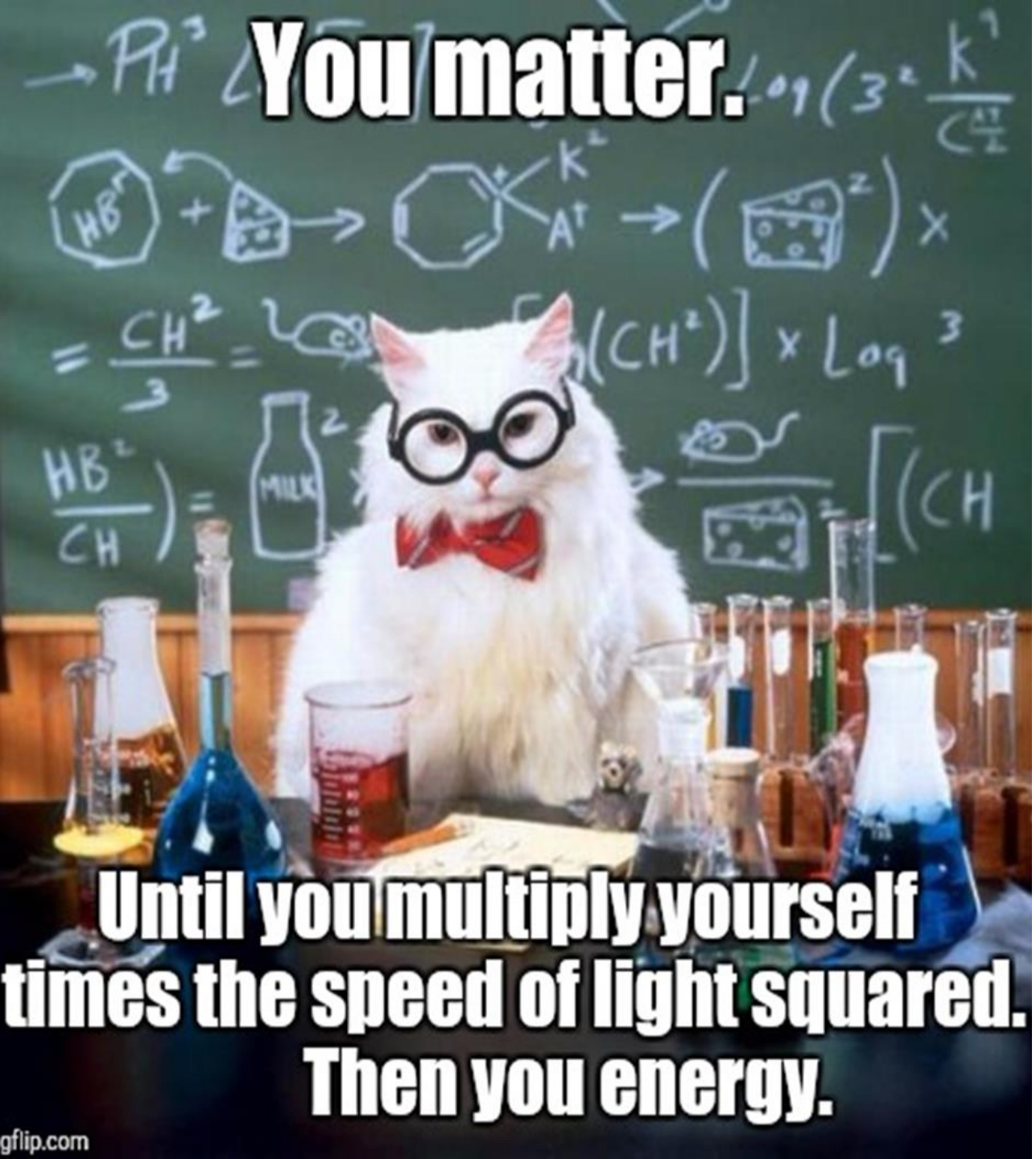


IS2T1 Properties of Matter

Late work week 6

- All late work for week 6 is due this **Friday, 9-25** by 8:00 a.m. All work not turned in will stay as a “missing/zero” in infinite campus and cannot be submitted in google classroom.

Virtual Expectations

BE ON TIME

Wake up early enough to get ready

Eat breakfast

Log on a few minutes early

Use your real name on the screen.

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

Sit up straight and be in camera view for attendance

CHAT RESPONSIBLY

Raise your hand to speak

Type your question in the chat box

Stay on topic (no side conversation)

PARTICIPATE

Stay focused

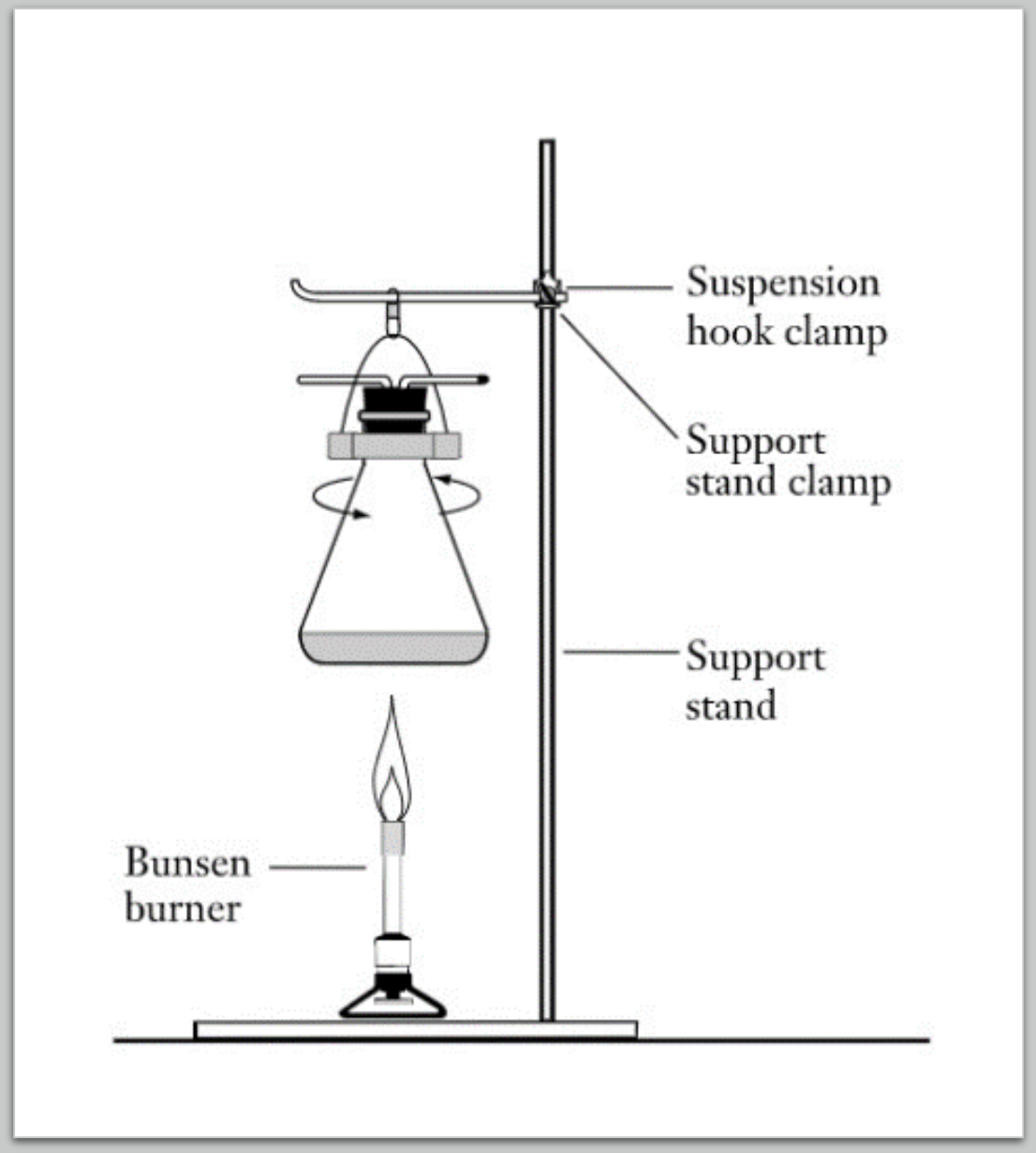
Ask and answer questions

Listen and show respect to peers

Activity #2: Hero's Engine

1. Water has been added to the flask and it has been sealed. Air vents exist on the side of the flask's lid.
2. A string has been hooked to the flask's tab so it hangs over the burner.
3. What do you **predict** will happen when you light the burner? _____

https://www.youtube.com/watch?v=92jBtxTef3g



Prediction

What do you predict will happen when you light the burner?

Observations:

1.

2.

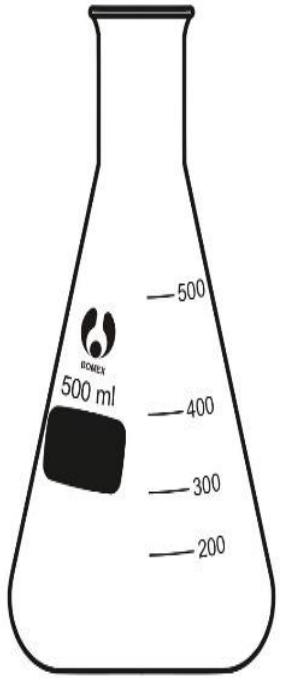
3.

Draw It Out:

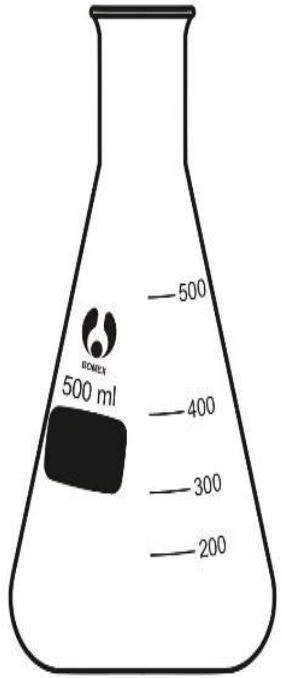
Using the boxes below…

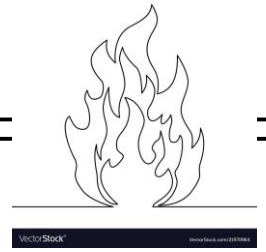
1) Draw in air molecules in the flask before and after the burner is lit. *(Are they evenly spread out? Are they concentrated in one area? Is there a difference in the number of molecules before vs. after the burner is lit? What is happening to the air particles as they get heated?)*

Before:



After:





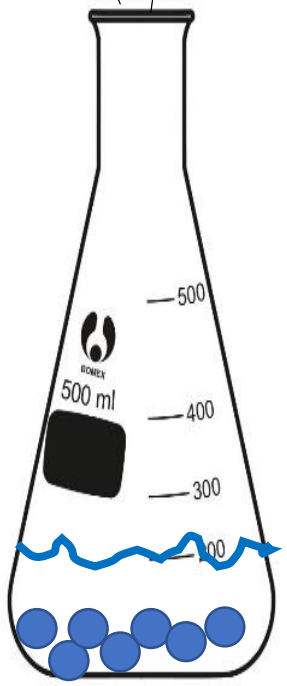
Draw It Out:

Using the boxes below…

1) Draw in air molecules in the flask before and after the burner is lit. *(Are they evenly spread out? Are they concentrated in one area? Is there a difference in the number of molecules before vs. after the burner is lit? What is happening to the air particles as they get heated?)*

Before:

Reactants



Liquid

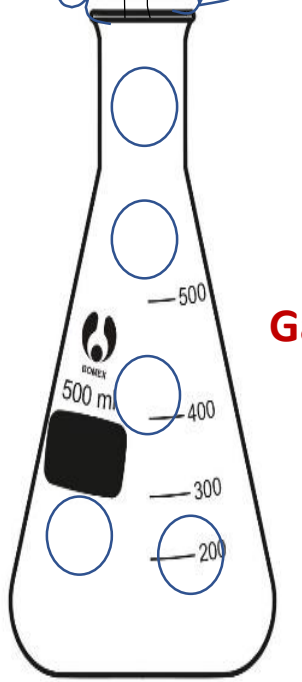
After:

Products

H_2O vapor escaping

KE increases

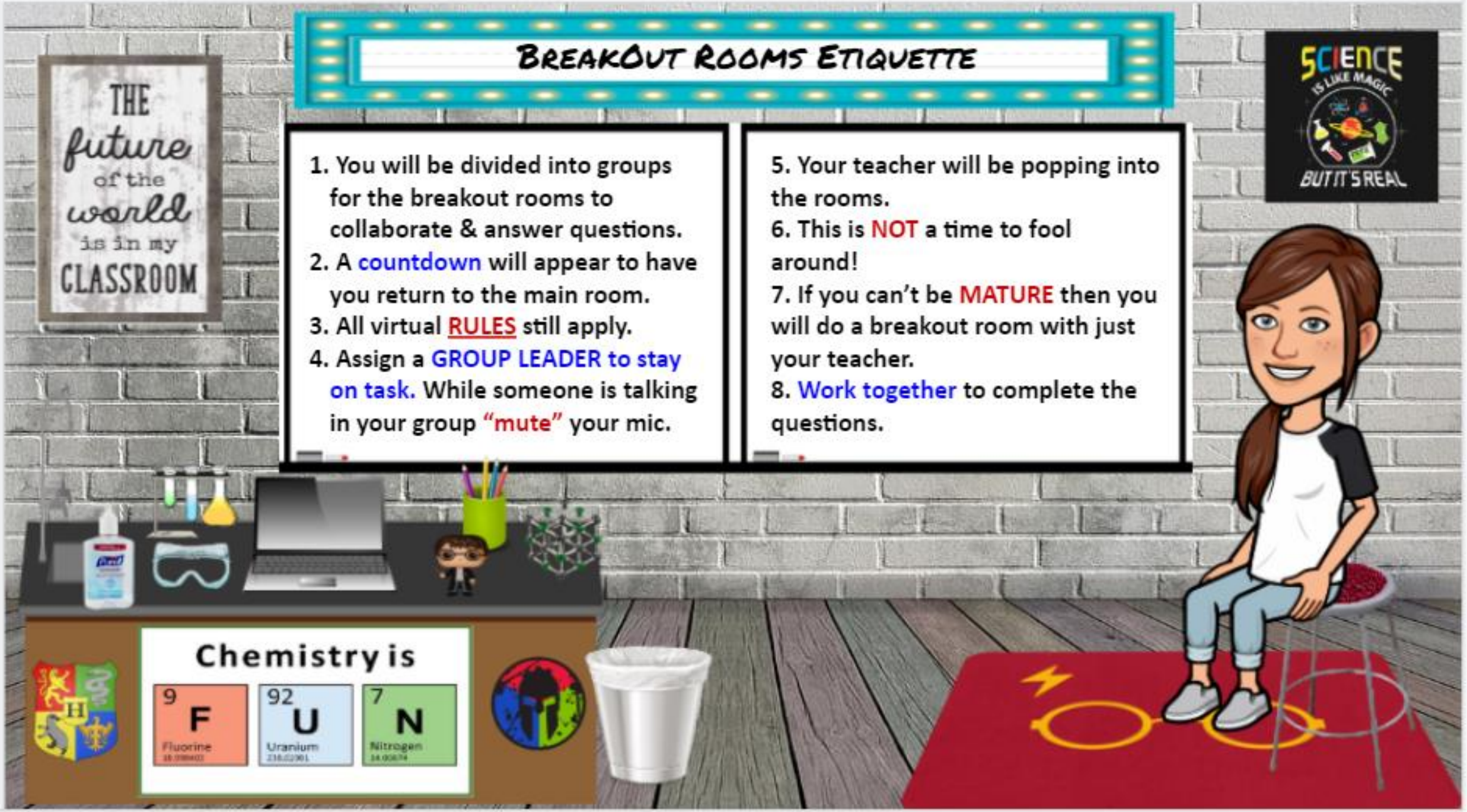
Gases



Think it out…

1. Name all of the components of this "system?" Flask, fire, water
2. Would you consider the components in this activity to be a part of an "open system" or a "closed system?" Explain. open system
3. What types of "particles" are present? *solid* *liquid* *gas*
4. What is happening inside the flask as it is being heated? Liquid particles are being converted to gas, steam is being produced

   What is your evidence?
5. How are the particles changing in behavior as the Flask is continuing to be heated? Liquid to a gas
6. What is the burner adding to your "system"/setup? Heat energy & KE
7. Would the outcome be different if there were no holes? Yes or No and why? Yes The pressure would build up and cause it to explode.


BreakOut Rooms Etiquette
1. You will be divided into groups for the breakout rooms to collaborate & answer questions.
2. A countdown will appear to have you return to the main room.
3. All virtual RULES still apply.
4. Assign a GROUP LEADER to stay on task. While someone is talking in your group "mute" your mic.
5. Your teacher will be popping into the rooms.
6. This is NOT a time to fool around!
7. If you can't be MATURE then you will do a breakout room with just your teacher.
8. Work together to complete the questions.
THE future of the world is in my CLASSROOM
SCIENCE IS LIKE MAGIC BUT IT'S REAL
Chemistry is
9 F Fluorine
92 U Uranium
7 N Nitrogen

What did you learn?

- **Choose the correct words to complete the following statement. Not all words will be used.**

speed, temperature, heated, pressure, cooled, kinetic, gases

- Changes in ___temperature___ creates changes in the ___speed___of the particles, as evidenced through the spinning of the flask as the flask is ___heated___. The openings in the flask released the ___pressure___ building up inside the flask and heating of the liquid inside is creating ___gases___ (that escape). As the liquid is heated the particles move faster & ___kinetic___ energy increases.

Activity #3: Trapped in a Jar

Procedure:

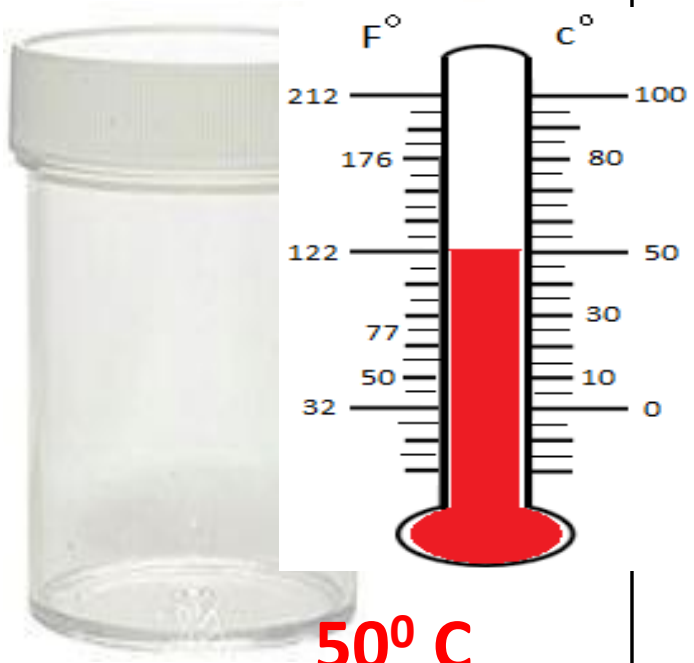
- A light spray of mist(H_2O) is sprayed inside a jar and then the jar is sealed. A heat lamp is placed a few inches from the sealed jar. Then the jar is placed into a bowl of ice water. Two temperature readings are observed.

Draw it out…

Using the boxes below…

1) Draw in air particles when under the heat lamp and when in the ice water. *(Are particles evenly spread out? Is there a difference in the number of particles between the 2 set ups?)*

Heat Lamp:



50⁰ C

Ice Bath:

11⁰ C

Briefly describe your before and after illustrations. What is happening to the air particles when placed into the bowl of water?

_____

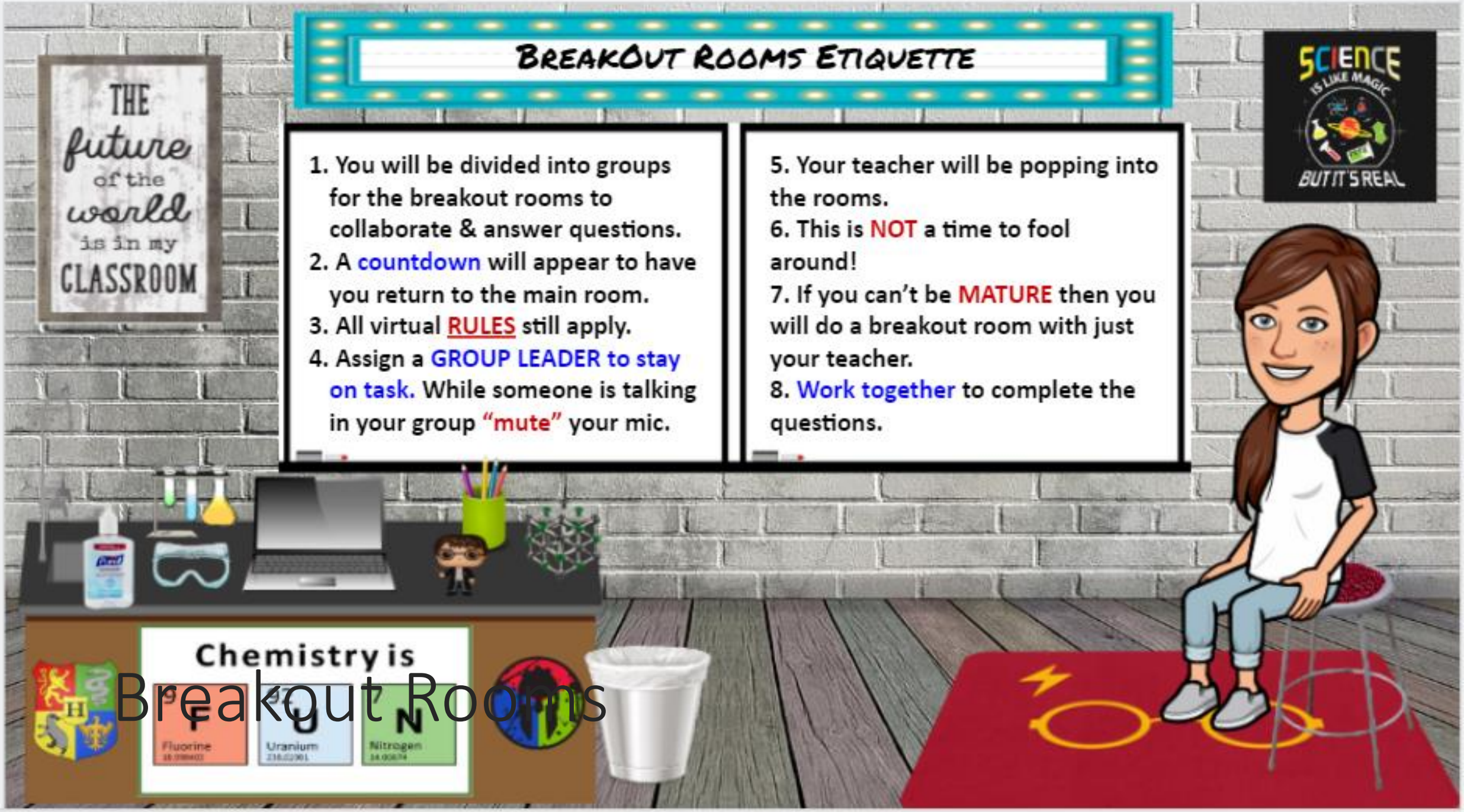
_____

Think it out…

1. Name all of the components of this "system." Jar, heat lamp, thermometer, ice, bowl, water mist
2. Would you consider the components in this activity to be a part of an "open system" or a "closed system"? Explain. ___

Closed system

3. What types of "particles" are present? *solid* *liquid* *gas*
4. What is the heat lamp adding to your "system"/setup? Heat energy
5. What is the ice water bowl taking away from your "system"/set up? Heat energy & KE
6. What is happening when you place the jar under the heat lamp? Add more Heat
7. What is happening when you place the jar in the water bowl? Slowing the particles down
8. Would the outcome be different if the jar were left open? Gas particles would escape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8. Work together to complete the questions.
THE future of the world is in my CLASSROOM
SCIENCE IS LIKE MAGIC BUT IT'S REAL
Chemistry is
F Fluorine
U Uranium
N Nitrogen
Breakout Rooms

What did you learn?

- **Choose the correct words to complete the following statement. Not all words will be used.**

  speed, temperature, thermometer, particles, kinetic, faster, collisions

- Heat creates a change in ___temperature___ as seen by changes in the ___thermometer___ readings. Thermometer readings change based upon the number of ___collisions___ between the ___particles___ and the thermometer. The particles are increasing in ___kinetic___ energy as they are being heated because they are moving ___faster___.

Tie It Up (CER):

Based on the evidence seen and data collected from these three activities, write a CER that answers the following question: *How is particle motion related to temperature?*

Question: *How is particle motion related to temperature?*

Claim: In complete sentences answer the question above.

As the temperature increases, particles move faster, KE increases
As the temperature decreases, particles slown down, KE decreases

Evidence: (Proof, fact, data calculations, observations, things you notice with your senses. Fill-in the evidence statement.)

1. From our **Pinwheel by Candlelight** experiment we observed

Warm air particles rising and spinning the pinwheel

2. From our **Soda Can Steam Engine** experiment we observed

Liquid particles being heated, pressure being released and the flask spinning

Reason (logical connection between what you observed and why that happened)

(How does your evidence support your claim?)

1. We can conclude from our evidence that warm air which is less dense will **rise** and cooler air which is more dense will **sink**. Particles that are moving will increase in **kinetic** energy.

2. We can conclude from our evidence that changes in temperature will change the speed of the **particles** therefore increasing the **kinetic** energy.

Tie It Up (CER):

Based on the evidence seen and data collected from these three activities, write a CER that answers the following question: *How is particle motion related to temperature?*

Question: *How is particle motion related to temperature?*

Claim: In complete sentences answer the question above.

Evidence: (Proof, fact, data calculations, observations, things you notice with your senses. Fill-in the evidence statement.)	**Reason** (logical connection between what you observed and why that happened)
1. From our **Pinwheel by Candlelight** experiment we observed _____ _____ 2. From our **Soda Can Steam Engine** experiment we observed _____ _____	(How does your evidence support your claim?) 1. We can conclude from our evidence that warm air which is less dense will _____rise_____ and cooler air which is more dense will _____sink_____. Particles that are moving will increase in _____kinetic_____ energy. 2. We can conclude from our evidence that changes in temperature will change the speed of the_____particles_____therefore increasing the _____kinetic_____ energy.

Worksheet B

Directions: All work must be shown for full credit. Answers must show proper significant figures and scientific notation as well as include a unit.

Pinwheel by Candlelight:

1. What are the reactants and products for a combustion reaction, like that observed in your pinwheel candle explore activity?

   Fuel +_____ → _____+_____ + _____

   (reactants) *(products)*

2. Highlight the three gases that are the same in the equation below for all combustion reactions.

$$\text{(Fat) } C_{55}H_{104}O_6\text{ (s)} + 78\ O_2\text{ (g)} \rightarrow 55\ CO_2\text{ (g)} + 52\ H_2O\text{ (g)} + \text{energy}$$

3. If energy is released is the reaction exothermic or endothermic? _____
4. Most candles are made of paraffin, which is composed of carbons and hydrogens. One type of paraffin could have a chemical formula of $C_{31}H_{64}$. Rewrite the above equation, replacing the chemical formula for *fat* with the chemical formula for paraffin. Fill-in the missing blanks using paraffin as your fuel for the combustion reaction.

   _____+_____--> _____+_____+_____

5. What is the gas needed for anything to burn in a combustion reaction? _____ (formula only)

6. What are the three products always produced in a combustion reaction? _____, _____, _____

Go to www.menti.com and enter the code 2070.
Answer the question

Now, complete worksheet B, post page 6 & the Quizziz. Use all of your notes!