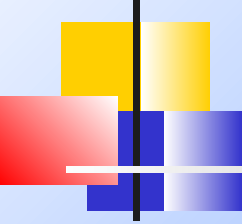
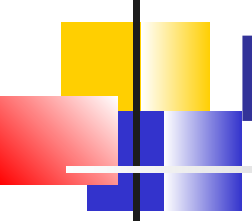


Scientific and Engineering Notation



Prefixes and Conversions

- Prefixes : Are used to eliminate zeros from a given value
- Conversions : Change the numeric value of a measurement from one prefix's value to another prefix's value.



Prefixes and Conversions

Whole Values are: VOLTS, AMPS, OHMS, FARAD, HERTZ etc.

Whole Values have all of the zeros or decimal places in their number value: 3000 volts 1000 amps

5,000,000 ohms 0.000001 farads

560,000 hertz

Prefixes are added to whole value electrical measurements to eliminate zeros or decimal places:

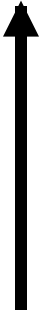
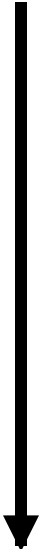
3 K volts 1 K amps

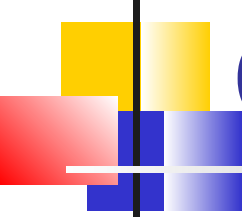
5 M ohms

1 u farad

560 K Hertz

Prefixes and *Whole Values*

		Prefix	Symbol	Move decimal	Value
	+ 6	Mega= 1,000,000 	M	+ 6 places	1 M
	+ 3	Kilo= 1,000 	K	+ 3 places	1 K
"whole values" Amp, Volt, Ohm, Farad, Hertz					
	- 3	milli= 0.001 	m	- 3 places	1 m
	- 6	micro= 0.000001 	u	- 6 places	1 u
	- 9	nano = 0.000000001 	n	- 9 places	1 n
	- 12	pico= 0.0000000000001 	p	- 12 places	1 p



Conversions: Example 1

Prefixes:	Symbol:
Mega = + 6M	
Kilo = + 3K	
Whole values = 0	
milli = - 3m	
micro = -6u	
nano = -9n	
pico = -12p	

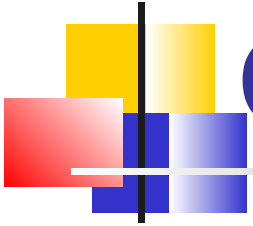
Convert the following:

5,000,000 ohms = ? M ohms

1. Determine the decimal places of each
2. Which prefix is larger ? **M**
3. Which number will be **larger** / **smaller**?
Ohms / **M ohms**
4. Move the decimal to produce the correct answer. **6 places left**

5,000,000. = 5 M ohms





Conversions: Example 2

Convert the following:

$$0.000001 \text{ fd} = \underline{\quad? \quad} \text{ u fd}$$

1. Determine the decimal places of each
2. Which prefix is larger ? **farad**
3. Which number will be **larger** / **smaller**?
u farad / **farad**
4. Move the decimal to produce the correct answer. **6 places to right**

Prefixes:	Symbol:
Mega = + 6M	
Kilo = + 3K	
Whole values = 0	
milli = - 3m	
micro = -6u	
nano = -9n	
pico = -12p	

$$\underline{.0000001} \text{ fd} = 1 \text{ u fd}$$