

- Name the properties of bases. - Slippery, bitter,  $\text{pH} > 7$
- Name the properties of acids. - Sour, combine with metals to make  $\text{H}_2$ ,  $\text{pH} < 7$
- Look at the pH chart in the data book. Explain it like you would to someone who has not taken this class.
- What is an indicator? What does it do? Describe what color bromthymol blue would be at  $\text{pH}=3$ .  
- chemical that changes colour in acid/base.  $\rightarrow$  yellow
- What is a non-metal oxide? What is a metal oxide?  
a non-metal combined with oxygen / metal bonded to oxygen.
- What happens when you put a non-metal oxide in water? What happens when you put a metal oxide in water?  
makes acid / makes base
- What is an organic compound?  
contains high % of carbon and hydrogen.
- What is an inorganic compound?  
All else.

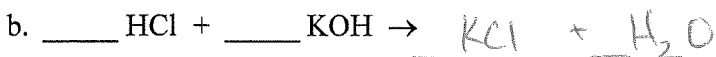
9-12 Complete the following chart.

Reaction Type	Starts with	Example
Synthesis	two elements	$\text{H}_2 + \text{O}_2$
Decomposition	one compound	$\text{HCl}$
Single replacement	one element + one compound	$\text{K} + \text{FeCl}_2$
Double replacement	two compounds	$\text{K}_2\text{SO}_4 + \text{NaCl}$
Neutralization	acid and base	$\text{HCl} + \text{NaOH}$
Combustion	organic and oxygen gas	$\text{C}_3\text{H}_8 + \text{O}_2$

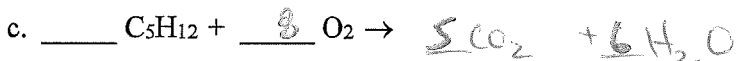
13, 14 Predict the products and name the reaction type.



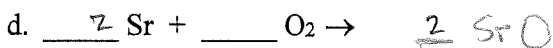
Decomposition.



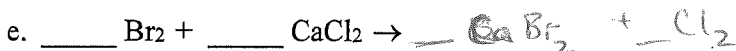
Neutralization.



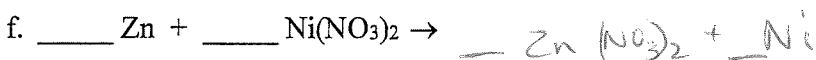
combustion.



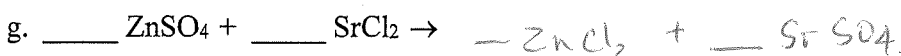
synthesis



single replacement



single replacement



Double replacement

15. Describe how temperature, concentration, and catalysts effect reaction rate.

hotter, more concentrated, and catalyst = faster / colder, less concentrated, no catalyst = slower

16. What is a catalyst?

chemical that speeds up reaction, but is not consumed.

17. Define isotope. same atom different amount of neutrons

18. What two ways can isotopes be written? Give an example of both.

Greek letter of structure.



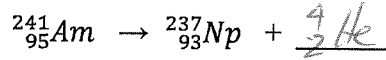
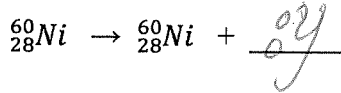
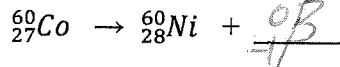
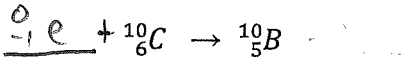
19. Complete the chart.

Name	Formula	Atomic Mass	Protons	Neutrons
Carbon-14	${}^{14}_6C$	14	6	8
Uranium-238	${}^{238}_{92}U$	238	92	146

20. Describe alpha, beta, and gamma decay.

shoots out helium nucleus → shoots out  $e^{-}$  from nucleus. → raw energy in form of E.M. wave.

21, 22, 23, 24 Complete the following equations.



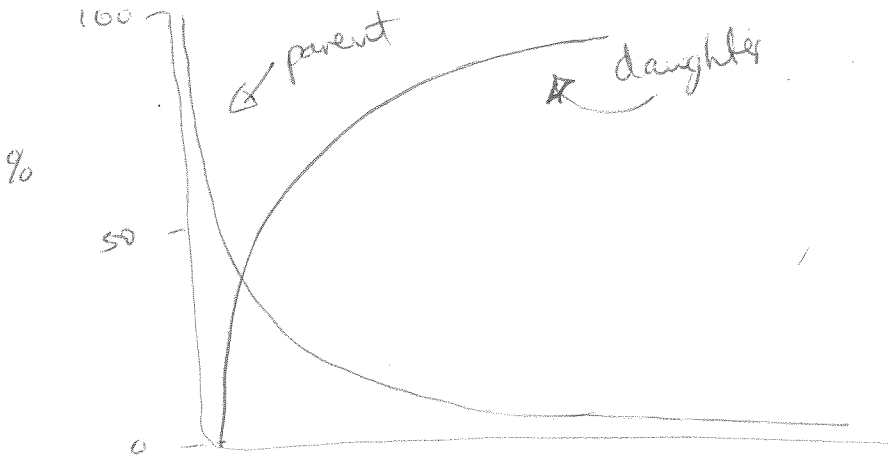
25. What is a fusion reaction?

two atoms combining to form larger atom and releasing energy.

26. What is a fission reaction?

the splitting of an atom using a neutron

27. Sketch a decay curve. Show both the parent and daughter isotopes.



28. What is half-life?

the time it takes for half of a sample to decay.

29. What percent of a radioactive isotope will remain after 25 years if it has a half-life of 5 years?

3.125% (5 half-lives)  $1 \rightarrow \frac{1}{2} \rightarrow \frac{1}{4} \rightarrow \frac{1}{8} \rightarrow \frac{1}{16} \rightarrow \frac{1}{32}$

30. If 1.4g of isotope remains, how many grams was in the original sample if the half-life is 23 days and the isotope has been stored for 92 days?

4 half-lives

$\frac{92}{23} =$

①  
 $1.4 \times 2 = 2.8$   
 ②  
 $2.8 \times 2 = 5.6$   
 ③  
 $5.6 \times 2 = 11.2$   
 ④  
 $11.2 \times 2 = 22.4g$