO REMEMBER FOR EXAM #2

Honors Chemistry

**#1 WHEN CALCULATING MOLARITY, THE
VOLUME NEEDS TO HAVE WHAT UNIT?**

Liters (L)

#2 THE MAXIMUM AMOUNT OF SOLUTE
DISSOLVED IS CALLED _____.

Saturated solution

#3 LESS THAN THE MAXIMUM AMOUNT
OF SOLUTE DISSOLVED IS CALLED

_____.

Unsaturated solution

#4 MORE THAN THE MAXIMUM AMOUNT
OF SOLUTE DISSOLVED IS CALLED

_____.

Supersaturated solution

#5 THE SOLUBILITY OF SOLIDS GOES
_____ AS THE TEMPERATURE IS
INCREASED.

Up

#6 THE SOLUBILITY OF GASES GOES
_____ AS THE TEMPERATURE IS
INCREASED.

Down

**#7 IF YOU'RE TRYING TO MAKE A
DILUTED SOLUTION, YOU USE THE
EQUATION:**

$$M_1 V_1 = M_2 V_2$$

**#8 WHEN MAKING A DILUTED SOLUTION
THE WATER ADDED TO THE NEW SOLUTION
IS FOUND BY SUBTRACTING WHICH TWO
NUMBERS?**

$$\text{Water added} = V_2 - V_1$$

#9 FACTORS THAT AFFECT RATE ARE:

1. **Temperature**
2. **Concentration/Pressure**
3. **Surface area**
4. **Catalysts**


#10 FACTORS THAT AFFECT EQUILIBRIUM POSITION:

1. **Temperature**
2. **Concentration/Pressure/Volume**

#11 ONLY _____ CHANGES THE
EQUILIBRIUM CONSTANT (K_{EQ})

Temperature

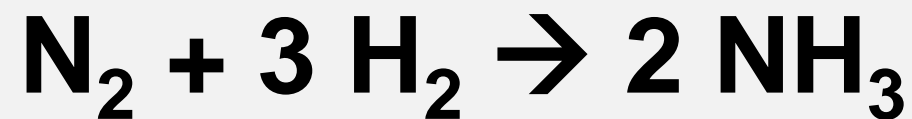
#12 WHAT IS AVERAGE RATE?

Delta over Delta! 

- ***Average Rate*** = $\frac{\Delta[X]}{\Delta t} = \frac{[X]_{final} - [X]_{initial}}{t_{final} - t_{initial}}$

#13 WHAT IS A RATE EXPRESSION?
WHAT IS IT USED FOR?

**Relates rate of a reactant or product to
another reactant or product**



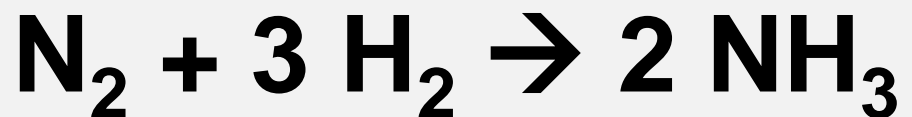
$$\frac{-\Delta[\text{N}_2]}{\Delta t} = \frac{-\Delta[\text{H}_2]}{3 \Delta t} = \frac{\Delta[\text{NH}_3]}{2 \Delta t}$$

Entire thing is the RATE EXPRESSION

REMEMBER!

Reactants are negative, Products are positive.

#14 WHEN YOU WANT THE RATE OF ONE SUBSTANCE BUT YOU ONLY HAVE THE RATE FOR ANOTHER SUBSTANCE, YOU CAN USE THE _____ TO SOLVE FOR THE MISSING RATE.
PRACTICE Q: SOLVE RATE OF H₂ IN TERMS OF N₂



Rate Expression

$$\frac{-\Delta[\text{N}_2]}{\Delta t} = \frac{-\Delta[\text{H}_2]}{3 \Delta t} = \frac{\Delta[\text{NH}_3]}{2 \Delta t}$$

$$\frac{3 \Delta[\text{N}_2]}{\Delta t} = \frac{\Delta[\text{H}_2]}{\Delta t}$$

#15 THE RATE LAW ONLY INCLUDES
THE CONCENTRATIONS OF THE

_____.

Reactants!

#16 THE EQUILIBRIUM EXPRESSION IS
DIVIDED BY

[Products]
[Reactants]

#17 THE RATE LAW EXPONENTS ARE CALLED _____. ARE THEY FROM THE BALANCED EQUATION COEFFICIENTS OR FOUND EXPERIMENTALLY?

Orders

FOUND EXPERIMENTALLY!

If the reaction is a single step reaction, then yes they will match...but you have to be told that! Never assume the exponents will be the coefficients!

#18 ARE THE EXPONENTS IN AN
EQUILIBRIUM EXPRESSION FROM THE
BALANCED EQUATION COEFFICIENTS OR
FOUND EXPERIMENTALLY?

**Balanced equation
coefficients**

**#19 SOLIDS AND LIQUIDS DO OR DO
NOT AFFECT EQUILIBRIUM?**

DO NOT!

#20 A LARGE VALUE FOR K INDICATES THAT
THE _____ SIDE IS FAVORED AND A
SMALL VALUE FOR K INDICATES THE
_____ SIDE IS FAVORED.

Products (right) – “equilibrium lies to the right”
Reactants (left) – “equilibrium lies to the left”

$$\underline{\#21} \quad K'_{eq} = \text{????}$$

$$\frac{1}{K_{eq}}$$

#22 IF Q IS BIGGER THAN K , THAN THE REACTION WILL SHIFT TO THE

_____.

Left (towards the reactants)

Numerator is too big! You have too many products!

#23 IF Q IS SMALLER THAN K, THAN THE
REACTION WILL SHIFT TO THE

_____.

**Right (towards the products).
Denominator is too big! You
have too many reactants!**

#24 I CAN USE THE 5% RULE WHEN:

1. $K < 1$
2. If K is 1000x smaller than the initial concentration
3. X is 5% or less of the initial concentrations
4. $\frac{x}{[initial]} \times 100 \leq 5\%$ use x NOT K

#25 ALSO...

- 1. CAREFUL WITH SCIENTIFIC NOTATION!**
- 2. CAREFUL WITH METRIC CONVERSIONS!**
- 3. PUNCH YOUR CALCULATOR CORRECTLY!**
- 4. USE PARENTHESES!**
- 5. ANSWER THE QUESTION THAT IS ACTUALLY ASKED!!!**
- 6. SHOW ENOUGH WORK TO PROVE YOU DID THE PROBLEM...BUT DON'T WASTE ALL YOUR TIME DOING SO!**
- 7. STUCK? MOVE ON AND COME BACK LATER! CAREFUL ON YOUR BUBBLE SHEET!!!!**
- 8. TAKE A BREATH AND JUST ANSWER ONE QUESTION AT A TIME 😊**