September 12, 2016

Chapter 1-2 Test Study Guide

1. Tools for measuring…
    a. Length: ruler
    b. Mass: centigram balance
    c. Volume: graduated cylinder (NOT beaker)
2. Physical vs Chemical Change
    a. Physical: no change in identity, change in physical state
        i. Melting, boiling, sublimation, freezing, vaporization, deposition
    b. Chemical: change in identity (conservation of mass)
        i. Burning, digestion, rusting, oxidation
    c. *In both changes, there is conservation of energy
3. Physical vs Chemical Properties
    a. Physical: can be observed or measured without changing identity
        i. Boiling point, density, conductivity, heat transfer, melting point
    b. Chemical: must be observed during chemical reaction → change in identity
        i. Toxicity, flammability, heat of combustion
4. Convert between mL and cm3
    a. 1 mL = 1 cm3 (cubic centimeter)
5. Sig Figs: Multiplication/Division & Addition/Subtracting
    a. Multiply/Divide:

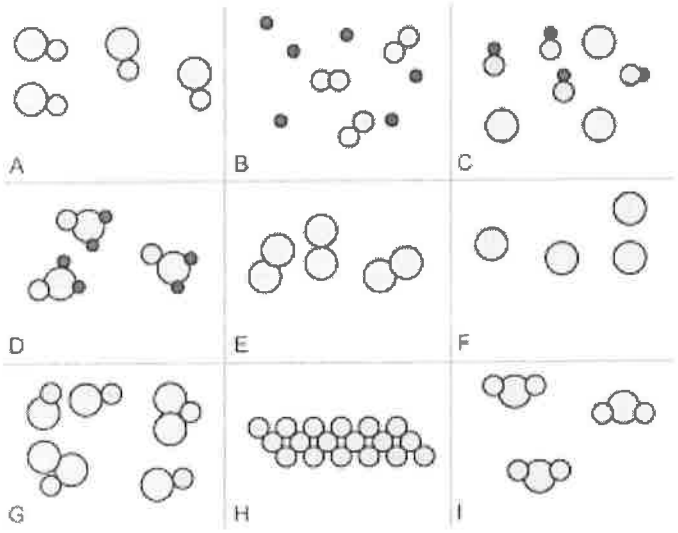
        13.5 x 14.02 = 189.27, round to 3 sig figs, *189.3*

        12.8 / 4.5 = 2.8444, round to 3 sig figs, *2.84*
    b. Add/Subtract:

        14.55 + 13.233 = 27.783, round to 2 places after decimal, *27.78*

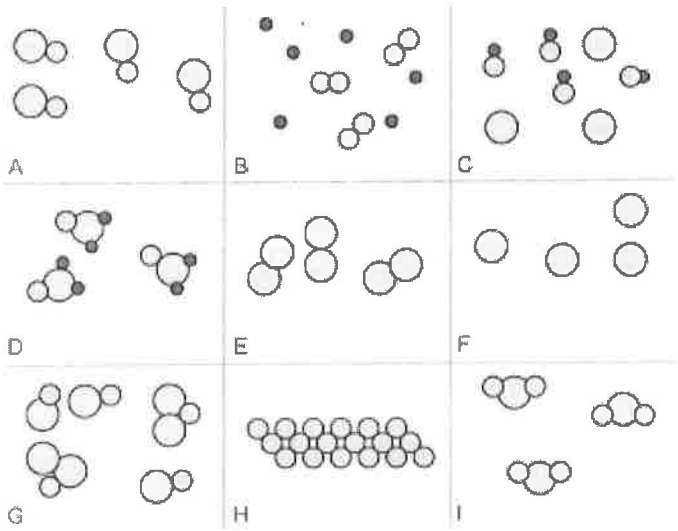
        20.4 - 2.78 = 17.62, round to 1 place after decimal, *17.6*
6. State of Matter Symbols:
    a. (s): solid
    b. (l): liquid
    c. (g): gas
    d. (aq): aqueous-- dissolved in water

7. Use different models of elements, compounds and mixtures:



A. compound
B. mixture
C. mixture
D. compound
E. element
F. element
G. mixture
H. element
I. compound

8. (Now identify state of matter & homogeneous/heterogeneous)



A. gas, homo
B. gas, hetero
C. gas, hetero
D. gas, homo
E. gas, homo
F. gas, homo
G. gas, hetero
H. solid, homo
I. gas, homo

9. Identify # of Sig Figs in any number:

99.002: 5 sig figs

123 000: 3 sig figs

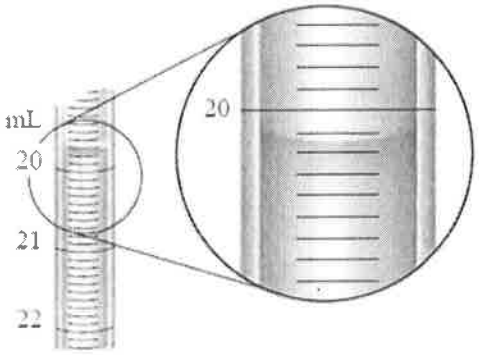
12.000: 5 sig figs

0.000430: 3 sig figs

520: 2 sig figs

520. : 3 sig figs

10. Digit of Uncertainty



Person	Results of Measurement
1	20.15 mL
2	20.14 mL
3	20.16 mL
4	20.17 mL
5	20.16 mL

(These 3 digits) 20.1 are all certain

Uncertain: .0X

X = hundredths

11. Identify 38 Elements and Symbols

12. Calculate Slope Given a Graph ie. Units of Slope

Units of slope: rise/run

$$\frac{Y2-Y1}{X2-X1}$$

13. Independent and Dependent Variables:

a. Independent: x axis, variable YOU are changing/manipulating

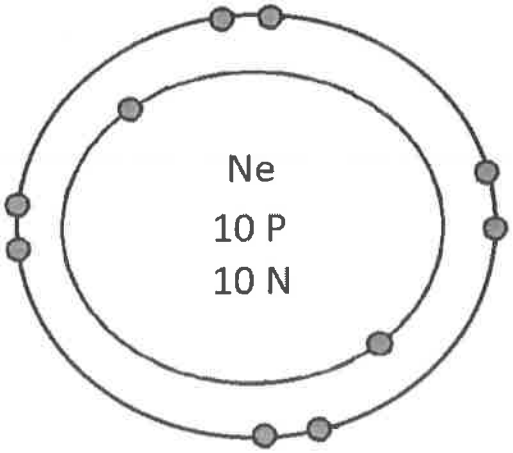
b. Dependent: y axis, variable that depends on what you are changing

14. Intensive and Extensive Properties:

a. Intensive: DON'T change when amount of substance is varied

b. Extensive: DO change when amount of substance is varied

15. Use Atomic Level to Determine if Mixture is Homo/Heterogeneous



Homogeneous: (this is an example) everything evenly spread, no identifiable different parts

Heterogeneous: identifiable parts (ex. Granola bar)

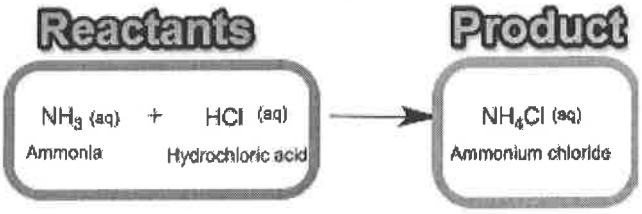
16. Differentiate Element, Compound and Mixture by Formulas:

a. Element: Na (Sodium)

b. Compound: NaCl (Sodium Chloride)

c. Mixture: NaCl + K (Sodium Chloride and Potassium)

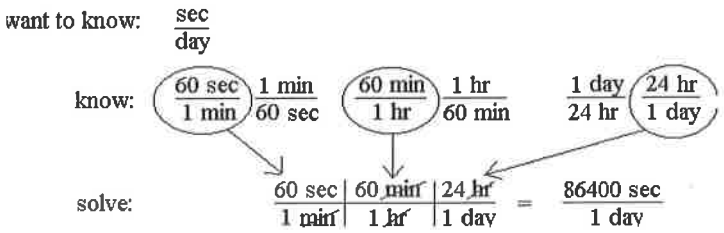
17. Identify Products and Reactants:



18. Convert through Metric System: Kilo - Pico

- Kilo
- Hecto
- Deca
- Basic unit
- Deci
- Centi
- Milli
- Micro
- Nano
- Pico

19. Dimensional Analysis:



6.0 ~~mi~~ 1609.3 ~~m~~ 1 cm 1 ~~hr~~ 1 ~~min~~ 9655.8 cm

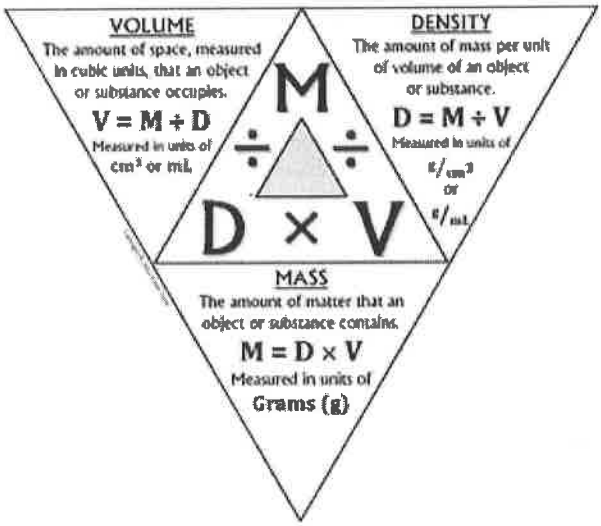
---------- = ---------- = 0.027 cm/sec

1 ~~hr~~ 1 ~~mi~~ 100 ~~m~~ 60 ~~min~~ 60 sec 360 000 sec

20. What gas makes limewater cloudy?

Carbon Dioxide! (CO_2)

21. Density Formula:



22. Scientific Notation

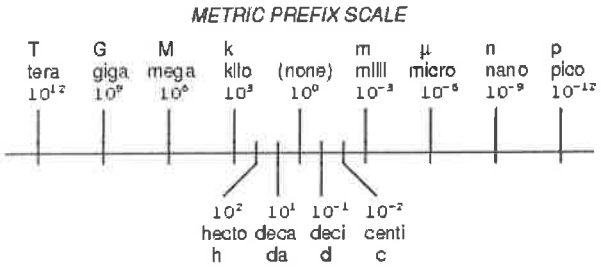
2×10^9

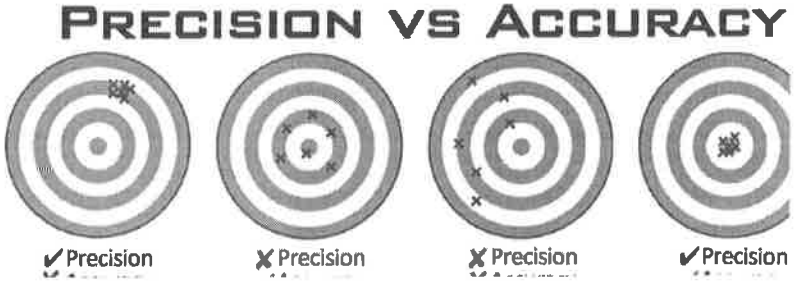
2.000000000

1 2 3 4 5 6 7 8 9

2,000,000,000

23. Know Metric Prefixes and Number Values



24. Apply Conservation of Matter:

25. Accuracy (Truth) vs Precision (Repeatable)