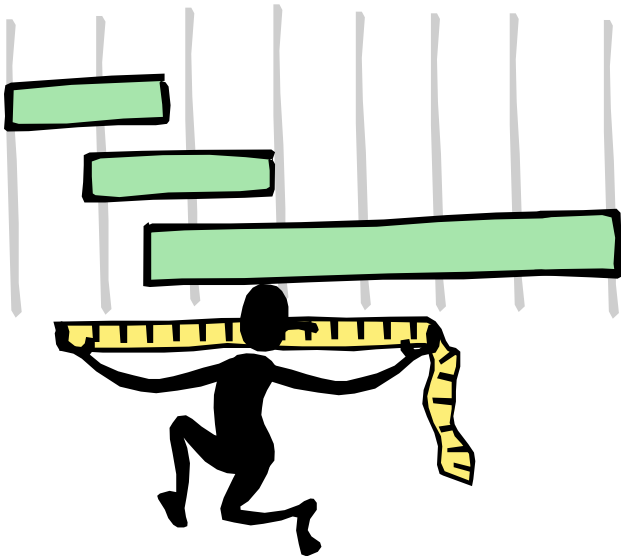
Metric Mania



Metric Conversions
Ladder Method

T. Trimpe 2008 http://sciencespot.net/

when you know	multiply by	to find
length		
millimeters	0.04	inches
centimeters	0.39	inches
meters	3.28	feet
meters	1.09	yards
kilometers	0.62	miles
inches	25.40	millimeters
inches	2.54	centimeters
feet	30.48	centimeters
yards	0.91	meters
miles	1.61	kilometers
speed		
miles per hour	1.61	kilometers per hour
kilometers per hour	0.62	miles per hour
volume		
milliliters	0.20	teaspoons
milliliters	0.07	tablespoons
milliliters	0.03	fluid ounces
liters	4.23	cups
liters	2.11	pints
liters	1.06	quarts
liters	0.26	gallons
cubic meters	35.31	cubic feet
cubic meters	1.31	cubic yards
teaspoons	4.93	milliliters
tablespoons	14.79	milliliters
fluid ounces	29.57	milliliters
cups	0.24	liters
pints	0.47	liters
quarts	0.95	liters
gallons	3.79	liters
cubic feet	0.03	cubic meters
cubic yards	0.76	cubic meters

when you know	multiply by	to find
mass and weight		
grams	0.035	ounce
grams	0.032	ounce (apoth.)
kilograms	2.20	pounds
kilograms	2.68	pounds (apoth.)
tons (1,000 kg)	1.10	short tons
ounces	28.35	grams
ounces (apoth.)	31.10	grams
pounds	0.45	kilograms
pounds (apoth.)	0.37	kilograms
short tons (2,000 lb)	0.91	metric tons
temperature		
degrees Fahrenheit	(°F – 32) ÷ 1.8	degrees Celsius
degrees Celsius	(°C 1.8) + 32	degrees Fahrenheit

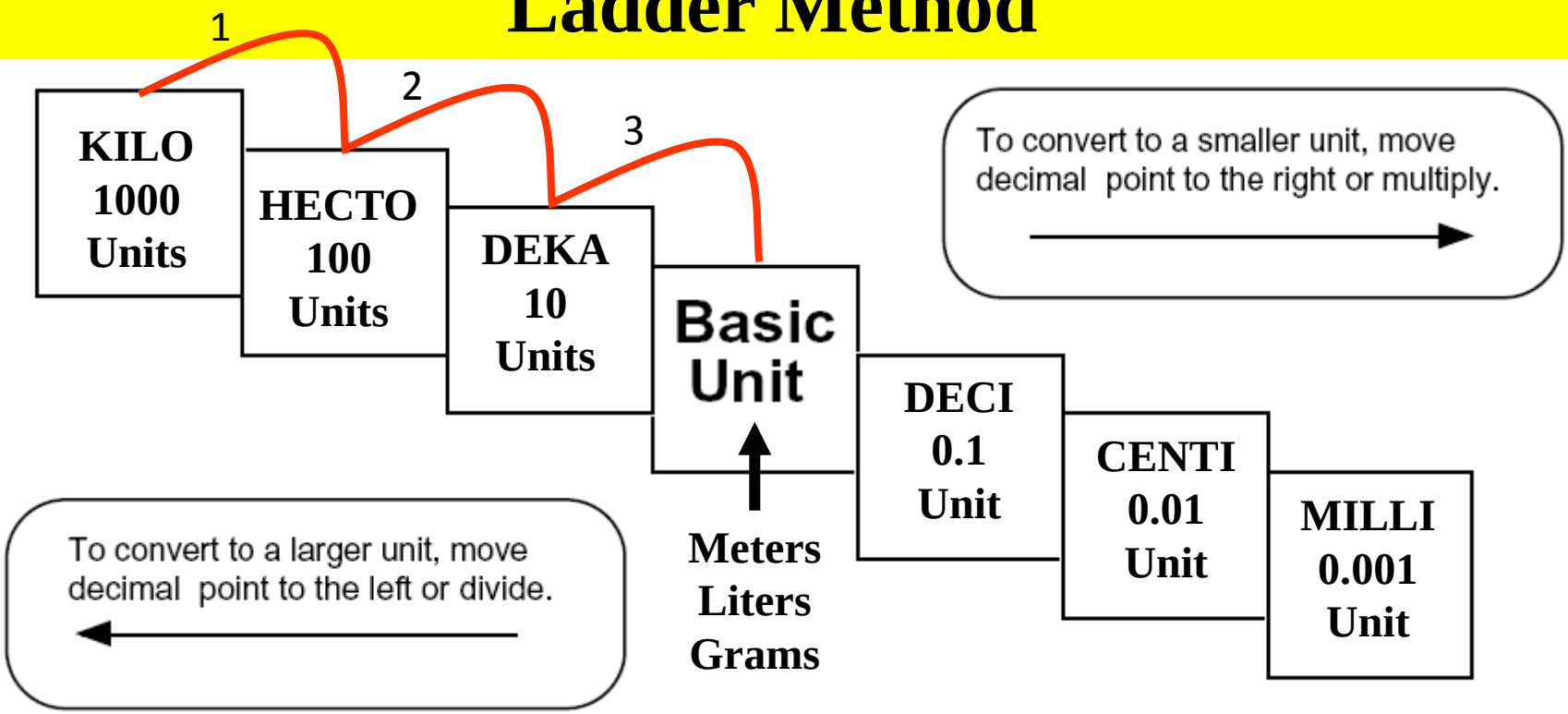
metric prefixes

prefix	symbol	factor		
exa-	E	10^{18}	=	1,000,000,000,000,000,000
peta-	P	10^{15}	=	1,000,000,000,000,000
tera-	T	10^{12}	=	1,000,000,000,000
giga-	G	10^{9}	=	1,000,000,000
mega-	M	10^{6}	=	1,000,000
kilo-	k	10^{3}	=	1,000
hecto-	h	10^{2}	=	100
deca-	da	10	=	10
deci-	d	10^{-1}	=	0.1
centi-	c	10^{-2}	=	0.01
milli-	m	10^{-3}	=	0.001
micro-	µ	10^{-6}	=	0.000,001
nano-	n	10^{-9}	=	0.000,000,001
pico-	p	10^{-12}	=	0.000,000,000,001
femto-	f	10^{-15}	=	0.000,000,000,000,001
atto-	a	10^{-18}	=	0.000,000,000,000,000,001

Volume, Mass, and Length

- Volume=Liters
  - Measured by graduated cylinder or ruler
- Mass=Grams
  - Measured by balances and scales
- Length=Meters
  - Measured by ruler or meterstick

Ladder Method



How do you use the "ladder" method?

1st – Determine your starting point.

2nd – Count the "jumps" to your ending point.

3rd – Move the decimal the same number of jumps in the same direction.

4 km = _____ m

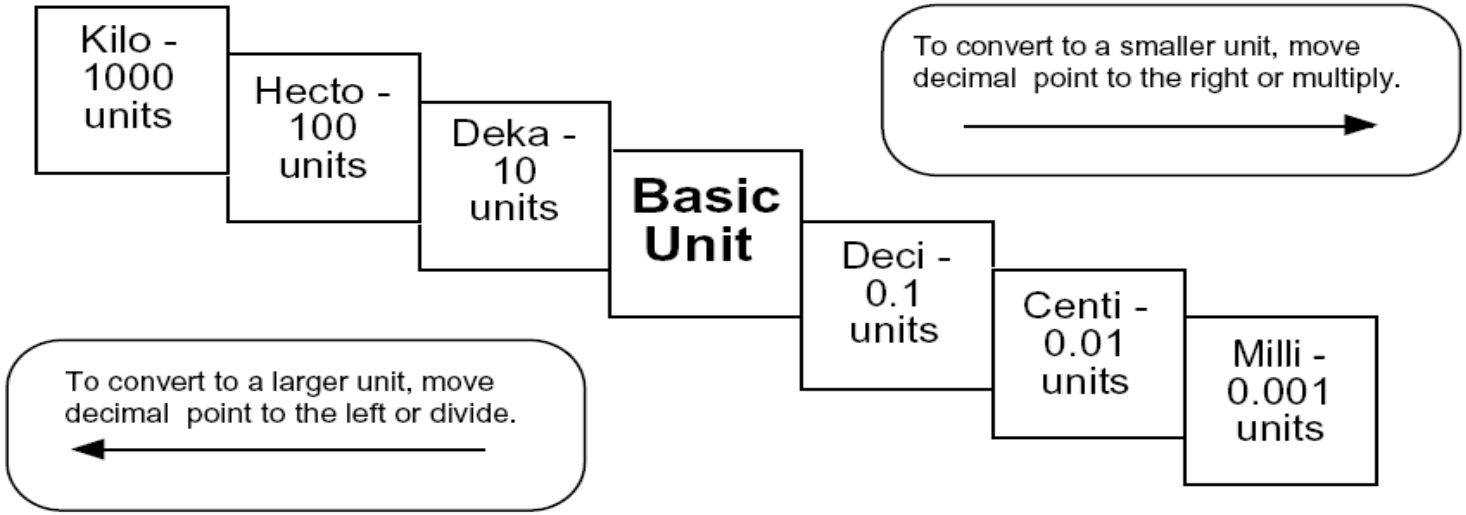
Starting Point Ending Point

How many jumps does it take?

4. __. __. __. = 4000 m

1 2 3

Conversion Practice



Try these conversions using the ladder method.

1000 mg = _____ g

1 L = _____ mL

160 cm = _____ mm

14 km = _____ m

109 g = _____ kg

250 m = _____ km

Compare using <, >, or =.

56 cm ◯ 6 m

7 g ◯ 698 mg

Metric Conversion Challenge

Write the correct abbreviation for each metric unit.

1) Kilogram _____

2) Meter _____

3) Gram _____

4) Milliliter _____

5) Millimeter _____

6) Liter _____

7) Kilometer _____

8) Centimeter _____

9) Milligram _____

Try these conversions, using the ladder method.

10) 2000 mg = _____ g

11) 104 km = _____ m

12) 480 cm = _____ m

13) 5.6 kg = _____ g

14) 8 mm = _____ cm

15) 5 L = _____ mL

16) 198 g = _____ kg

17) 75 mL = _____ L

18) 50 cm = _____ m

19) 5.6 m = _____ cm

20) 16 cm = _____ mm

21) 2500 m = _____ km

22) 65 g = _____ mg

23) 6.3 cm = _____ mm

24) 120 mg = _____ g

Compare using <, >, or =.

25) 63 cm ◯ 6 m

26) 536 cm ◯ 53.6 dm

27) 5 g ◯ 508 mg

28) 43 mg ◯ 5 g

29) 1,500 mL ◯ 1.5 L

30) 3.6 m ◯ 36 cm