Please complete the following instructions:

1. As you come in, **please use** the hand sanitizer at the back lab table.
2. Find your **same seat** as last time…this is your **permanent seat.**
3. **DO NOT** move the chairs or go to a lab table.
4. Turn your computer on, log into **Zoom** and **TURN OFF** your video and **PLUG IN** your headphones.
5. **Your phone needs to be in your backpack.**
6. **Put your name in the chat on Zoom.**
7. **Answer the daily check-in question.**

Have you completed steps 4-7?

On Campus Expectations 2.0

BE ON TIME

Get to school on time.
In between classes use your time wisely to get to the next class.
Come into class, sit in assigned seat, sign into google, and answer the check-in question.

BE PREPARED

Bring your own device if you choose. Technology should be charged and bring the cord.
Phones are off and put away inside your backpack (unless I tell you to use it for something).

UNMUTE YOURSELF

We want to hear you talk to participate.
Raise your hand, unmute yourself and speak loudly so we can hear you.

BE PRESENTABLE

Wear appropriate clothing.
Bring an extra mask in case you need it.
No food or drink in the classroom.

CHAT RESPONSIBLY

Raise your hand to speak in class.
Type your question in the chat box for our period.
Stay on topic (no side conversation)

PARTICIPATE

Stay focused!
Ask and answer questions and take good notes!
Listen and show respect to peers

Virtual Expectations 2.0

BE ON TIME

Log on a few minutes early, so you are not tardy.
Use your real name on the screen & answer the daily check-in question on time to not lose points.

BE PREPARED

Be in a QUIET location
Technology should be charged
No distractions including phones (unless you are using your phone to meet)

MUTE YOURSELF

Keep your mic on MUTE unless you have been called on
Use headphones if you have them

BE PRESENTABLE

Wear appropriate clothing
Be sure your camera is on
In order to mark you present for attendance I have to see you!

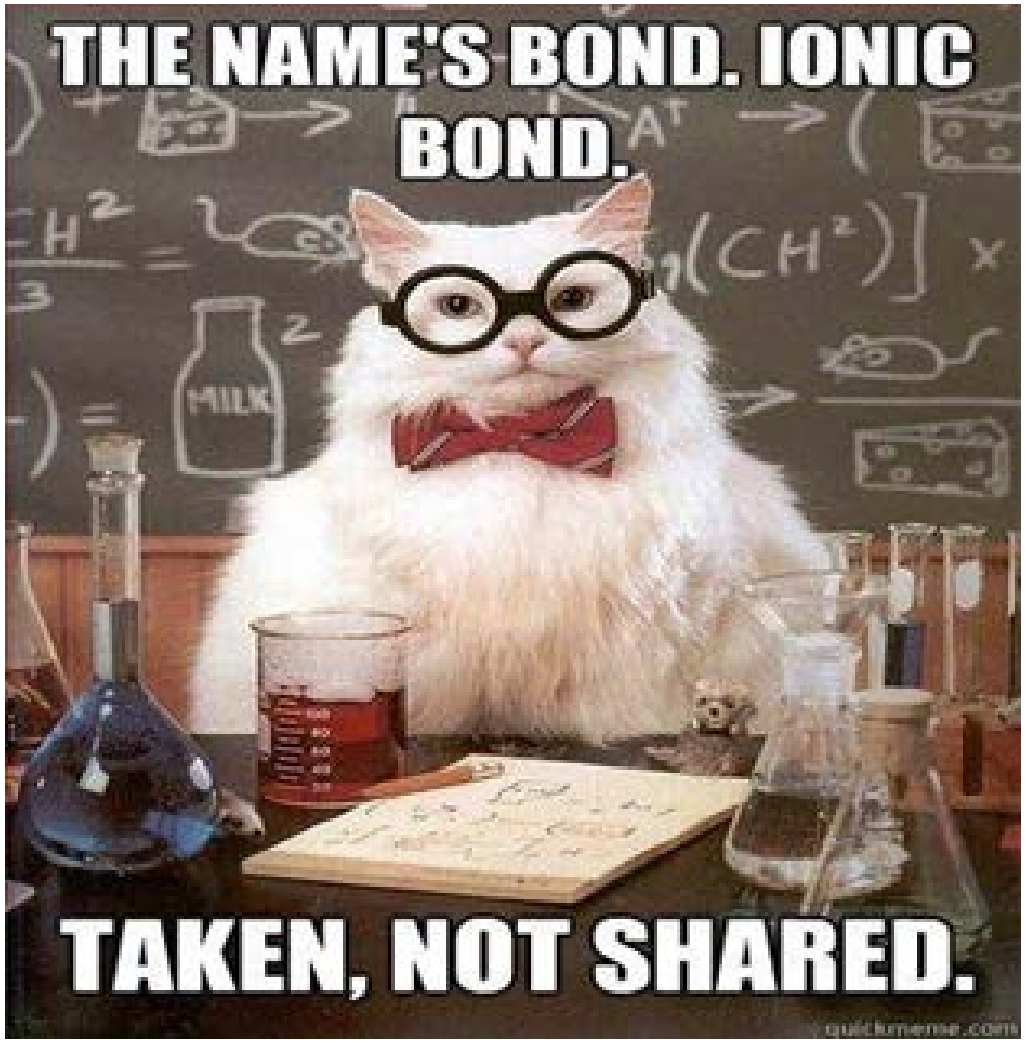
CHAT RESPONSIBLY

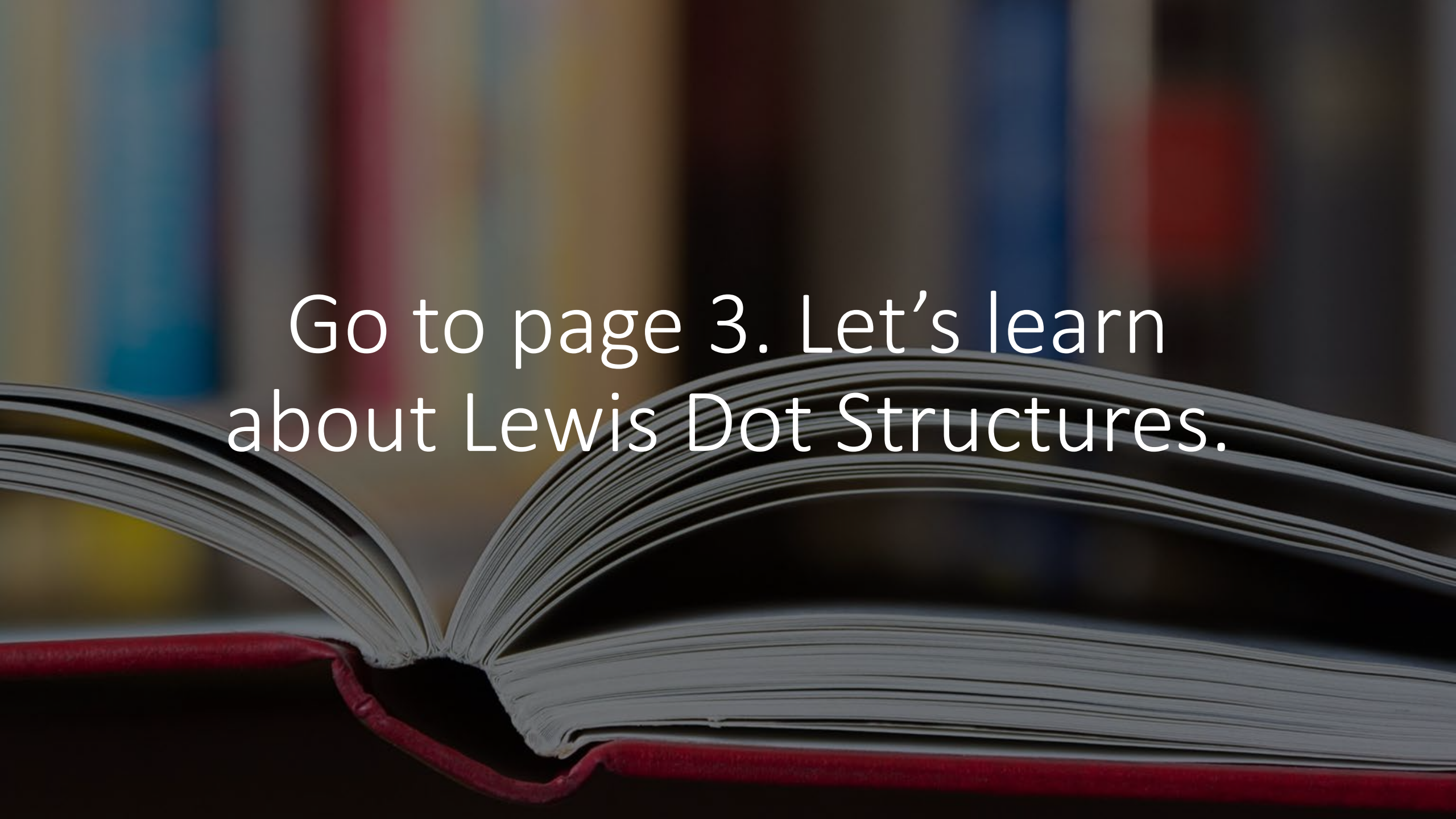
Raise your hand to speak
Type your question in the chat box
Stay on topic (no side conversation)

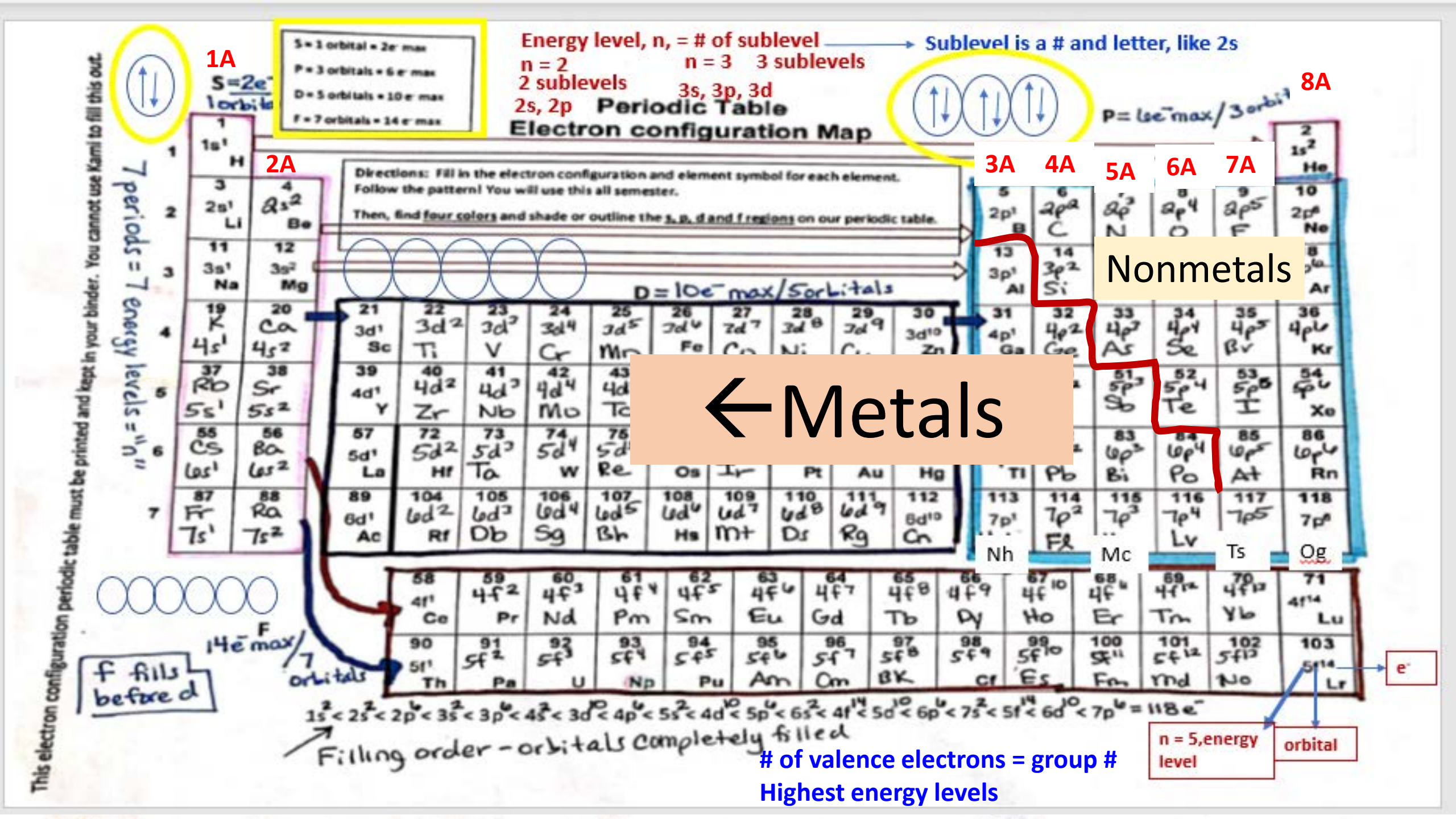
PARTICIPATE

Stay focused
Ask and answer questions, take good notes
Listen and show respect to peers

IS4T1- Bonding (pg. 3)




Go to page 3. Let’s learn
about Lewis Dot Structures.


Periodic Table
Electron configuration Map
Energy level, n, = # of sublevel
n = 2
2 sublevels
2s, 2p
n = 3 3 sublevels
3s, 3p, 3d
Sublevel is a # and letter, like 2s
S = 1 orbital • 2e⁻ max
P = 3 orbitals • 6 e⁻ max
D = 5 orbitals • 10 e⁻ max
F = 7 orbitals • 14 e⁻ max
1A
2A
3A
4A
5A
6A
7A
8A
S=2e⁻ max/1 orbital
P=6e⁻max/3orbital
D=10e⁻ max/5orbitals
F
14e⁻max/7 orbitals
Directions: Fill in the electron configuration and element symbol for each element. Follow the pattern! You will use this all semester.
Then, find four colors and shade or outline the s, p, d and f regions on our periodic table.
Nonmetals
←Metals
Nh
Mc
Ts
Og
7 periods = 7 energy levels = "n"
f fills before d
This electron configuration periodic table must be printed and kept in your binder. You cannot use Kami to fill this out.
1s² < 2s² < 2p⁶ < 3s² < 3p⁶ < 4s² < 3d¹⁰ < 4p⁶ < 5s² < 4d¹⁰ < 5p⁶ < 6s² < 4f¹⁴ < 5d¹⁰ < 6p⁶ < 7s² < 5f¹⁴ < 6d¹⁰ < 7p⁶ = 118e⁻
Filling order - orbitals completely filled
# of valence electrons = group #
Highest energy levels
n = 5, energy level
orbital
e⁻

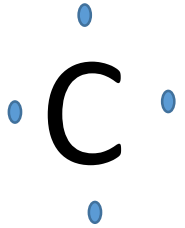
Electron Dot Diagram (Lewis Dot Diagram)

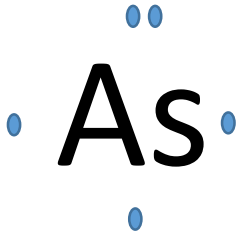
READ FIRST:: **Lewis Dot Structures** are a tool for representing the arrangement of valence electrons around atoms in chemical substances. When atoms combine, only electrons in the outer (valence) shell are involved. We can represent these valence electrons with Lewis diagrams.

We are going to use Lewis dot structures to understand the difference between ionic bonds and covalent bonds (we will discuss these later). First let us make Lewis Dot Structures for common atoms and ions:

Dots = group # = valence electrons

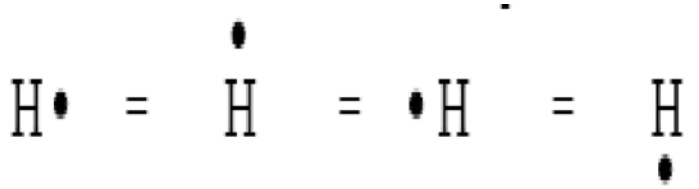
IA	IIA	IIIA	IVA	VA	VIA	VIIA	0
H•							•He•
Li•	•Be•	•B•	•C•	••N•	••O••	••F••	••Ne••
Na•	•Mg•	•Al•	•Si•	••P••	••S••	••Cl••	••Ar••
K•	•Ca•						





READ FIRST:: To write Lewis diagrams:

1. Write the element symbol. Around this symbol draw dots – one for each valence electron.
2. It does not matter on which side dots are placed. For example, hydrogen can be drawn four ways:



3. **The number of valence electrons is equal to the group number (A's).** For example, hydrogen is in group IA (group 1) and it has one valence electron. Neon is in 8A (group 18) and it has 8 valence electrons. The only exception is He which is in group 8 but has 2 valence electrons.

***right, left, top, bottom then fill counter clockwise from the top**

***dots will rotate to find the most stable arrangement possible**

Arrangement of dots can change

*Each position around the element symbol represents an orbital, which can hold no more than **2** electrons.

1A forms 1 bond (+1 charge)

2A forms 2 bonds (+2 charge)

3A forms 3 bond (+3 charge)

4A forms 4 bonds (-4 charge)

5A forms 3 bonds (-3 charge)

6A forms 2 bonds (-2 charge)

7A forms 1 bond (-1 charge)

Concept Check: **REFER TO THE TABLE ON THE PREVIOUS PAGE FOR HELP.**

4. Determine the group #, valence electrons, and draw the Lewis diagrams for the following:

		Group # (A's)	#Valence Electrons	Lewis Dot Diagram	How many e^- are available for bonding?
a)	Cs	1	1	Cs	1
b)	Sr	2	2	Sr	2
c)	In	3	3	In	3
d)	Sn	4	4	Sn	4
e)	Sb	5	5	Sb	3
f)	Se	6	6	Se	2
g)	I	7	7	I	1
h)	Kr	8	8	Kr	0

Notice how the two electrons on the side are written vertical and not written horizontal

Concept Check: Circle the lone pairs on Se and I.

Lone pairs do not form bonds. **Single electrons can form a bond.**

Atom	Outer electron configuration (only s and p)	Electron dot structure	How many electrons are available for bonding?	Type of ion (Cation/Anion)	Formula of the ion	Noble gas it resembles
Li	$2s^1$	Li•	one	Cation	Li^+	He
Mg	$3s^1$	•Mg•	two	cation	Mg^{2+}	Ne
O	$2s^2\ 2p^4$	:Ö:	two	anion	O^{2-}	Ne
Na	$3s^1$	Na•	one	cation	Na^+	Ne
P	$3s^2\ 3p^3$	:P•	three	anion	P^{-3}	Ar

Concept Check:

1. Circle which of the following are ionic compounds?

NaCl H_2O CO_2 Mg_3P_2

2. List two reasons for how you identified the ionic compounds above.

a. Metal and a nonmetal b. cation and an anion

3. How many of each ion OR ratio of ions would be in the following ionic compounds?

1:1 KCl 3:2 Ba_3N_2 3:2 Mg_3P_2

4. Draw the Lewis dot structure for Sulfur.

:S:

How many lone pairs? 2 sets

5. How is the ratio of positive cations to negative anions related to the overall charge in ionic compounds?

a. positive cations will equal the negative anions

b. there are more positive cations than negative anions

c. there are more negative anions than positive cations.

You will now complete a QUIZ using all your notes. This QUIZ must be completed in class.

Then, you will complete an Edpuzzle.

If you get **dropped from Zoom** you need to come back to class or you will be marked absent.