

**Directions:** Using the Reference Tables for Chemistry, locate the following information.

1. Name  $C_5H_{12}$ .
2. Write the equation for the decay of Kr-85.
3. Explain how you know that  $NaPO_4$  is soluble in water but  $NiCrO_4$  is not.
4. What is the definition of STP, and give the values?
5. Name, and give the formulas of the strongest and weakest bases.
6. Name  $C_2H_3O_2^-$  or  $CH_3COO^-$
7. What is the solubility of sulfur dioxide at 40 degrees Celsius, in grams?
8. What is the freezing point of fluorine?
9. What are the units for the heat of fusion, and what do they mean?
10. What is the symbol for the mole?
11. What is the vapor pressure of water at  $75^\circ C$ ?
12. How much heat does it take to convert 20g of water to steam at  $100^\circ C$ ?
13. What is the prefix for 1/1000 of a meter?
14. What is the molecular formula of ammonia?
15. What is the formula for the permanganate ion?
16. Name  $CH_3COOH$
17. Write the symbol for a positron?
18. What is the half-life of Pu-239?
19. Is the formation of water, from its elements endothermic or exothermic?
20. What is the atomic mass of silver?
21. How much heat is released when LiBr dissolves in water?
22. Give the names and formulas of the strongest and weakest acids.
23. What is the general formula for alkynes? What does it mean?

24. What is the electronegativity of chlorine?
25. What is the decay mode of Au-198?
26. What is the ionization energy of Rb?
27. Which atom is more likely to lose electrons, Al or Zn?
28. What is the atomic number of Te?
29. What is the atomic radius of Bromine?
30. What is the oxidation state of sulfur?
31. Which indicator would be the best to use to identify a strong base?
32. Write the electron configuration of potassium.
33. At what temperature will water boil, when the atmospheric pressure is 55 kPa?
34. What is the trend of atomic radii across period 3?
35. Will Mn produce colored ions in solution? Why or why not?
36. Will  $\text{Sn}^{4+}$  gain or lose electrons when it reacts with Cu?
37. What is the heat of vaporization of water?
38. Will Al react with HCl to produce hydrogen gas?
39. What is the density of tin?
40. In the molecule  $\text{CCl}_4$ , what is the EN difference of the C-Cl bond? Is the bond polar or nonpolar? Why? Is the molecule polar or nonpolar? Why?

**Using table T, solve the following problems:**

41. Give the parts per million of solute for a solution containing 25g of sodium chloride in 200g of water.
42. If the accepted value for the mass of an object is 10.3g and a student found that the mass was 10.1g, what is the student's percent error?
43. If a peanut is burned in a calorimeter containing 50g of water, and the water temperature changes from  $45^{\circ}\text{C}$  to  $57^{\circ}\text{C}$ , how many joules of energy were released by the peanut?

## 2002 Edition • Reference Tables for Chemistry Scavenger Hunt

**Directions :** Your reference tables will be your most valuable tool during the course of Regents Chemistry. They contain an amazing amount of information! The problem is, many students are not well enough acquainted with their tables and are unaware that the answers to many questions are literally at their fingertips! To that end, this activity is a scavenger hunt designed to lead you in the use of every table in the 2002 reference tables for Chemistry. Answer the questions on the left, and write the **letter and title of the table used** on the right. Good luck and happy hunting!

QUESTION

TABLE /TITLE

1. Complete the chart below with the missing labels.

<p><b>KEY</b></p> <p>→ 12.0111</p> <p>→ C</p> <p>→ 6</p> <p>→ 2-4</p>	<table style="margin: auto;"> <tr> <td style="padding: 5px;">12.0111</td> <td style="padding: 5px;">-4</td> </tr> <tr> <td style="padding: 5px; font-size: 2em;">C</td> <td style="padding: 5px;">+2</td> </tr> <tr> <td style="padding: 5px;">6</td> <td style="padding: 5px;">+4</td> </tr> </table>	12.0111	-4	C	+2	6	+4	<p>←</p> <p>Relative atomic masses are based on <math>^{12}\text{C} = 12.000</math></p> <p><b>Note:</b> Mass numbers in parentheses are mass numbers of the most stable or common isotope.</p>
12.0111	-4							
C	+2							
6	+4							

2. At a temperature of  $75^{\circ}\text{C}$ , what is the vapor pressure of ethanol?  
\_\_\_\_\_ kPa

3. List the conditions present at STP (standard temperature and pressure)

STP pressure :	_____ atm
	_____ kPa
STP temp :	_____ K
	_____ $^{\circ}\text{C}$

4. Complete the chart below

Atomic Number	symbol	name	ionization energy	electro-negativity	melting pt	boiling pt	density	atomic radius
1				2.1				208
	Li							
5					2573 K			
	N							
9								

5. What is the formula for the titration of an acid?

What is the formula for converting ° C to Kelvin?

What are the two ways to represent the concentration of a solution?

What table can these and other formulas be located? \_\_\_\_\_

6. What is the name for the polyatomic ion with the chemical formula  $\text{SCN}^-$  ?

\_\_\_\_\_

7. What does the symbol mol mean?

Name \_\_\_\_\_

Quantity \_\_\_\_\_

8. The heat of vaporization is the total amount of heat energy it would take to turn a given amount of liquid into gas. What is the heat of vaporization for one gram of  $\text{H}_2\text{O}$ ? \_\_\_\_\_

9. At  $50^\circ\text{C}$ , how many grams of salt ( $\text{NaCl}$ ) could I dissolve in 100 g of  $\text{H}_2\text{O}$  (liquid) ?

\_\_\_\_\_

10. List two ions that form soluble compounds :

\_\_\_\_\_

\_\_\_\_\_

11. What is the name of the acid with the formula  $\text{H}_2\text{SO}_4$  ?

\_\_\_\_\_

12. What is the name of the base with the formula  $\text{NaOH}$  ?

\_\_\_\_\_

13. At a pH of 3.0, what color will methyl orange be? \_\_\_\_\_

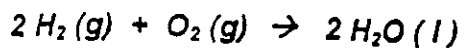
14. Fill in the missing information for the isotope I-131 :

Half-life =

Decay mode ( type of radiation) =

Nuclide name =

15. For the chemical reaction

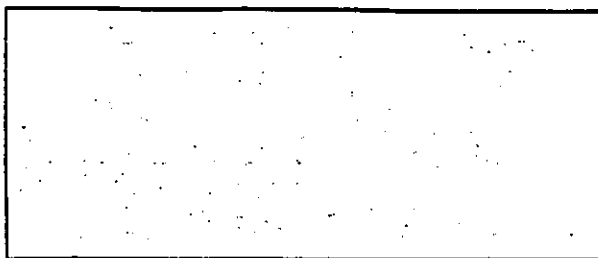


what is the heat of reaction ( $\Delta H$ ) ?

\_\_\_\_\_

16. The organic prefix "but-" means that the organic compound has how many carbon atoms? \_\_\_\_\_

17. Draw the functional group for an organic acid in the space below. Give the name of the example acid in the space provided : \_\_\_\_\_



18. Give the general formula for the group of organic compounds called alkanes : \_\_\_\_\_

19. How many periods in all on the Periodic Table of the Elements?

\_\_\_\_\_

20. What is the notation used for the type of radiation known as "alpha" ?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NAME \_\_\_\_\_

## Introductory Worksheet about the Chemistry Reference Tables

1. Which table would you use to find ...

- \_\_\_\_\_ a. the symbol for gamma radiation?
- \_\_\_\_\_ b. the formula for an organic ketone?
- \_\_\_\_\_ c. the charge on a nitrate ion?
- \_\_\_\_\_ d. the heat of vaporization of water?
- \_\_\_\_\_ e. the density of phosphorus?
- \_\_\_\_\_ f. the electron configuration of silver?
- \_\_\_\_\_ g. the formula for conversion from Celsius to Kelvin?

2. What is

- a. the boiling point of gallium? \_\_\_\_\_
- b. the ionization energy of fluorine? \_\_\_\_\_
- c. the atomic mass of the element Ac? \_\_\_\_\_
- d. the prefix of a carbon compound with 4 carbon atoms? \_\_\_\_\_
- e. a common acid? \_\_\_\_\_
- f. the name of an indicator for acids and bases? \_\_\_\_\_
- g. the half-life of the radioisotope Kr-85? \_\_\_\_\_
- h. equation that has a heat of reaction of + 66.4? \_\_\_\_\_
- i. name of the measurement of solution concentration? \_\_\_\_\_
- j. standard temperature (2 ways)? \_\_\_\_\_, \_\_\_\_\_

Compare:

1. the atomic radii of P, Ag, Mn – which is the biggest atom? \_\_\_\_\_

Why?

2. The electronegativity of Fe and Au – which is greater? \_\_\_\_\_

3. Which substance has the highest vapor pressure at 50 degrees Celsius?  
\_\_\_\_\_

4. Is a silver halide more soluble than a sodium halide? \_\_\_\_\_

5. Is a sodium carbonate soluble? \_\_\_\_\_