

- Chemicals/reactions, study of matter, elements, interaction between matter

- chemistry: the study of the composition of matter and the changes it undergoes

↳ Matter: anything that has mass and takes up space

↳ SI: international system of measurements

↳ worldwide committee of nerds

→ Length: Meter [m]

→ Mass: gram [g]

→ Volume: Liter [L]

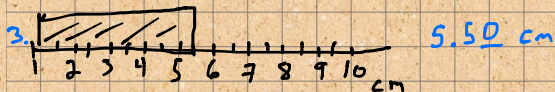
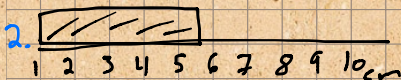
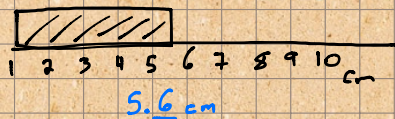
Prefix	Symbol	Multiplier Numerical	Exponential
yotta	Y	1,000,000,000,000,000,000,000,000	10^{24}
zetta	Z	1,000,000,000,000,000,000,000,000	10^{21}
exa	E	1,000,000,000,000,000,000,000	10^{18}
peta	P	1,000,000,000,000,000,000	10^{15}
tera	T	1,000,000,000,000,000	10^{12}
giga	G	1,000,000,000	10^9
mega	M	1,000,000	10^6
kilo	k	1,000	10^3
hecto	h	100	10^2
deca	da	10	10^1
no prefix means		1	10^0
deci	d	0.1	10^{-1}
centi	c	0.01	10^{-2}
milli	m	0.001	10^{-3}
micro	μ	0.000001	10^{-6}
nano	n	0.000000001	10^{-9}
pico	p	0.000000000001	10^{-12}
femto	f	0.000000000000001	10^{-15}
atto	a	0.000000000000000001	10^{-18}
zepto	z	0.00000000000000000001	10^{-21}
yocto	y	0.0000000000000000000001	10^{-24}

↳ ex: Eg = Exagram = 10^9

• Significant Figure: any digit recorded in a measurement

↳ Uncertainty: how confident a scientist is with a measurement

↳ Uncertain digit: last # recorded in a measurement [estimated]



★ Uncertain digits are still significant

Why is measurement so important?

Measurement - Real-life applications

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Firewall Log Analysis

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Standardized Units of Measure: Who Needs Them?

People use units of measure so frequently in daily life that they hardly think about what they are doing. A motorist goes to the gas station and pumps 10 gallons (a measure of volume) into an automobile. To pay for the gas, the motorist uses dollars—another unit of measure, economic rather than scientific—in the form of paper money, a debit card, or a credit card.

This is simple enough. But what if the motorist did not know how much gas was in a gallon, or if the motorist had some idea of a gallon that differed from what the gas station management determined it to be? And what if the value of a dollar were not established, such that the motorist and the gas station attendant had to haggle over the cost of the gasoline just purchased? The result would be a horribly confused situation: the motorist might run out of gas, or money, or both, and if

