

CHAPTER 1

WEBWORK GUIDE

1.1 Units

Every number deserves a unit. Every time you write or enter a number you should think about the unit of the number. There are some cases (radians, cycles, etc.) where we consider the numbers unitless but you should still think about those cases.

WebWork will require you to enter units for most answers. The units I use in this class are summarized here.

Unit	Symbol	WebWork Abbreviation
degrees	°	deg
radians		rad
Amperes	A	A
Volts	V	V
Ohms	Ω	ohm
Hertz	Hz	Hz
seconds	s	s
minutes	min	min
Coulombs	C	C
Farad	F	F
Joules	J	J

1.2 Exponential Notation

Unfortunately WebWork does not accept all SI prefixes. Therefore, all numbers should be entered using exponential notation. The letter 'E' can be entered in place of 'x10^e'. The 'E' must be capitalized. The table below has a number of examples:

Value	WebWork Entry
45°	45 deg
1.25 mA	1.25E-3 A
5 kJ	5E3 J
1.1 pF	1.1E-12 F

1.3 Functions

Some problems will require you to enter a function as an answer. The table below shows the built-in operators and functions we will use in class that are native to WebWork:

Description	WebWork Symbol
Add	+
Subtract	-
Multiply	*
Divide	/
Natural Exponential	exp()
Sine	sin()
Cosine	cos()

This table shows a number of example functions typical to my courses and how they should be entered in WebWork:

Type	Value	WebWork Entry
Phasor (Time-domain)	$6 \cos(1500t - 45^\circ)$	6*cos(1500*t-(pi/4))
Phasor (Time-domain)	$12 \cos(700t + 50^\circ)$	12*cos(700*t+50*(pi/180))
Transfer function	$\frac{0.08s^2}{0.08s^2+0.6s+1}$	(0.08*s^2)/(0.08*s^2+0.6*s+1)
KVL (Mesh Analysis)	$-15I_1 - 8I_2 + 15I_3 = 8$	-15*I1-8*I2+15*I3=8
KCL (Nodal Analysis)	$\frac{1}{32k\Omega} V_A - \frac{1}{32k\Omega} V_O = 20\mu A$	(1/32E3)*Va-(1/32E3)*Vo=20E-6
Singularity Function	$u(t+1)-u(t)+u(t-1)-2u(t-2)+u(t-3)=8$	u(t+1)-u(t)+u(t-1)-2*u(t-2)+u(t-3)