WORKSHEET
SERIES P9

Student Name_____date_____MB#_____

Students should be able to Calculate, Measure and Compare fundamental characteristics of a series circuit.

- **Measure:** The student will use a Digital Multimeter (DMM), to measure the current (I), voltage (E), and resistance (R) for the Circuit on the P9 circuit on the Miniboard Series Trainer (simulator).
- **Calculate:** The student will use the principles of ohms law to calculate, current (I), voltage (E), and resistance R for the P9 Circuit using the measurements taken with the DMM on the Miniboard Series Trainer (simulator).
- **Compare:** The student will then compare the results of the measurements taken and those calculated using the DMM measurements to calculate.

Part A Measure

Measuring Voltages:

Measure and record Battery Voltage a_____

Measure and record Voltage Drop for resistor R1 b_____

Measure and record Voltage Drop for resistor R2 c _____

Measure and record Voltage Drop for resistor R3 d_____

Measure and record Voltage Drop for resistor R4 e_____

Measure and record Total Voltage Drop for series circuit P9 f _____

Measuring Resistance:

Measure and Record resistance of resistor R1 g_____

Measure and Record resistance of resistor R2 h_____

Measure and Record resistance or resistor R3 i_____

Measure and Record resistance of resistor R4 j_____

Measure and Record total resistance (Rt) or circuit P9 k_____

Measuring Amperage

Measure and Record the amperage of circuit P9 l_____

Part B Calculate

Calculate Voltage (IXR)

Calculate Voltage Drop by multiplying resistance x amperage for each resistor.

R1 voltage drop	(g x l)		m_____
R2 voltage drop	(h x l)		n_____
R3 voltage drop	(i x l)		o_____
R4 voltage drop	(j x l)		p_____
Circuit P9 Total voltage drop	(m +n + o + p)	Sum	q_____
Circuit P9 Total voltage drop Calculated	(k x l)		r_____

Calculate Resistance (E/I)

Calculate Resistance by dividing voltage by amperage.

R1 Resistance	(b / l)		s_____
R2 Resistance	(c / l		t_____
R3 Resistance	(d / l)		u_____
R4 Resistance	(e / l)		v_____
Circuit P9 (Rt) Resistance Total		Sum	w _____
Circuit P9 Calculated Resistance Total	(f /l)		x_____

Calculate Amperage (E/R)

Circuit P9 (It) Amperage Total	(f / k)	y _____

Part C Compare

Record measured and calculated results to complete the following table. Note: letters in each cell refer to your answers above. (Measured and calculated readings should be less than + - 5%)

Voltages	Measured	Calculated		< 5% difference Y /N
R1 voltage drop	b	m		
R2 voltage drop	c	n		
R3 voltage drop	d	o		
R4 voltage drop	e	p	**Voltage Drop Sum**	
P9 total voltage drop	f	r	q	
Resistance	Measured	Calculated		
R1 resistance	g	s		
R2 resistance	h	t		
R3 resistance	i	u		
R4 resistance	j	v	**Resistance Sum**	
P9 resistance total (Rt)	k	x	w	
Amperage	Measured	Calculated		
P9 circuit amperage	l	y		