Chemistry Unit 1 Worksheet Period:\_\_\_\_\_ Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Metric Conversions

|  |  |  |  |
| --- | --- | --- | --- |
| **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** |

1. Convert the following metric measures to the indicated new unit in parentheses using the ladder method (Move the decimal place):

a. 0.0120 m (to cm) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. 248.5 mL (to L) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. 101 g (to kg) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ d. 350 cm2  (to m2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ e. 0.97 km (to m) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ f. 1.580 kg (to mg)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

g. 183 mm (to km) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

h. 0.0062 s (to μs) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Convert the following metric measures to the indicated new unit in parentheses using the powers of 10 method:

a. 5.48 x 10-12 m (to nm) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. 1.3 x 104 mL (to L) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. 3.17 x 102 cm2 (to m2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d. 1.92 m2 (to mm2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e. 7.79 x 10-4 cm (to μm) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Convert the following metric measures to the indicated new unit in parentheses using conversion factors:

a. 651 cm (to m) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. 7.835 kg (to g) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4. Convert the following metric measures to the indicated new unit in parentheses using the method indicated: Show your work for the powers and dimensionalysis methods.**

* 1. 277 cm (to m) ladder = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. 0.000 62 Mm (to m) dimensionalysis = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  3. 3,857 g (to mg) ladder = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  4. 3.40 x 105 mg (to g) powers = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  5. 2.3 x 104 µL (to L) powers = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  6. 12.75 Mm (to km) dimensionalysis = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  7. 0.000 78 dL (to mL) ladder = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  8. 3.4 x 105 µs (to ms) powers = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  9. 300,000 km (to Mm) ladder = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  10. 0.0036 mL (to μL) ladder = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  11. 8.56 x 105 mg (to kg) powers = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  12. 8.06 nm (to mm) dimensionalysis = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  13. 8.105 x 105 cm2 (to m2) powers = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_