

Mater and Atomic Theory

name _____

Walk Around Practice Handout

1-6 Name the six phase changes...

Solid to gas	Liquid to gas	Gas to solid
Gas to liquid	Solid to liquid	Liquid to solid

7		
8		
9		

10	
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11 how to separate these mixtures, what processes could you use?	Brass metal (solid Cu + Zn) Salty Water Sugar Water Iron filings & Sand Nickel coins (solid Cu + Ni) Water & liquid ethanol Sand & water	
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How many electrons are...

22. in an atom of STRONTIUM? _____

23. in an atom of PHOSPHOROUS? _____

24. in one molecule of H₂O _____

25. in one molecule of F₂ _____

26. in the 4th orbital of an atom of NIOBIUM? _____

27. in the 3rd OR 4th shell of TIN? _____ 28. able to fit into the second orbital of any atom? _____

28. How many protons, neutrons and electrons are in...

29. One atom Pb-207? _____ protons, _____ neutrons, _____ electrons

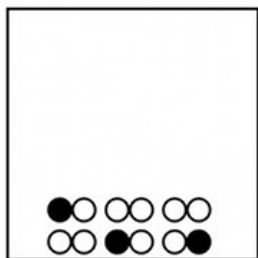
30. One isotope U-235? _____ protons, _____ neutrons, _____ electrons

31. Calculate the average weighted Atomic Mass of the element "Z" using this data table. SF, and units count. SHOW WORK	Isotope	Mass in amu	Proportion found in nature
	Z-192	191.88	14.55%
	Z-195	194.85	83.84%
	Z-196	195.94	1.610%

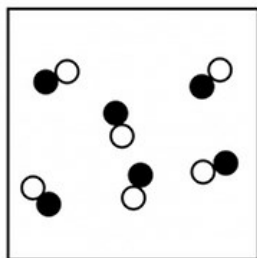
Name the six phase changes...

1. Solid to gas
2. Liquid to gas
3. Gas to solid
4. Gas to liquid
5. Solid to liquid
6. Liquid to solid

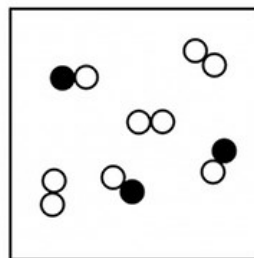
Key	
○	= atom of one element
●	= atom of a different element



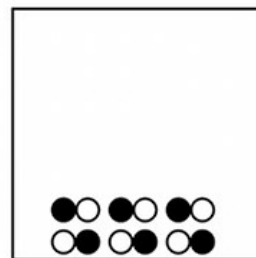
A



B



C



D

7. Which two particle diagrams represent two different phases of the same compound, only?

1. A and B
2. A and C
3. B and C
4. B and D

8. Which could be the proper formula for what is in Box “B”?

1. $\text{NaCl}_{(\text{s})}$
2. $\text{H}_2\text{O}_{(\text{g})}$
3. $\text{F}_{2(\text{g})}$
4. $\text{HF}_{(\text{g})}$

9. What are the phases of the four boxes, in A, B, C, D order?

1. solid, gas, gas, liquid
2. solid, gas, gas, solid
3. liquid, gas, gas, liquid
4. liquid, gas, gas, solid

10. What was that important “one liner” that tells us how to separate mixtures?

11. How would you separate these mixtures from each other (matching). There are some choices that you may use more than once, and some not at all.

Mixtures	Ways to separate these might be taking advantage of difference in
Brass metal (solid Cu + Zn) Salty Water Sugar Water Iron filings and Sand Nickel coins (solid Cu + Ni) Water and liquid ethanol Sand and water	Boiling point Freezing point Density Magnetic attraction Filtration Melting point Particle Size

The next topic in chemistry is naming and writing formulas. I put in the names to show you how smart I intend to make you starting Tuesday.

(get psyched and get some sleep Monday evening!)

Tell how many atoms are in each of these compound formulas...

12. Ammonium phosphate $(\text{NH}_4)_3\text{PO}_4$

13. Skip this one — Ha!

14. Aluminum hypochlorite $\text{Al}(\text{ClO})_3$

15. Cobalt (III) thiocyanate $\text{Co}(\text{SCN})_3$

16. Manganese (VII) hydrogen sulfate $\text{Mn}(\text{HCO}_3)_7$

17. Magnesium bromide MgBr_2

18. Rubidium nitride Rb_3N

19. What do the letters in the acronym TOPIC-B stand for, and if you see one or more of these in a lab experiment, what does that mean has likely occurred?
20. What is the volume of 236 grams of chromium metal at standard temperature? Show formula, do math, use units, SF matter.

21. Put the names in order, then match their models, and finally, match the 3rd column to the first two.

Use Letters / Numbers once only.

U. Dalton	A. Planetary Model (with details)	1. Atoms act as hard spheres, Atomic Theory
V. Democritus	B. Billiard Ball	2. Gold Foil Experiment
X. Rutherford	C. Atomos	3. No experiments at all
Y. Thomson	D. Wave mechanical	4. Mathematics, and spectra
Z. 100's of other scientists	E. Planetary model (rough)	5. Electrons act as bits of matter and energy at the same time.
W. Bohr	F. Plum Pudding	6. Electrons discovered using the Cathode Ray Tube

How many electrons are...

- 22. in an atom of STRONTIUM?
- 23. in an atom of PHOSPHOROUS?
- 24. in one molecule of H_2O (this is hard)!
- 25. in one molecule of F_2 (also tricky)!
- 26. in the fourth orbital of an atom of NIOBIUM?
- 27. in the 3rd OR 4th shell of TIN?
- 28. able to fit into the second orbital of any atom?

How many protons,
neutrons and electrons
are in...

29. the atom Pb-207?

and

30. the isotope U-235?

Show work please.

31. Calculate the average weighted Atomic Mass of the element “Z” using this data table.

Significant figures and units count.

SHOW WORK.

Isotope	Mass in amu	Proportion found in nature
Z-192	191.88	14.55%
Z-195	194.85	83.84%
Z-196	195.94	1.610%