

## Metric System (Honors Chemistry)

**Prefixes:** (common prefixes used in chemistry)

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M	mega	a million	BIGGER THAN THE BASE
K	kilo	a thousand	
<hr/>			→ Base unit
d	deci	a tenth	smaller than the base
c	centi	a hundredth	
m	milli	a thousandth	
μ	micro	a millionth	
n	nano	a billionth	

### Base Units

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<u>length</u>	<u>mass</u>	<u>liquid volume</u>	<u>solid volume</u>
m meters	g grams	L liter	m <sup>3</sup>
<u>temperature</u>	<u>time</u>		
K Kelvin	seconds		
°C Celcius			

### Conversions in Metric

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*(combine a base unit with any prefix)*

*Example: (smaller than the base)*

nm nanometer	1/10 <sup>9</sup> of a meter	μm micrometer	1/1,000,000 or 1/10 <sup>6</sup> of a meter
1 x 10 <sup>9</sup> or 1 billion = 1m		1 x 10 <sup>6</sup> or 1 million = 1m	
mm millimeter	1/10 <sup>3</sup> of a meter	cm centimeter	1/100 of a meter
1000mm = 1m	1/1000	100cm = 1m	
dm decimeter	1/10 of a meter		
10dm = 1m			

*Example: (larger than the base)*

Km kilometer  
1Km = 1000m

**1ml = 1cm<sup>3</sup> = 1cc**  
**1000ml = 1 liter**  
**1 liter = 1dm<sup>3</sup>**  
**1 gram of water = 1ml of water**  
**1 dm<sup>3</sup> = 1000cm<sup>3</sup>**  
**1 hour = 60 min = 3600 sec**

*(This is the same for all base units: g, L, or m<sup>3</sup>)*

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### Conversions from metric and English

<b>Length:</b>	2.54 cm = 1 inch	1 yard = .914 meters	1.61Km = 1 miles
<b>Volume:</b>	29.57ml = 1 oz	3.785 L = 1 gallon	1 L = 1.057 quarts
<b>Mass:</b>	.454Kg = 1 lbs	454g = 1lbs	1Kg = 2.20 lbs