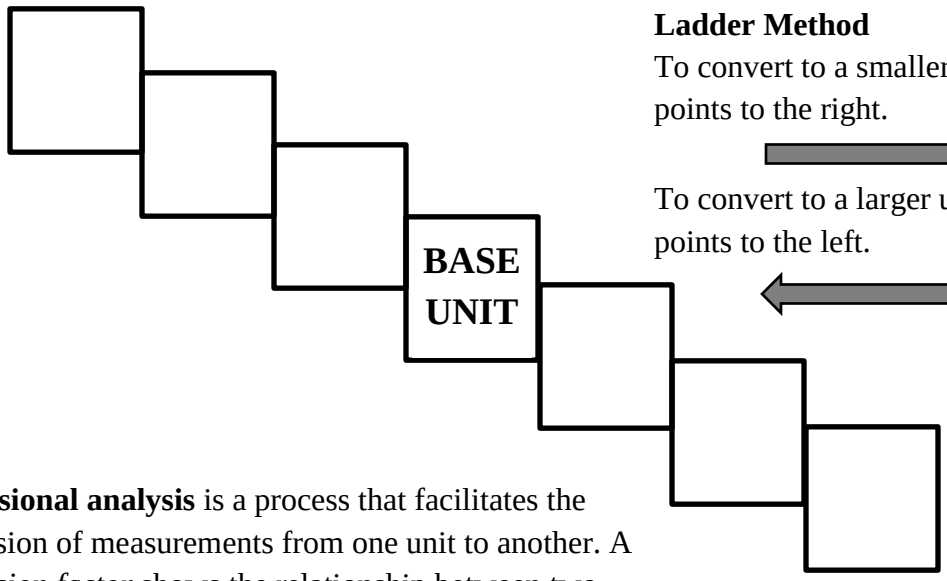
Measurement Mania

1. Fill in the prefix names and abbreviations in the graphic below.



Ladder Method
To convert to a smaller unit, move decimal points to the right.

To convert to a larger unit, move decimal points to the left.

Dimensional analysis is a process that facilitates the conversion of measurements from one unit to another. A *conversion factor* shows the relationship between two different units that express the same measurement.

2. Write the conversion factors for the following relationships.
   a. kilo- and base unit

   b. base unit and kilo-

   c. centi- and base unit

   d. base unit and centi-

   e. milli- and base unit

   f. base unit and milli-

3. Use dimensional analysis (bridges) for the following conversions.
   a. Convert 75.9 g to kg.

   b. Convert 7.958 hL to dL.

   c. Convert 0.295 km to m.

d. Convert 1975 mL to kL.

e. Convert 30.79 mm to cm.

f. Convert 32.7 dm to m.

g. Convert 65 cg to dg.

h. Convert 29 mL to daL.

4. Write the correct abbreviation for each unit.

a. kilogram = _____
b. meter = _____
c. gram = _____
d. milliliter = _____
e. millimeter = _____
f. liter = _____
g. kilometer = _____
h. centimeter = _____
i. milligram = _____

5. Use the ladder method to convert the following measurements.

a. 1,000 mg = _____ g
b. 160 cm = _____ mm
c. 125 g = _____ kg
d. 1 L = _____mL
e. 14 km = _____ m
f. 250 m = _____ km
g. 2,000 mg = _____ g
h. 104 km = _____ m
i. 480 cm = _____ m
j. 5.6 kg = _____ g
k. 8 mm = _____ cm
l. 5 L = _____mL
m. 198 g = _____ kg
n. 75 mL = _____ L
o. 50 cm = _____ m
p. 5.6 m = _____ cm
q. 16 cm = _____ mm
r. 2,500 m = _____ km
s. 65 g = _____ mg
t. 6.3 cm = _____ mm
u. 75 L = _____ kL
v. 120 mg = _____ g

6. Compare the following measurements by writing the appropriate symbol (<, >, or =) in the circle.

a. 56 cm ◯ 6 m

b. 7 g ◯ 698 mg

c. 63 cm ◯ 6 m

d. 5 g ◯ 508 mg

e. 1,500 mL ◯ 1.5 L

f. 536 cm ◯ 53.6 dm

g. 43 mg ◯ 5 g

h. 3.6 m ◯ 36 cm

7. Determine the number of significant figures in each of these numbers.

- 2.03 ____
- 1.0 ____
- 2.00 ____
- 0.00860 ____
- 1.0030 ____
- 967,000 ____
- 5.10 ____
- 0.000065 ____
- 0.009 ____
- 0.005 ____
- 0.005670 ____
- 0.00872 ____
- 780 ____
- 78,000 ____
- 780.000 ____
- 0.0224 ____
- 3.000 ____
- 3000 ____
- 0.004300 ____
- 0.00800 ____
- 0.00967 ____
- 0.023 ____
- 4.530 ____
- 0.090 ____
- 500 ____
- 0.1110 ____
- 54,000 ____
- 708 ____
- 780.00 ____
- 780.0 ____
- 0.00471 ____
- 0.0089 ____
- 230518 ____
- 1000.1 ____
- 0.006007 ____
- 9.6700 ____
- 7.0200 ____
- 70,164 ____
- 0.090 ____
- 0.00005 ____
- 0.0076009 ____
- 0.000008 ____
- 0.908 ____
- 0.4900 ____
- 670,004 ____
- 10.05 ____
- 0.1005 ____
- 0.002030 ____
- 23000000 ____
- 6.250 ____
- 9.067 ____
- 0.04010 ____
- 3.00 ____
- 909 ____
- 0.500 ____
- 670,000. ____
- 0.800008 ____
- 0.00881 ____
- 34.802 ____
- 2,700 ____
- 5000000 ____
- 0.000100 ____
- 1.005 ____
- 2.0550 ____
- 0.0050 ____
- 30.4 ____
- 54.000 ____
- 90 ____
- 900.0 ____
- 0.050 ____
- 5000 ____
- 500,000,000 ____
- 24,091,800 ____
- 0.00600 ____
- 20.040 ____

8. Determine how many significant figures in these numbers.
   - 7.080×10^{-7} ____
   - 0.00450×10^{-10} ____
   - 3.40×10^{-8} ____
   - 5.000×10^{6} ____
   - 4.0×10^{-4} ____
   - 0.03400×10^{16} ____
   - 2.801×10^{-6} ____
   - 5×10^{15} ____
   - 2.3×10^{12} ____
   - 2.300×10^{10} ____
9. What is the SI unit for length? _____
10. Circle the best unit for measuring each distance.
    a. Thickness of an eyelash: mm cm m
    b. Length of a desk: cm m km
11. Convert the following measurements.
    a. 34 mm = _____ cm
    b. 234 cm = _____ m
    c. 3 km = _____ m
    d. 35 m = _____ mm
12. What is the SI unit for mass? _____ What is the base unit for mass? _____
13. Circle the best unit for measuring each mass.
    a. Amount of spices in a batch of cookies: mg g kg
    b. Your mass: mg g kg
    c. Mass of two pennies: mg g kg
14. Convert the following measurements.
    a. 16 mg = _____ g
    b. 4.7 kg = _____ g
    c. 12,345 g = _____ kg
    d. 2 g = _____ mg
15. What is the base unit used for liquid volumes? _____
16. Circle the best unit for measuring each volume.
    a. Amount of soda in one can: mL L
    b. Water in a bathtub: mL L
17. Convert the following measurements.
    a. 160 mL = _____ L
    b. 23 kL = _____ L
    c. 456 cL = _____ mL
    d. 120 mL = _____ cm^3
18. Trichloroethylene has a density of 1.46 g/cm^3. Indicate whether objects with the following densities would float, sink, or remain suspended in trichloroethylene?
    a. 1.00 g/mL _____
    b. 0.85 g/mL _____
    c. 1.4 g/mL _____
    d. 1.56 g/mL _____