

WEEKLY PLANNER: ALL SCIENCE WEEK

OF 11.19.18



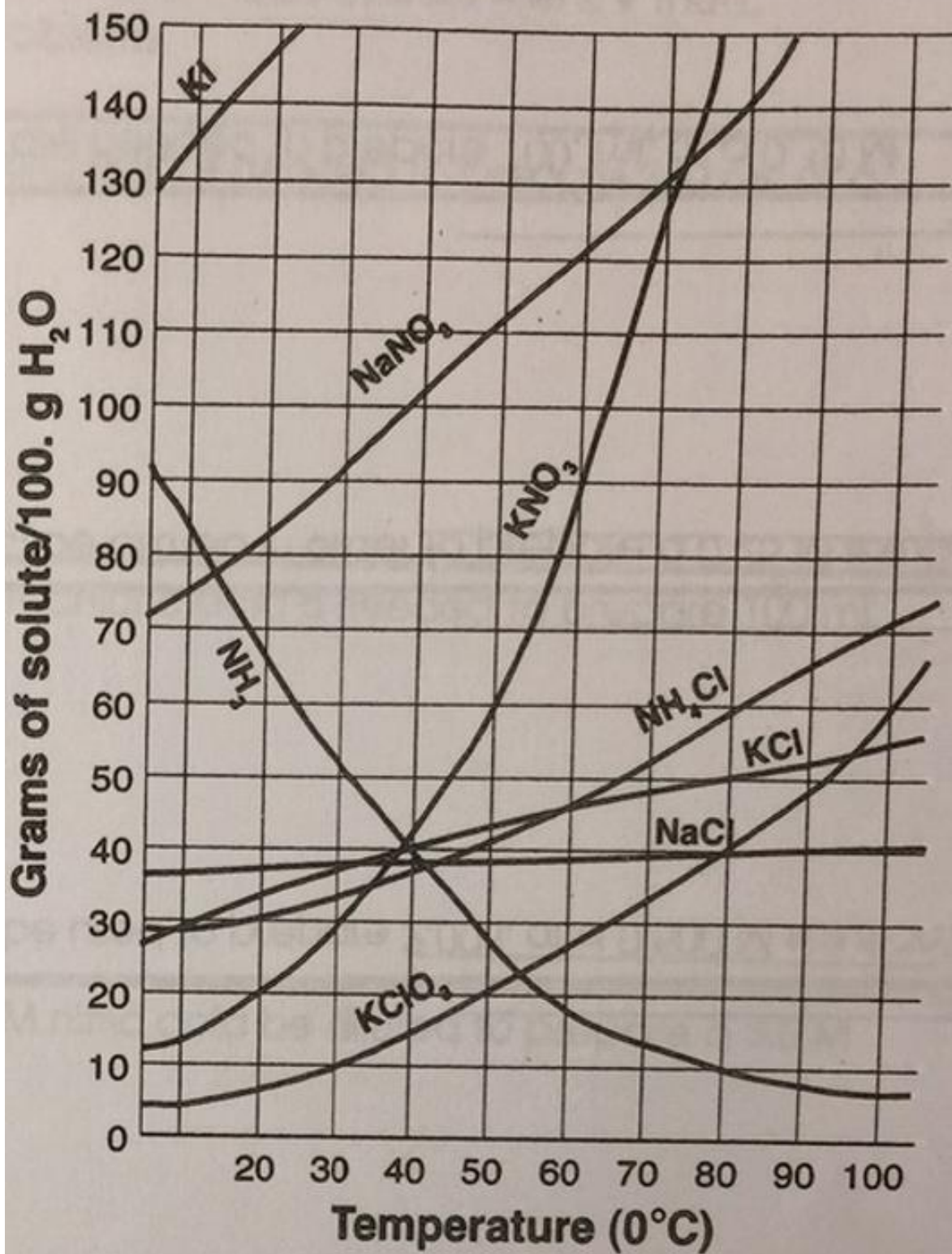
Objectives for the week: SLC's will be October 11th. Please call Ms. Linda to schedule.

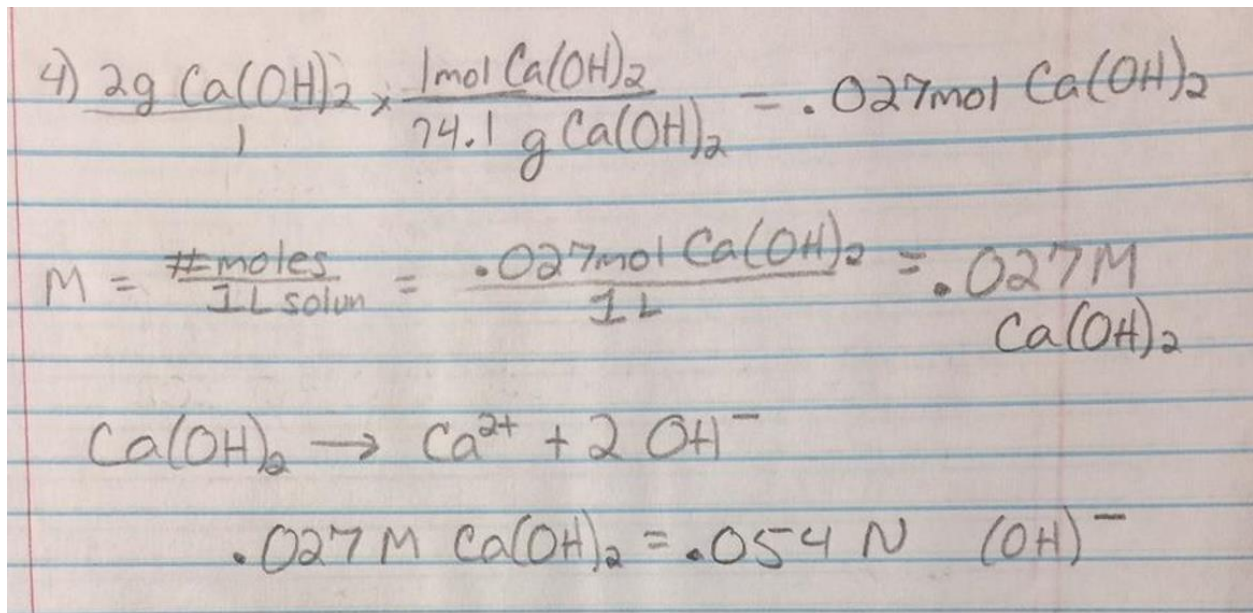
Bio.3.1.1 Explain the double-stranded, complementary nature of DNA as related to its function in the cell. Bio.3.1.2 Explain how DNA and RNA code for proteins and determine traits.

Chm.2.2.4 Analyze the stoichiometric relationships inherent in a chemical reaction.

Day	Honors <u>Biology</u> - What is the biology of health and disease?	Honors <u>Chemistry</u> - What are solutions and how does molarity work?
Mon 11.19	Notes: Health and Disease Lab- Mouse party HW= finish project	Present HW answers Finish molarity packet, presentation!
Tues 11.20 STUDY BUDDIES!	Bacteriophage video https://www.youtube.com/watch?v=YI3tsmFsrOg *-Holiday review packet 60 q. due Mon. *Test corrections due Mon.	Quiz? Get tests back Kool-Aid LAB!! *-Holiday review packet 100 q due Mon.
Wed 11.21	HOLIDAY BREAK: COMPLETE EOC EXAM REVIEW #1 (ALL CLASSES)	
Thurs 11.22		
Friday 11.23		

NO WARM UPS THIS WEEK





1. Which of the following is a by-product of cellular respiration in animals?

- A. oxygen
- B. heat
- C. sugar
- D. protein

2. An experiment was performed using four plants of the same species. Each plant was placed in an identical container under the same environmental conditions. Carbon dioxide was added to each container. Each plant was then exposed to a different color of light. After 72 hours, the volume of carbon dioxide in each container was measured. The measured data is shown in the table below.

Plant	Light Color	Initial Volume of CO ₂	Final Volume of CO ₂
1	Red	250 cm ³	60 cm ³
2	Orange	250 cm ³	200 cm ³
3	Green	250 cm ³	400 cm ³
4	Blue	250 cm ³	100 cm ³

Which statement would **most likely** explain the different volumes of carbon dioxide after 72 hours?

- A. Photosynthesis occurs under all colors of light.
- B. Photosynthesis is not affected by the color of light.
- C. Photosynthesis occurs best under certain colors of light.
- D. Photosynthesis will occur whether or not light is present.

59. Why may snakes eat only once a week?

- A. They have small digestive tracts.
- B. They lack adequate available prey.
- C. They require large amounts of food.
- D. They require much less energy to maintain homeostasis.

55. What is the movement of materials from a low concentration to a high concentration called?

- A. active transport
- B. passive transport
- C. osmosis
- D. diffusion

STOICHIOMETRY: MIXED PROBLEMS

Name _____

- $N_2 + 3H_2 \rightarrow 2NH_3$
What volume of NH_3 at STP is produced if 25.0 g of N_2 is reacted with an excess of H_2 ?
40.0 L
- $2KClO_3 \rightarrow 2KCl + 3O_2$
If 5.0 g of $KClO_3$ is decomposed, what volume of O_2 is produced at STP?
1.4 L
- How many grams of KCl are produced in Problem 2?
3.0 g
- $Zn + 2HCl \rightarrow ZnCl_2 + H_2$
What volume of hydrogen at STP is produced when 2.5 g of zinc react with an excess of hydrochloric acid?
0.86 L
- $H_2SO_4 + 2NaOH \rightarrow H_2O + Na_2SO_4$
How many molecules of water are produced if 2.0 g of sodium sulfate are produced in the above reaction?
 8.5×10^{21} molecules
- $2AlCl_3 \rightarrow 2Al + 3Cl_2$
If 10.0 g of aluminum chloride are decomposed, how many molecules of Cl_2 are produced?
 6.77×10^{22} molecules

Page 65

STOICHIOMETRY: LIMITING REAGENT

Name _____

- $N_2 + 3H_2 \rightarrow 2NH_3$
How many grams of NH_3 can be produced from the reaction of 28 g of N_2 and 25 g of H_2 ?
34 g
- How much of the excess reagent in Problem 1 is left over?
19 g
- $Mg + 2HCl \rightarrow MgCl_2 + H_2$
What volume of hydrogen at STP is produced from the reaction of 50.0 g of Mg and the equivalent of 75 g of HCl ?
23 L
- How much of the excess reagent in Problem 3 is left over?
25.0 g
- $3AgNO_3 + Na_3PO_4 \rightarrow Ag_3PO_4 + 3NaNO_3$
Silver nitrate and sodium phosphate are reacted in equal amounts of 200. g each. How many grams of silver phosphate are produced?
164 g
- How much of the excess reagent in Problem 5 is left?
136 g

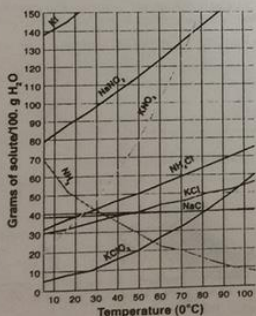
Page 66

SOLUBILITY CURVES

Name _____

Answer the following questions based on the solubility curve below.

- Which salt is least soluble in water at 20° C? **$KClO_3$**
- How many grams of potassium chloride can be dissolved in 200 g of water at 80° C? **100g**
- At 40° C, how much potassium nitrate can be dissolved in 300 g of water? **180 g**
- Which salt shows the least change in solubility from 0° - 100° C? **$NaCl$**
- At 30° C, 90 g of sodium nitrate is dissolved in 100 g of water. Is this solution saturated, unsaturated or supersaturated? **unsaturated**



- A saturated solution of potassium chlorate is formed from one hundred grams of water. If the saturated solution is cooled from 80° C to 50° C, how many grams of precipitate are formed? **22g NH_3**
- Which salt is most soluble? **KI**
- Which salt is least soluble at 50° C? **$KClO_3$**
- Which salt is least soluble at 80° C? **$NaCl$**

Page 67

MOLARITY (M)

Name _____

$$\text{Molarity} = \frac{\text{moles of solute}}{\text{liter of solution}}$$

Solve the problems below.

- What is the molarity of a solution in which 58 g of $NaCl$ are dissolved in 1.0 L of solution?
1.0 M
- What is the molarity of a solution in which 10.0 g of $AgNO_3$ is dissolved in 500. mL of solution?
0.118 m
- How many grams of KNO_3 should be used to prepare 2.00 L of a 0.500 M solution?
101 g
- To what volume should 5.0 g of KCl be diluted in order to prepare a 0.25 M solution?
270 mL
- How many grams of $CuSO_4 \cdot 5H_2O$ are needed to prepare 100. mL of a 0.10 M solution?
2.5g

Page 68

MOLARITY BY DILUTION Name _____

Acids are usually acquired from chemical supply houses in concentrated form. These acids are diluted to the desired concentration by adding water. Since moles of acid before dilution = moles of acid after dilution, and moles of acid = $M \times V$ then, $M_1 \times V_1 = M_2 \times V_2$. Solve the following problems.

- How much concentrated 18 M sulfuric acid is needed to prepare 250 mL of a 6.0 M solution?
83 mL
- How much concentrated 12 M hydrochloric acid is needed to prepare 100 mL of a 2.0 M solution?
17 mL
- To what volume should 25 mL of 15 M nitric acid be diluted to prepare a 3.0 M solution?
125 mL
- To how much water should 50. mL of 12 M hydrochloric acid be added to produce a 4.0 M solution?
100 mL (150 mL total solution)
- To how much water should 100. mL of 18 M sulfuric acid be added to prepare a 1.5 M solution?
1.1 liters (1.2 liters or 1200 mL total solution)

Page 69

NORMALITY (N) Name _____

normality = molarity \times total positive oxidation number of solute
 Example: What is the normality of 3.0 M of H_2SO_4 ?
 Solution: Since the total positive oxidation number of H_2SO_4 is +2 (2 H⁺), $N = 6.0$.

Solve the problems below.

- What is the normality of a 2.0 M NaOH solution?
2.0 N
- What is the normality of a 2.0 M H_3PO_4 solution?
6.0 N
- A solution of H_2SO_4 is 3.0 N. What is its molarity?
1.5 M
- What is the normality of a solution in which 2.0 g of $Ca(OH)_2$ is dissolved in 1.0 L of solution?
0.054 N
- How much $AlCl_3$ should be dissolved in 2.00 L of solution to produce a 0.150 N solution?
13.3g

Page 71
Chemistry IER766

MOLALITY (m) Name _____

Molality = $\frac{\text{moles of solute}}{\text{kg of solvent}}$

Solve the problems below.

- What is the molality of a solution in which 3.0 moles of NaCl is dissolved in 1.5 Kg of water?
2.0 m
- What is the molality of a solution in which 25 g of NaCl is dissolved in 2.0 Kg of water?
0.22 m
- What is the molality of a solution in which 15 g of I_2 is dissolved in 500. g of alcohol?
0.12 m
- How many grams of I_2 should be added to 750 g of CCl_4 to prepare a 0.020 m solution?
3.8 g
- How much water should be added to 5.00 g of KCl to prepare a 0.500 m solution?
135g

Page 70

ELECTROLYTES Name _____

Electrolytes are substances that break up (dissociate or ionize) in water to produce ions. These ions are capable of conducting an electric current.
 Generally, electrolytes consist of acids, bases and salts (ionic compounds).
 Nonelectrolytes are usually covalent compounds, with the exception of acids.
 Classify the following compounds as either an electrolyte or a nonelectrolyte.

Compound	Electrolyte	Nonelectrolyte
1. NaCl	X	
2. CH_3OH (methyl alcohol)		X
3. $C_3H_8(OH)_3$ (glycerol)		X
4. HCl	X	
5. $C_6H_{12}O_6$ (sugar)		X
6. NaOH	X	
7. C_2H_5OH (ethyl alcohol)		X
8. CH_3COOH (acetic acid)	X	
9. NH_4OH ($NH_3 + H_2O$)	X	
10. H_2SO_4	X	

Page 72

OUTBREAK!!!

MY NAME:	
	People's germs in my cup before round 1
ROUND 1	People in my cup before round 2
Round 2	People in my cup before round 3
Round 3	People in my cup before round 4
Round 4	ALL People's germs in my cup !!!

<https://www.cdc.gov/mobile/applications/sto/web-app.html> SOLVE THE OUTBREAK!

How to Play

Home Screen

The screenshot shows the home screen of the 'Solve the Outbreak' app. At the top right, there is a 'CDC 24/7' logo with the tagline 'Saving Lives. Protecting People.' and a gear icon for settings. The main area features two virus cards: 'Level 1' with '12 Outbreaks' and '0 out of 18,000 points', and 'Level 2' with '3 Outbreaks' and '0 out of 4,500 points'. The Level 2 card is locked. Below the cards, the text 'SOLVE THE OUTBREAK' is displayed with a magnifying glass icon, followed by 'BECOME A DISEASE DETECTIVE' and 'LEARN MORE ABOUT EPIDEMIOLOGY.' A navigation bar at the bottom contains 'LEARN', 'SCORES', 'ABOUT', and 'HELP' buttons. Handwritten annotations in white and yellow provide instructions: 'CLICK TO LEARN MORE ABOUT CDC.' points to the top right; 'CLICK THE VIRUS TO SOLVE OUTBREAKS.' points to the Level 1 virus; 'TO UNLOCK LEVEL 2, YOU MUST EARN A PERFECT SCORE IN LEVEL 1.' points to the Level 2 virus; 'CLICK TO VIEW SETTINGS TO TURN ON/OFF SOUND, AND RESET SCORES.' points to the gear icon; and 'LEARN MORE ABOUT EPIDEMIOLOGY.' points to the 'LEARN' button.

CLICK TO LEARN MORE ABOUT CDC.

CDC 24/7 Saving Lives. Protecting People.

Level 1
12 Outbreaks
0 out of 18,000 points

Level 2
3 Outbreaks
0 out of 4,500 points

CLICK THE VIRUS TO SOLVE OUTBREAKS.

TO UNLOCK LEVEL 2, YOU MUST EARN A PERFECT SCORE IN LEVEL 1.

CLICK TO VIEW SETTINGS TO TURN ON/OFF SOUND, AND RESET SCORES.

SOLVE THE OUTBREAK

BECOME A DISEASE DETECTIVE
LEARN MORE ABOUT EPIDEMIOLOGY.

LEARN SCORES ABOUT HELP

Level Screen

Level 1 ← TO UNLOCK LEVEL 2, EARN A PERFECT SCORE ON ALL 12 OUTBREAKS IN LEVEL 1.

CLICK AND DRAG THE MOUSE LEFT AND RIGHT TO ACCESS EACH OF THE OUTBREAK SCENARIOS.

CLICK THE CONTINUE BUTTON TO PICK UP WHERE YOU LEFT OFF.

CLICK THE START BUTTON TO BEGIN A NEW OUTBREAK.

CLICK THE RESTART BUTTON TO ERASE YOUR ANSWERS AND START OVER.

Breathless in the Midwest
Number Sick: 15
Hospitalizations: 15
Deaths: 7
Location: US
0 out of 1500 points
Start

The Queens Killer
Number Sick: 62
Hospitalizations: 1150
Deaths: 400
Location: Nigeria
0 out of 1500 points
Restart

Case of the Conference B...
Number Sick: 37
Hospitalizations: 1
Deaths: 1
Location: US (5 S...)
0 out of 1500 p...
Start

Continue

SOLVE THE OUTBREAK
BECOME A DISEASE DETECTIVE

Disease Detective (dih-zeez dih-tek-tiv)
CDC disease investigator who is trained in epidemiology and sent to investigate possible outbreaks around the globe. Also known as an Epidemic Intelligence Service (EIS) officer.

CDC

LEARN SCORES ABOUT HELP

Outbreak Screen

BACK

Breathless in the Midwest

CDC 24/7 Saving Lives. Protecting People

CLICK THE BACK BUTTON TO RETURN TO THE LEVEL SCREEN.

Clue #1

The first reported case is a 37-year-old musician from Chicago named Zeke. You start by talking to Zeke to find out **what he was doing** before he got sick.

Zeke said that he started coughing and feeling very tired shortly after he led a music workshop for 50 students at a Chicago concert hall. He thought he might have picked something up from one of the students in the class, or perhaps he caught it 2 days ago on a flight home from vacation in Africa.

CLICK THE GOLD TEXT TO GET MORE INFORMATION.

CLICK AN ICON TO NAVIGATE TO A DIFFERENT SECTION. GOLD ICONS SHOW WHICH SECTION YOU ARE CURRENTLY READING.

Clue Tip

ANSWER THIS QUESTION

Where do you think Zeke caught whatever made him sick?

CLICK A BOX TO ANSWER THE QUESTION.

The flight home from vacation in Africa

The music workshop

It's too soon to know for sure

Learn Scores About Help

Little alchemy, Physics games ,
Learn Genetics Utah (mouse party),