Day 5: Metric Conversions & Defining Appropriate Units

The Metric System of Measurement is based on multiples of 10. The three base units are meters, liters, and grams. The 6 prefixes are kilo (1000), hector (100), deka (10), base unit (1), deci (.1), centi (.01), and milli (.001). A helpful way to remember the order of the prefixes is **King Henry Died Unusually Drinking Chocolate Milk.**

Metric Conversion

King	Henry	Died	Unusually	Drinking	Chocolate	Milk
Kilo	Hecto	Deca	* Unit *	Deci	Centi	Milli
10 x 10 x 10 x LARGER than a unit	10 x 10 x LARGER than a unit	10 x LARGER than a unit	*Meter* (length) *Liter* (liquid volume) *Gram* (mass/weight)	10 x SMALLER than a unit	10 x 10 x SMALLER than a unit	10 x 10 x 10 x SMALLER than a unit
1 kilo = 1,000 units	1 hecto = 100 units	1 deca = 10 units	1 unit	10 deci = 1 unit	100 centi = 1 unit	1,000 milli = 1 unit
km = kilometer kL = kiloliter kg = kilogram	hm = hectometer hL = hectoliter hg = hectogram	dam = decameter daL = decaliter dag = decagram	m = meter L = liter g = gram	dm = decimeter dL = deciliter dg = decigram	cm = centimeter cL = centiliter cg = centigram	mm = millimeter mL = milliliter mg = milligram
Example: 5 kilo	50 hecto	500 deca	5,000 units	50,000 deci	500,000 centi	5,000,000 milli

DIVIDE numbers by 10 if you are getting bigger (same as moving decimal point one space to the left)

MULTIPLY numbers by 10 if you are getting smaller (same as moving decimal point one space to the right)

K H D U d c m

Examples: Convert from one prefix to another

A. 2500 L = 2.5 kL

2500. = 2.500 = 2.5

B. 38.2 g = 3820 cg

38.20 = 3820

C. 5 m = 5000 mm

5000.

D. 1000 mg = 1 g

1000. = 1.0 = 1

E. 14 km = 14000 m

14000.

F. 1 L = 1000 mL

1000.

K H D U d c m

160

Examples: Compare measurements using <, >, or =.
(Hint: They have to be written in the same units of measure before you can compare.)

A. 502 mm = .502 m

502

B. 90,801 cg > 5 g

90,801

C. 160 cL = 1.6 L

1.6

Defining Appropriate Units – Metric

Unit of Measure	Abbreviation	Estimate
Length		
Millimeter	mm	1 mm = thickness of a cd
Centimeter	cm	1 cm = width of computer keyboard key
Meter	m	1 m = length across a doorway
Kilometer	km	1 km = length of 11 football fields
Mass = weight		
Milligram	mg	1 mg = mass of a strand of hair
Gram	g	1 g = mass of a dollar bill
Milligram	kg	1 kg = mass of a textbook
Capacity = volume		
Milliliter	mL	1 mL = sip from a drink
Liter	L	1 L = amount of liquid in a bottle of water
Kiloliter	kL	1 kL = amount of water in two bathtubs

Practice: Choose the appropriate metric unit of measure to use when measuring the following:

a. The length of your pencil:

cm

b. The amount of water to fill a swimming pool

kL

c. Your height

m

d. The distance from New York to California

km

Unit of Measure	Abbreviation	Estimate
Length		
Inch	in	1 in = length of small paper clip
Foot	ft	1 ft = length of a man's foot
Yard	yd	1 yd = length across a doorway
Mile	mi	1 mi = length of 4 football fields
Weight		
Ounce	oz	1 oz = weight of one slice of cheese
Pound	lb	1 lb = weight of one can of canned food
Ton	t	1 t = weight of small car
Capacity		
Fluid Ounce	fl oz	1 fl oz = sip from a drink
Cup	c	1 c = large scoop of ice cream
Pint	pt	1 pt = school lunch milk container
Quart	qt	1 qt = container of automobile oil
Gall	gal	1 gal = large can of paint

Practice: Choose the appropriate metric unit of measure to use when measuring the following:

a. The height of a building

yd or ft

b. The weight of your biology textbook

lb

c. The weight of a semi truck

tons

d. The amount of chicken noodle soup in a soup can

fl. oz

e. The amount of water that fills a bathtub

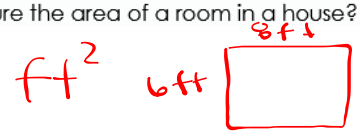
gal

4

Defining Appropriate Units – Mixed Multiple Choice

1. Sandra collected data about the amount of rainfall a city received each week. Which value is MOST LIKELY part of Sandra's data?
   a) 3.5 feet
   b) 3.5 yards
   c) 3.5 inches
   d) 3.5 meters

2. What is a good unit to measure the area of a room in a house?
   a) Square feet
   b) Square miles
   c) Square inches
   d) Square millimeters



ft^2 $6ft \cdot 8ft = 48ft^2$

3. If you were to measure the volume of an ice cube in your freezer, what would be a reasonable unit to use?
   a) Cubic feet
   b) Cubic miles
   c) Square feet
   d) Cubic inches

$in \cdot in \cdot in = in^3$

4. Which unit is the most appropriate for measuring the amount of water you drink in a day?
   a) Kiloliters
   b) Liters
   c) Megaliters
   d) Milliliters

5. If you were to measure the volume of an ice cube in your freezer, what would be a reasonable unit to use?
   a) Cubic feet
   b) Cubic miles
   c) Square feet
   d) Cubic inches

6. What is a good unit to measure the area of a room in a house?
   a) Square feet
   b) Square miles
   c) Square inches
   d) Square millimeters