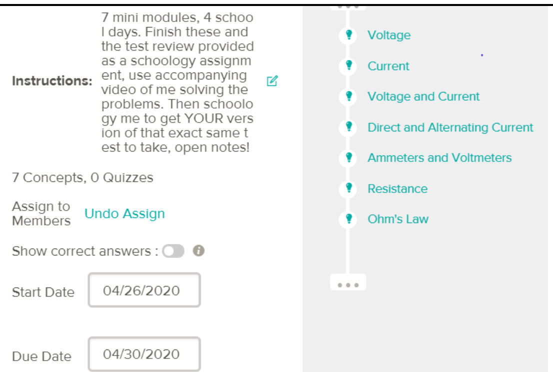
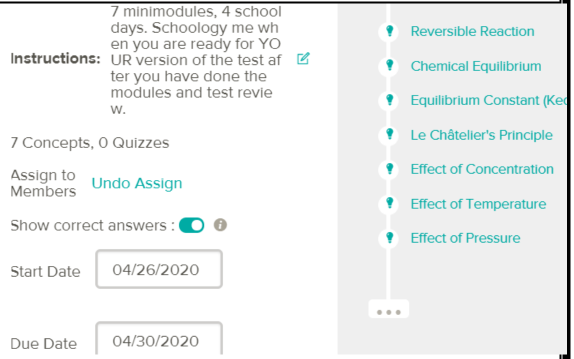
Phys/Chem Weekly Planner: All science week of 4.27.2020 **(remember all previous weeks are archived below)**

NEXT GENERATION SCIENCE STANDARDS For States, By States

Objectives for the week: Chm.3.1.3 Infer the shift in equilibrium when a stress is applied to a chemical system (Le Chatelier's Principle). Phy.2.3 Analyze the nature of moving charges and electric circuits. Phy.2.3.1 Explain Ohm's law in relation to electric circuits.

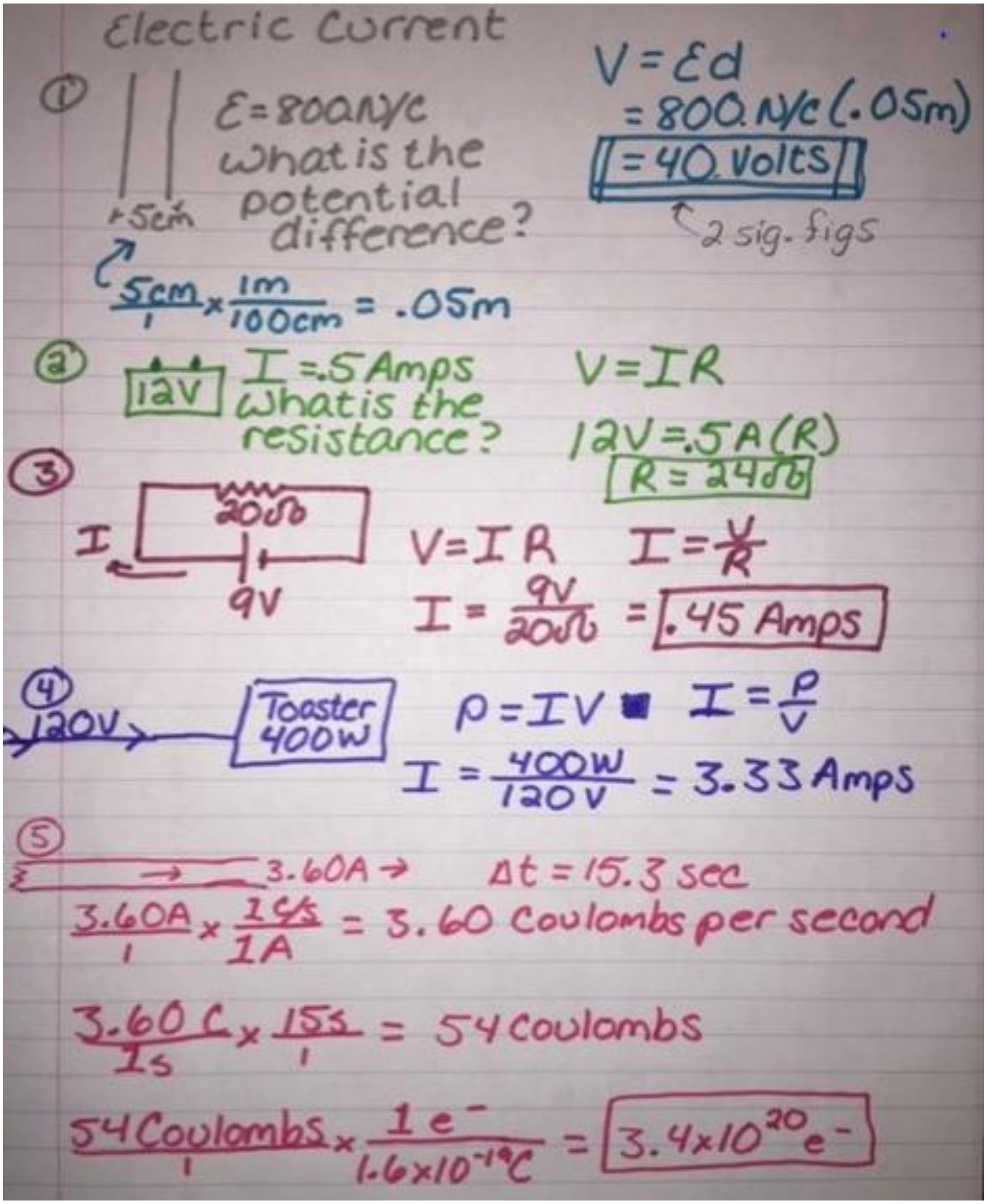
Day	*Honors Physics*	*Honors Chemistry*
Mon 4.27	 **Instructions:** 7 mini modules, 4 school days. Finish these and the test review provided as a schoology assignment, use accompanying video of me solving the problems. Then schoology me to get YOUR version of that exact same test to take, open notes! 7 Concepts, 0 Quizzes Assign to Members Undo Assign Show correct answers : ☐ Start Date 04/26/2020 Due Date 04/30/2020 Voltage Current Voltage and Current Direct and Alternating Current Ammeters and Voltmeters Resistance Ohm's Law **Week overview:** **https://screencast-o-matic.com/watch/cYftivAKO7** **ZOOM mtg. at 6pm**	 **Instructions:** 7 minimodules, 4 school days. Schoology me when you are ready for YOUR version of the test after you have done the modules and test review. 7 Concepts, 0 Quizzes Assign to Members Undo Assign Show correct answers : ☑ Start Date 04/26/2020 Due Date 04/30/2020 Reversible Reaction Chemical Equilibrium Equilibrium Constant (Ke Le Châtelier's Principle Effect of Concentration Effect of Temperature Effect of Pressure **Week overview:** **https://screencast-o-matic.com/watch/cYftivAKO7** **ZOOM mtg. at 6pm**
Tues 4.28	**Continue with mini-modules** https://www.unicef.org/coronavirus/how-teenagers-can-protect-their-mental-health-during-coronavirus-covid-19 **ZOOM mtg. at 6pm**	**Continue with mini-modules** https://www.unicef.org/coronavirus/how-teenagers-can-protect-their-mental-health-during-coronavirus-covid-19 **ZOOM mtg. at 6pm**
Wed 4.29	**Continue with mini-modules** **ZOOM mtg. at 6pm**	**Continue with mini-modules** **ZOOM mtg. at 6pm**
Thurs 4.30	Statics- electricity **Test review!** https://screencast-o-matic.com/watch/cYfvnuBFPf ZOOM mtg. cancelled due to 8th grade visits	Solutions and **Molarity** **Test review!** https://screencast-o-matic.com/watch/cYfvenBqhS ZOOM mtg. cancelled due to 8th grade visits
Friday 5.1	**Test - Current Electricity**	**Test - Equilibrium**

Warm up activities! CANCELLED for this week

Monday - https://evanscca.weebly.com/

TURN OFF cell phone and put in the bin ☺

PHYZ Warm up: TURN OFF cell phone and put in the bin ☺	**CHEM Warm up:** **Turn OFF your cell phone and put in bin ☺**



Electric Current

① 5cm

$\mathcal{E} = 800\,N/C$

what is the potential difference?

$\frac{5cm}{1} \times \frac{1m}{100cm} = .05m$

$V = \mathcal{E}d$

$= 800.\,N/C\,(.05m)$

$\boxed{= 40.\ Volts}$

2 sig. figs

② 12V

$I = .5$ Amps

What is the resistance?

$V = IR$

$12V = .5A(R)$

$\boxed{R = 24\Omega}$

③ 20Ω I 9V

$V = IR \quad I = \frac{V}{R}$

$I = \frac{9V}{20\Omega} = \boxed{.45\ Amps}$

④ 120V Toaster 400W

$P = IV \quad I = \frac{P}{V}$

$I = \frac{400W}{120V} = 3.33$ Amps

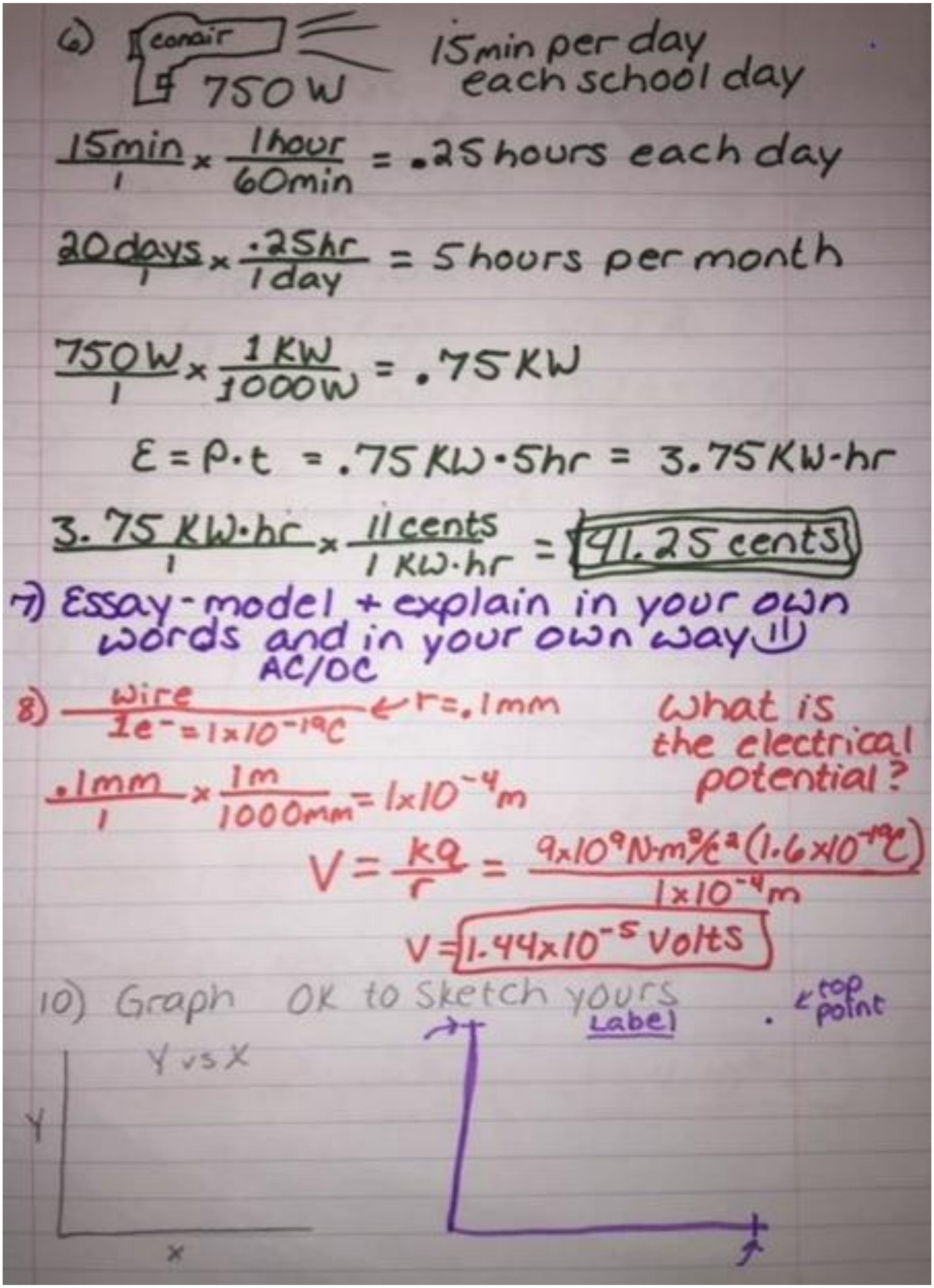
⑤ 3.60A →

$\Delta t = 15.3$ sec

$\frac{3.60A}{1} \times \frac{1C/s}{1A} = 3.60$ Coulombs per second

$\frac{3.60\,C}{1s} \times \frac{15s}{1} = 54$ Coulombs

$\frac{54\,Coulombs}{1} \times \frac{1e^-}{1.6 \times 10^{-19}C} = \boxed{3.4 \times 10^{20} e^-}$



6) conair 750 W

15min per day
each school day

$\frac{15\text{min}}{1} \times \frac{1\text{hour}}{60\text{min}} = .25$ hours each day

$\frac{20\text{days}}{1} \times \frac{.25\text{hr}}{1\text{day}} = 5$ hours per month

$\frac{750\text{W}}{1} \times \frac{1\text{KW}}{1000\text{W}} = .75\text{KW}$

$E = P \cdot t = .75\text{KW} \cdot 5\text{hr} = 3.75\text{KW-hr}$

$\frac{3.75\text{KW} \cdot \text{hr}}{1} \times \frac{11\text{cents}}{1\text{KW} \cdot \text{hr}} = \boxed{41.25\text{ cents}}$

7) Essay - model + explain in your own words and in your own way (!!)

AC/DC

8) $\frac{\text{wire}}{1e^- = 1\times10^{-19}\text{C}} \leftarrow r = .1\text{mm}$

What is the electrical potential?

$\frac{.1\text{mm}}{1} \times \frac{1\text{m}}{1000\text{mm}} = 1\times10^{-4}\text{m}$

$$V = \frac{kq}{r} = \frac{9\times10^9\text{N}\cdot\text{m}^2/\text{C}^2(1.6\times10^{-19}\text{C})}{1\times10^{-4}\text{m}}$$

$$V = \boxed{1.44\times10^{-5}\text{ Volts}}$$

10) Graph OK to sketch yours

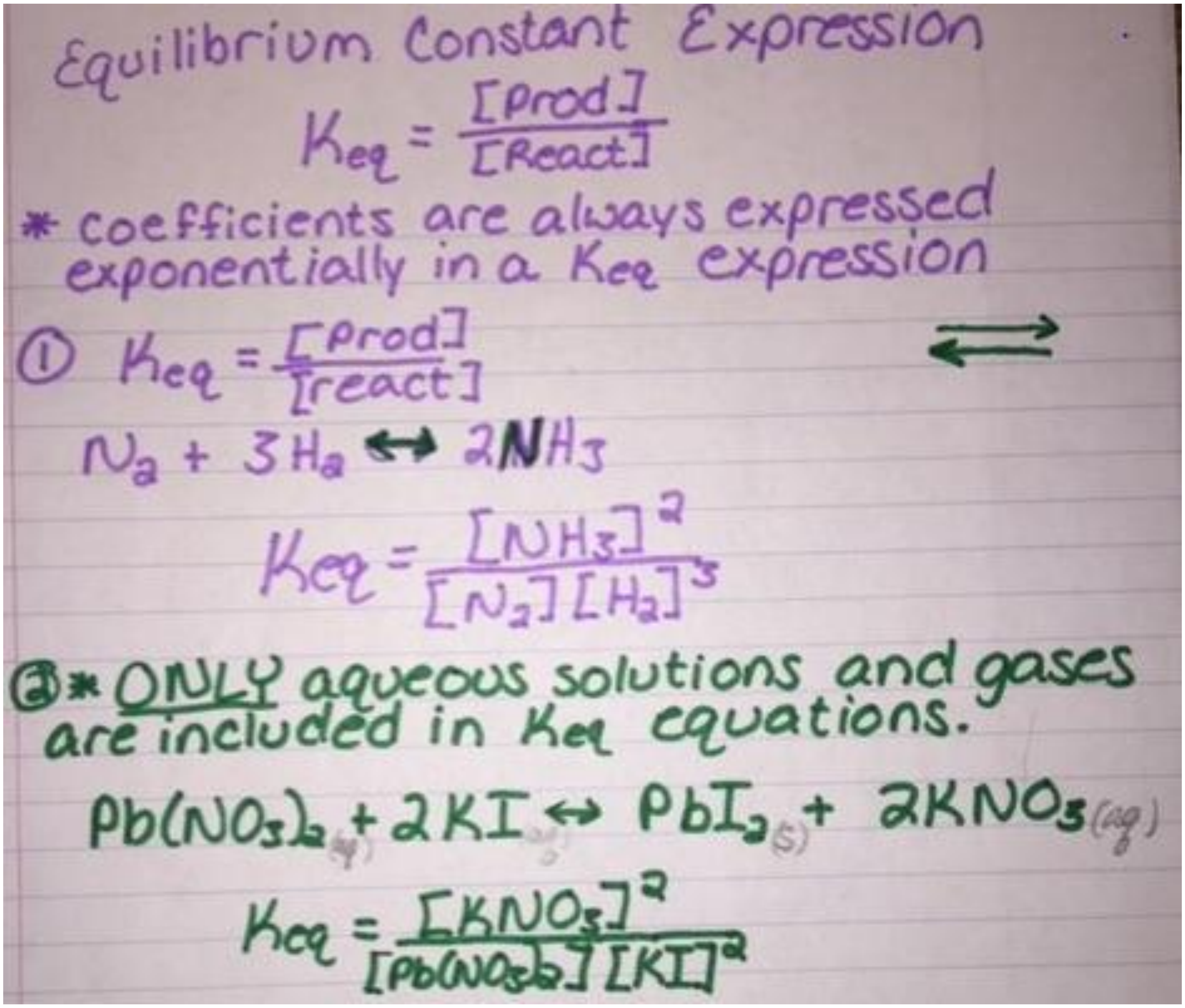
Label

. ← top point

Y vs X

Y

x



Equilibrium Constant Expression

$$K_{eq} = \frac{[Prod]}{[React]}$$

* coefficients are always expressed exponentially in a Keq expression

① $K_{eq} = \frac{[Prod]}{[react]}$ $\rightleftharpoons$

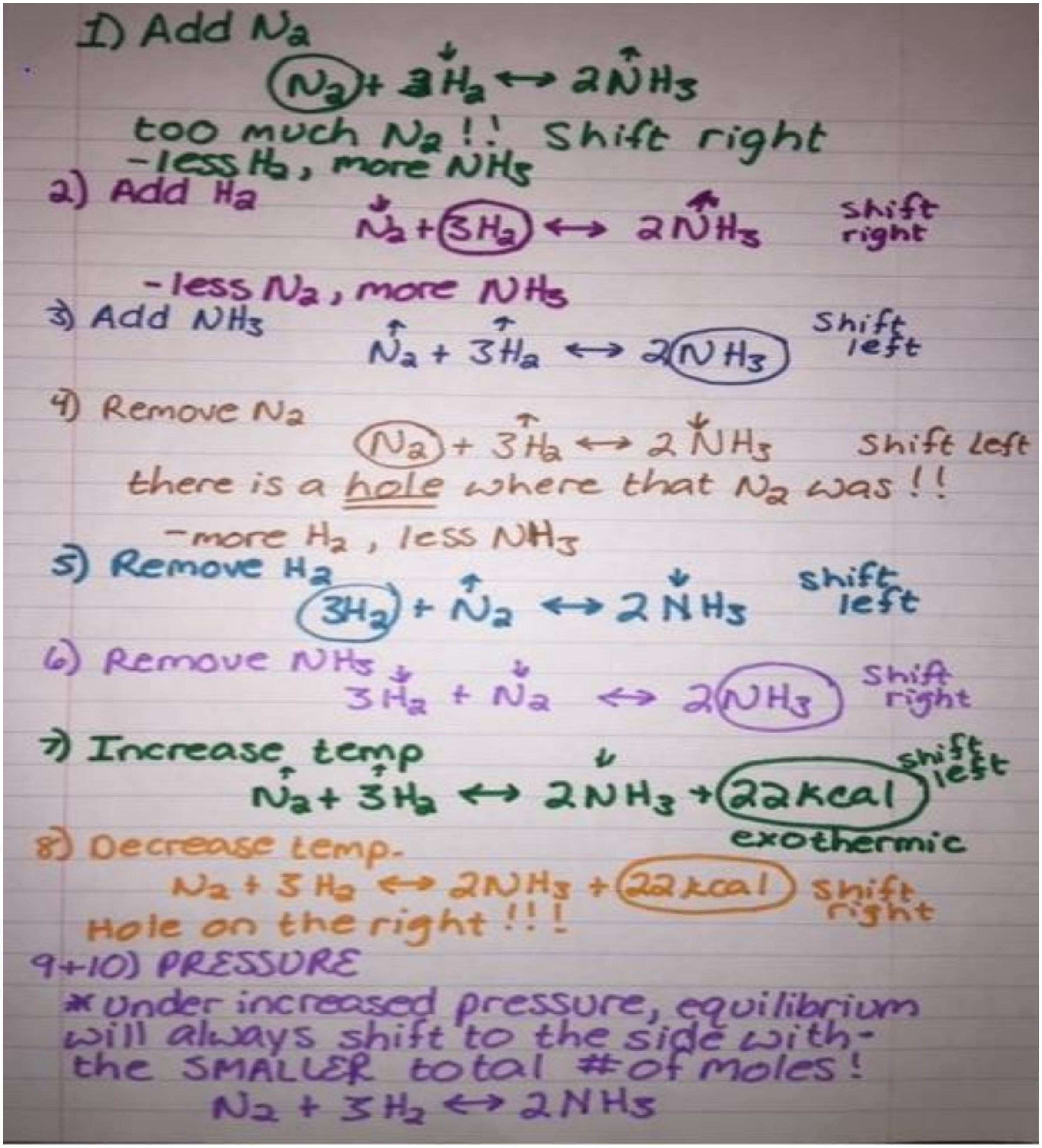
$N_2 + 3H_2 \leftrightarrow 2NH_3$

$$K_{eq} = \frac{[NH_3]^2}{[N_2][H_2]^3}$$

② * ONLY aqueous solutions and gases are included in Keq equations.

$Pb(NO_3)_{2(aq)} + 2KI_{(aq)} \leftrightarrow PbI_{2(s)} + 2KNO_{3(aq)}$

$$K_{eq} = \frac{[KNO_3]^2}{[Pb(NO_3)_2][KI]^2}$$



1) Add N_2

$\boxed{N_2} + \overset{\downarrow}{3H_2} \leftrightarrow 2\overset{\uparrow}{N}H_3$

too much N_2!! Shift right

-less H_2, more NH_3

2) Add H_2

$\overset{\downarrow}{N_2} + \boxed{3H_2} \leftrightarrow 2\overset{\uparrow}{N}H_3$ shift right

-less N_2, more NH_3

3) Add NH_3

$\overset{\uparrow}{N_2} + \overset{\uparrow}{3H_2} \leftrightarrow 2\boxed{NH_3}$ Shift left

4) Remove N_2

$\boxed{N_2} + \overset{\uparrow}{3H_2} \leftrightarrow 2\overset{\downarrow}{N}H_3$ Shift Left

there is a hole where that N_2 was!!

-more H_2, less NH_3

5) Remove H_2

$\boxed{3H_2} + \overset{\uparrow}{N_2} \leftrightarrow 2\overset{\downarrow}{N}H_3$ shift left

6) Remove NH_3

$\overset{\downarrow}{3H_2} + \overset{\downarrow}{N_2} \leftrightarrow 2\boxed{NH_3}$ Shift right

7) Increase temp

$\overset{\uparrow}{N_2} + \overset{\uparrow}{3H_2} \leftrightarrow \overset{\downarrow}{2}NH_3 + \boxed{22 kcal}$ shift left

exothermic

8) Decrease temp-

$N_2 + 3H_2 \leftrightarrow 2NH_3 + \boxed{22 kcal}$ shift right

Hole on the right!!!

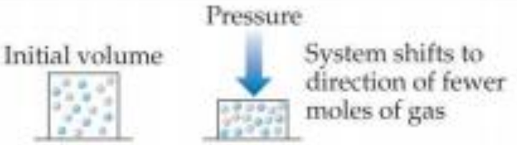
9+10) PRESSURE

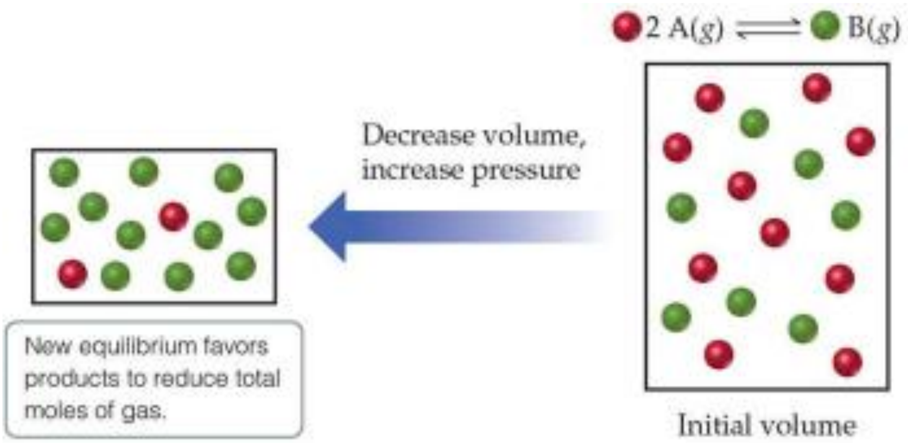
*Under increased pressure, equilibrium will always shift to the side with- the SMALLER total # of moles!

$N_2 + 3H_2 \leftrightarrow 2NH_3$

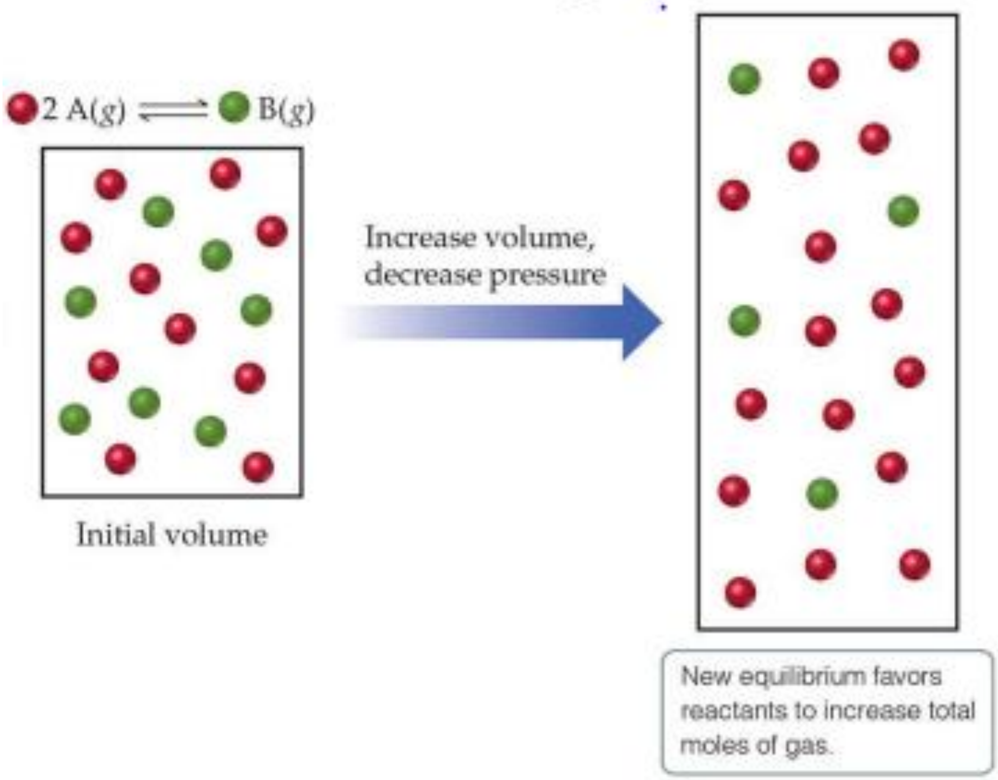
Pressure: changing the pressure by changing the volume

At constant temperature, reducing the volume of a gaseous equilibrium mixture causes the system to shift in the direction that reduces the number of moles of gas.





New equilibrium favors products to reduce total moles of gas.



New equilibrium favors reactants to increase total moles of gas.

https://covidtracking.com/data

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