**Unit 1 Laboratory Skills Study Guide –**

**Unit purposes: To develop laboratory and math skills that will commonly occur during the course. To learn *how* we know *what* we know about the chemistry.**

**Memory items**

5 most common metric prefixes (k, d, c, m, μ)

 Meter stick equivalences (1 m = 100 cm, 1 m = 1000 mm, 1 km = 1000 m)

 Apply to g: (1 g = 100 cg, 1 g = 1000 mg, 1 kg = 1000 g)

 Apply to L: (1 L = 100 cL, 1 L = 1000 mL, 1 kL = 1000 L)

 1 cm3 = 1 mL

 Density of water = 1.0 g/mL

 $d=\frac{m}{V}$

**Skills to know**

Identify laboratory equipment

Perform measurements

Convert between scientific notation and standard notation

Identify the number of sigfigs in a number

Round a number to a given number of sigfigs or decimal places

Perform calculations and round to the proper number of sigfigs using the two rules

Convert metric units using the ladder method and the powers of 10 method

Use dimensional analysis to perform unit conversions

Use the density formula

**Unit 1 Test Description: 80 pts total**

|  |  |  |
| --- | --- | --- |
| 12 x 1 pt  | Vocabulary Matching |  |
| 3 x 1 pts | Lab equipment ID |  |
| 2 x 3 pts | Measurements  |  |  |
| 4 x 2 pts | Scientific notation |  |  |
| 4 x 2 pts | Counting Sigfigs |  |  |
| 2 x 2 pts | Rounding to sigfigs or dec. places |  |  |
| 8 x 2 pts | Significant figures calcuations |
| 3 x 2 pts | Metric conversions |  |  |
| 2 x 4 pts | Dimensional analysis (factor label method) |
| 3 x 3 pts | Density calculations |  |  |

**Testing procedures and rules**

There will be two parallel versions of the test for each class. You will not be allowed to sit next to someone with the same test. Testing folder crosses will be positioned around the center of each table to block view of same version on opposite side of table. You will be allowed to use your calculator and the information provided below. BEWARE: YOU WILL NOT BE ALLOWED TO USE YOUR PHONE AS A CALCULATOR AND THERE ARE LIMITED CALCULATORS AVAILABLE TO BORROW. **BRING YOUR OWN CALCULATOR.** You will be asked to place your phone in your backpack at your feet or in a box on the front bench or in the cell phone bag. If I see a cell phone at any time during a test for any reason, you will receive a zero on the test. There shall be nothing on the tables except for the test, your calculator and a writing implement.

**Information provided on the test**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Prefix** | **Symbol** | **Meaning** | **Example** |
| **tera** | **T** | **1 000 000 000 000 or 1012** | **1 Ts = 1 000 000 000 000 s = 1012 s** |
| **giga** | **G** | **1 000 000 000 or 109** | **1 Gs = 1 000 000 000 s = 109s** |
| **mega-** | **M** | **1 000 000 or 106** | **1 Ms = 1 000 000 s = 106 s** |
| **kilo-** | **k** | **1 000 or 103** | **1 ks = 1000 s = 103 s** |
| **deci-** | **d** | **0.1 or 10-1** | **1 ds = 0.1 s = 10-1 s** |
| **centi-** | **c** | **0.01 or 10-2** | **1 cs = 0.01 s = 10-2 s**  |
| **milli-** | **m** | **0.001 or 10-3** | **1 ms = 0.001 s = 10-3 s** |
| **micro-** | **µ** | **0.000 001 or 10-6** | **1 µs = 0.000 001 s = 10-6 s** |
| **nano-** | **n** | **0.000 000 001 or 10-9** | **1 ns = 0.000 000 001 s = 10-9 s** |
| **pico-** | **p** | **0.000 000 000 001 or 10-12** | **1 ps = 0.000 000 000 001 s = 10-12 s** |