





Do these activities.

5.53 Using Data Table 4, complete the following chart for some common elements.

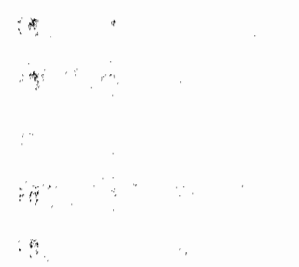
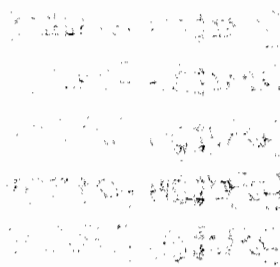
Data Table 4

Element	Symbol	Atomic Mass	Mass of one mole (g)
carbon	C	12.01115	12.01115
hydrogen	a.	b.	c.
oxygen	d.	e.	f.
calcium	g.	h.	i.
uranium	j.	k.	l.
chlorine	m.	n.	o.
iron	p.	q.	r.
phosphorus	s.	t.	u.
sulfur	v.	w.	x.
nitrogen	y.	z.	aa.

Sample #1

Sample #2

Sample #3



Answer these questions.

- 5.54 How many total bolts in Sample #1? \_\_\_\_\_
- 5.55 What is the bolt to unit ratio? \_\_\_\_\_
- 5.56 How many total nuts are in Sample #1? \_\_\_\_\_
- 5.57 What is the nut to unit ratio? \_\_\_\_\_
- 5.58 If you had 1,000 units of #1, how many bolts would you have? \_\_\_\_\_
- 5.59 What is the bolt to unit ratio? \_\_\_\_\_
- 5.60 If you had a mole of units of #1, how many bolts would you have? \_\_\_\_\_
- 5.61 What is the bolt to unit ratio? \_\_\_\_\_
- 5.62 What is the nut to unit ratio for a mole of #1? \_\_\_\_\_
- 5.63 What is the bolt to nut ratio for Sample #1? \_\_\_\_\_

Use the Periodic Table of Elements that came with Science LIFEPAC 1101 as necessary.

Choose the correct answer (each answer, 3 points).

- 1.01 Circle all the species that are ions.
- |                    |                              |
|--------------------|------------------------------|
| a. HCl             | d. NaCl                      |
| b. $\text{NH}_4^+$ | e. $\text{H}_2\text{PO}_4^-$ |
| c. $\text{CCl}_4$  | f. $\text{H}_3\text{O}^+$    |
- 1.02 Both members of each pair are very soluble in water. If you had equal molar concentrations of each solution, which member of each pair would theoretically be the better conductor of electricity? (Circle one member of each pair.)
- |                             |                                      |
|-----------------------------|--------------------------------------|
| a. CsCl, $\text{CaCl}_2$    | d. CaS, $\text{Li}_2\text{S}$        |
| b. KBr, $\text{AlCl}_3$     | e. $\text{AlCl}_3$ , $\text{MgCl}_2$ |
| c. KI, $\text{K}_2\text{S}$ |                                      |
- 1.03 Which 0.1 M solution out of each group would conduct the most electricity?
- |   |                           |
|---|---------------------------|
| a. CsF, NaCl, KBr                               | c. sucrose, glycerine, KI |
| b. NaBr, KCl, $\text{AlCl}_3$ , $\text{MgCl}_2$ |                           |
- 1.04 Which of the following choices would be a nonconducting substance or solution (more than one may be correct).
- |  |   |
|--|---|
| a. carbon tetrachloride                | d. $\text{CaCl}_2$ (dissolved in water) |
| b. $\text{BeF}_2$ (dissolved in water) | e. $\text{BaF}_2$ (dissolved in water)  |
| c. distilled water                     |   |
- 1.05 Which solution of NaI would conduct the most current?
- |          |          |          |          |
|----------|----------|----------|----------|
| a. 0.1 M | b. 0.8 M | c. 0.3 M | d. 0.6 M |
|----------|----------|----------|----------|
- 1.06 What relationship seems to be true concerning electronegativity of different species?
- When ionic character increases electrical conductivity decreases.
  - When ionic character decreases electrical conductivity decreases.
  - When ionic character decreases electrical conductivity increases.
  - When ionic character increases electrical conductivity stays the same.
- 1.07 Which of the following ionic compounds when prepared as equal molar solutions would be the best conductor of electricity?
- |                   |                    |                    |
|-------------------|--------------------|--------------------|
| a. $\text{BeF}_2$ | c. $\text{CaBr}_2$ | e. $\text{CaCl}_2$ |
| b. $\text{SrF}_2$ | d. $\text{BaBr}_2$ |                    |
- 1.08 From the following pairs of substances, select which of the substances is more likely to be soluble in water. (Circle one in each pair.)
- |   |                                   |                                    |
|---|-----------------------------------|------------------------------------|
| a. $\text{O}_2$ or $\text{NH}_3$            | d. $\text{I}_2$ or NaI            | g. $\text{CCl}_4$ or $\text{NH}_3$ |
| b. $\text{CF}_4$ or $\text{CH}_2\text{F}_2$ | e. NaCl or $\text{CCl}_4$         | h. NaF or $\text{AlCl}_3$          |
| c. $\text{H}_2\text{S}$ or $\text{CH}_4$    | f. $\text{NH}_3$ or $\text{PH}_3$ | i. BrCl or $\text{CCl}_4$          |



## SCIENCE 1110: LIFEPAK TEST

Match these items (each answer, 2 points).

- |     |       |                            |                         |
|-----|-------|----------------------------|-------------------------|
| 1.  | _____ | "open spaces"              | a. L                    |
| 2.  | _____ | more collisions per second | b. educated guess       |
| 3.  | _____ | mixture                    | c. Ca                   |
| 4.  | _____ | Kinetic Theory             | d. H <sub>2</sub> O     |
| 5.  | _____ | liter                      | e. air                  |
| 6.  | _____ | mole                       | f. Boyle's Law          |
| 7.  | _____ | element                    | g. Charles' Law         |
| 8.  | _____ | hypothesis                 | h. molecular collisions |
| 9.  | _____ | volume and pressure        | i. g.f.w.               |
| 10. | _____ | compound                   | j. Dalton               |
|     |       |                            | k. Rutherford           |

Answer true or false (each answer, 1 point).

- \_\_\_\_\_ The substance  $\text{NO}_3^-$  is an ion.
- \_\_\_\_\_ The substance  $\text{CCl}_4$  is a molecule.
- \_\_\_\_\_ A saturated solution is not at equilibrium.
- \_\_\_\_\_ The solution 1 M  $\text{H}_2\text{SO}_4$  conducts more current than 1 M HCl.
- \_\_\_\_\_ An acid is bitter and brackish.

Choose the correct answer (each answer, 3 points).

- The number of positive charges in the nucleus of an atom is equal to \_\_\_\_\_.  
a. its mass number  
b. Avogadro's number  
c. its atomic number  
d. its atomic weight
- A proton \_\_\_\_\_.  
a. weighs about the same as an electron  
b. is a negatively charged particle  
c. weighs much less than a neutron  
d. is a, b, and c  
e. is none of these
- The electron configuration for carbon is \_\_\_\_\_.  
a.  $1s^2 2s^2$   
b.  $1s^2 2s 2p^1$   
c.  $1s^2 2s^2 2p^2$   
d.  $1s^2 2s^2 2p^4$
- The general formula for the alkane series is \_\_\_\_\_.  
a.  $\text{C}_n\text{H}_{2n}$   
b.  $\text{C}_n\text{H}_{2n+2}$   
c.  $\text{C}_n\text{H}_{2n-2}$   
d.  $\text{C}_n\text{H}_{n+2}$
- A major source of today's medicine is \_\_\_\_\_.  
a. wood  
b. petroleum  
c. coke  
d. coal