Quizzes handedback at the end of the period.

Purpose: Learn more of discoveries made by early energy scientists.

Warmup: What does each letter stand for?

E_{th} thermal energy (hot vibrating molecules)

E_{ph} phase energy (most - gas, medium - liquid, least - solid)

E_{ch} chemical energy (food, fuel, charged battery)

verbs
- Q heating
- W working
- R radiating

add examples

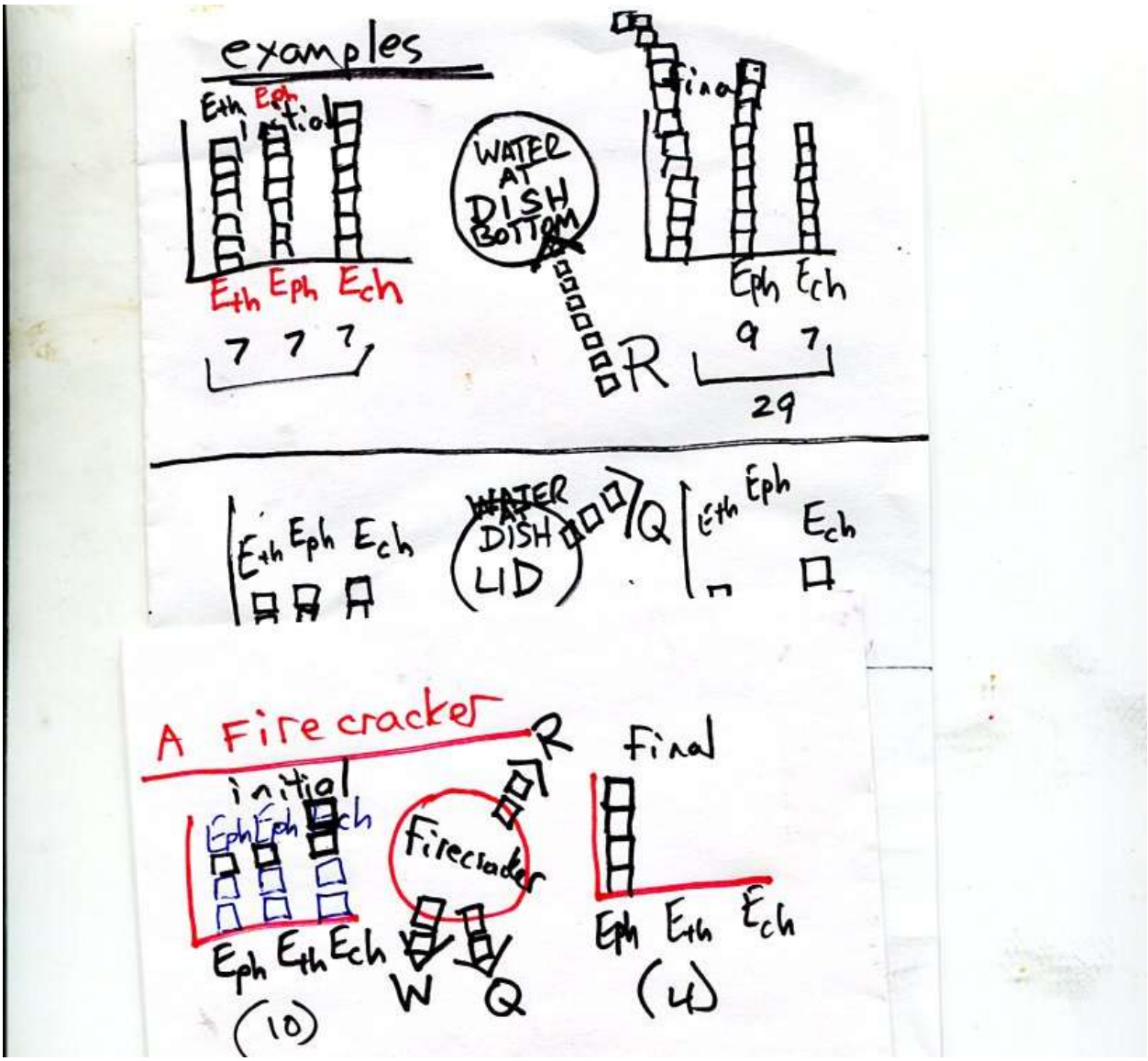
What's not exact in LoL energy diagrams

1. The number of squares in the beginning is just some arbitrary number that we make up at random. Some people find it comfortable to alwasys start with 4, 4, 4 in the intial box.
2. The amount that enters or leaves the system circle is not exact. We make that up randomly.
3. The total initialo, and the total final MUST agree with the number of squares of energy that entered or left the system.

What you must be precise about in LoL energy diagrams:

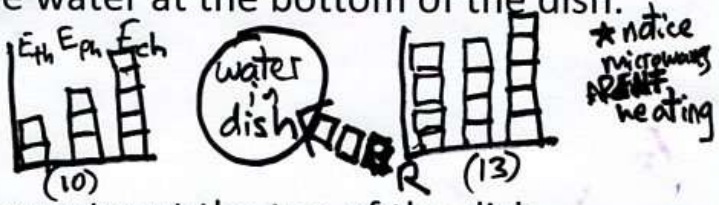
4. The direction of the arrow must be correct. Light must COME OUT from a firecracker, not go in. Light must GO IN to a growing corn plant performing photoshythesis, not come out.
5. If something changes from solid to liquid to gas, the Eph must increase. Going the other way, if something changes gas to liquid or liquid to solid, the Eph must decrease

6. If the formula of the substance is the same before and after, the Ech CAN NOT change. A big example of this is phase changes of water. if an ice cube turns into a puddle of water, the Ech did not change, the Eph went up though.

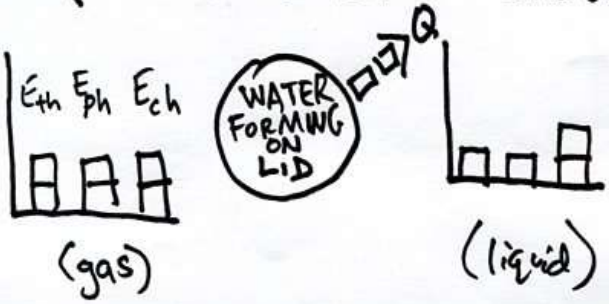


#3

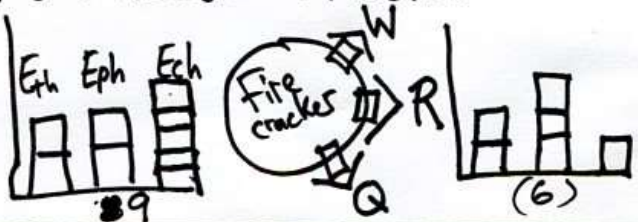
The water at the bottom of the dish.



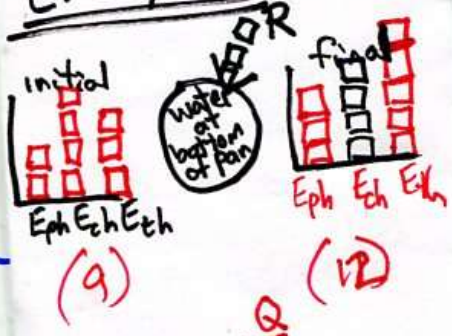
The water at the top of the dish.
(formed as steam condensed)



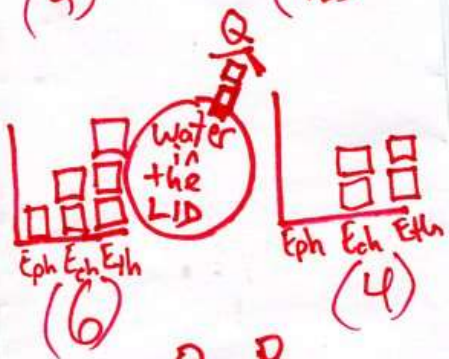
FIRECRACKER EXPLODING



Examples



(9) (12)



(6) (4)

(10) (7)

Some "ings" and some "E's"

EHS CA3MIs+ry

Mr. Genest

Name ANSWERS

Date

Tutors! Adults! Help this young chemist by visiting **http:genest.weebly.com** with any smart phone

Answer these by referring to the reading homework you did Monday night. If you need another copy of that reading go to the website address above.

1. Describe what early chemists meant by *caloric*
some kind of "stuff" that would flow into you, causing (1) melting + boiling and (2) warmth

2. What is our more modern word for caloric? heat
3. Our understanding of what causes changes to happen took two different paths that we eventually realized were the same. In paragraph 3 these are identified. Describe the two kinds of change scientists had studied.

A) Lifting or changing speed was caused by something

B) Heating or melting was caused by something.

4. What two ideas about energy were lost when the caloric idea was abandoned?

The storage and transfer of energy

5. Summarize in your own words the three principles guiding our modern view of energy.

A) energy can be stored

B) energy can flow from place to place

C) energy maintains its identity after flowing
When energy changes forms its still all energy.
None is lost.

6. Information is used as a metaphor to describe what energy is like. Describe the ways information is like energy, according to your reading.

Some "thing" is flowing,
Some "thing" is preserved.
And Yet it is massless, it is not matter.

7. We describe three storage "accounts" to understand the changes we see in chemistry. State their names and describe how energy is stored in these three storage modes (how would you recognize that energy is present in these accounts in a system of matter?).

A) E_{th} thermal energy

B) E_{ph} phase energy (Gas is most > LIQUID is MEDIUM > SOLID is least)

C) E_{ch} chemical energy (examples food, Fuel) (Stays the same if the formula stays the same)

8. We can transfer energy by three mechanisms. Name these and state how you would recognize each one in a system of matter. (Hint, think of your five senses.)

A) Q heating

B) W Working

C) R radiating

You will always be given these numbers on tests and quizzes.

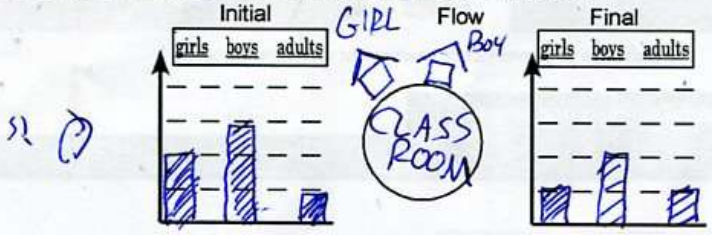
760. torr = 760. mmHg = 1.00 atm = 101.3 kPa = 101,300 pascals = 14.7 p.s.i.

9. A metal tube contains Avogadro's Number of helium atoms. After 5.0×10^{23} atoms escape, its volume is 250 mL. What was the original volume?

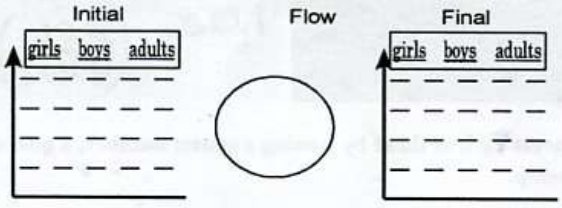
SHRINKING (BUT WE WANT ORIGINAL)

$$250\,mL \times \left(\frac{6.02 \times 10^{23}\ atoms}{5.22 \times 10^{23}\ atoms}\right) = 290\,mL$$

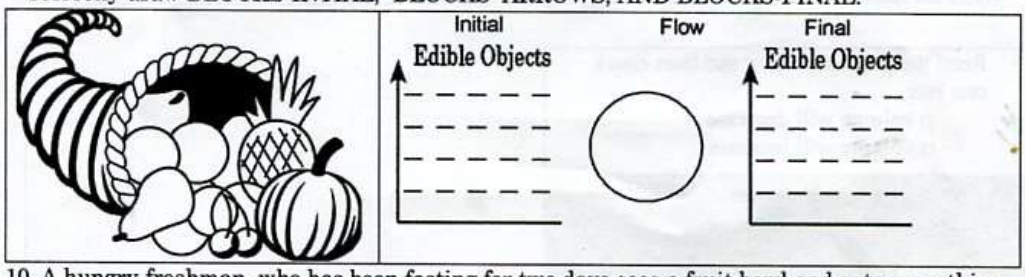
7. The bell rings in <u>*a classroom*</u> that has 3 boys, 2 girls, and 1 teacher. One boy and one girl walk out into the hallway to go to the cafeteria. The rest stay behind for help on homework. The system is underlined. First label the circle with what the system is. Correctly draw BLOCKS-INTIAL, BLOCKS ARROWS, AND BLOCKS-FINAL.



8. The bell rings in a classroom that has 3 boys, 2 girls, and 1 teacher. One boy and one girl walk out into <u>the hallway</u> to go to the cafeteria. The rest stay behind for help on homework. The system is underlined. First label the circle with what the system is. Correctly draw BLOCKS-INTIAL, BLOCKS ARROWS, AND BLOCKS-FINAL.



9. Mr Genest's students bring him a <u>Cornucopia</u>. He eats the pineapple, one cherry and the pumpkin. The system is underlined. First label the circle with what the system is. Correctly draw BLOCKS-INTIAL, BLOCKS ARROWS, AND BLOCKS-FINAL.



10. A hungry freshman, who has been fasting for two days sees a fruit bowl and eats everything in it! The system is her stomach. First label the circle with what the system is. Correctly draw BLOCKS-INTIAL, BLOCKS ARROWS, AND BLOCKS-FINAL.