## **KEY**

## **Circuits Worksheet**

## Multiple Choice

	1.	The following three appliances are connected in series to a 120 V house circuit: a toaster, 1200 W; a coffee pot,		
				operated at the same time, what total current would they draw
		a. 3 A b. 5 A		10 A
	_			21 A
	2.	Three resistors connected in series carry currents labeled $I_1$ , $I_2$ , and $I_3$ , respectively. Which of the following expresses the total current, $I_t$ , in the system made up of the three resistors in series?		
		a. $I_t = I_1 + I_2 + I_3$		$I_t = I_1 = I_2 = I_3$
		b. $I_t = (1I_1 + 1/I_2 + 1/I_3)$	a.	$I_{t} = (1I_{1} + 1/I_{2} + 1/I_{3})^{-1}$
	3.	Three resistors connected in parallel have voltages labeled $\Delta V_1$ , $\Delta V_2$ , and $\Delta V_3$ . Which of the following expresses the total voltage across the three resistors?		
		a. $\Delta V_t = \Delta V_1 + \Delta V_2 + \Delta V_3$	c.	$\Delta \mathbf{V}_1 = \Delta \mathbf{V}_1 = \Delta \mathbf{V}_2 = \Delta \mathbf{V}_3$
		b. $\Delta V_t = (1/\Delta V_1 + 1/\Delta V_2 + 1/\Delta V_3)$		$\Delta V_{t} = (1/\Delta V_{1} + 1/\Delta V_{2} + 1/\Delta V_{3})^{-1}$
	4.	Three resistors with values of $R_1$ , $R_2$ , and $R_3$ ar resistance, $R_t$ , of the three resistors?		nnected in series. Which of the following expresses the total
		a. $R_t = R_1 + R_2 + R_3$		$R_t = R_1 = R_2 = R_3$
		b. $R_t = (1/R_1 + 1/R_2 + 1/R_3)$	d.	$R_t = (1/R_1 + 1/R_2 + 1/R_3)^{-1}$
	5.	Three resistors with values of $3.0 \Omega$ , $6.0 \Omega$ , and	d 12	$\Omega$ are connected in series. What is the equivalent resistance o
		this combination?		
		a. 0.58 Ω	c.	$7.0\Omega$
		b. 1.7 Ω	d.	21 Ω
	6.	Three resistors with values of 4.0 $\Omega$ , 6.0 $\Omega$ , and resistance?	d 10	$0~\Omega$ are connected in parallel. What is their equivalent
		a. $20.0 \Omega$	c.	$6.0\Omega$
		b. 7.3 Ω		1.9 Ω
	7.	. Two resistors with values of 6.0 $\Omega$ and 12 $\Omega$ are connected in parallel. This combination is connected in series		
		with a $4.0 \Omega$ resistor. What is the overall resistance of this combination?		
		a. $0.50 \Omega$	c.	8.0 Ω
		b. 2.0 Ω	d.	$22\Omega$
	8.	8. Three resistors with values of 18 $\Omega$ , 26 $\Omega$ , 9 $\Omega$ , respectively, are connected in series. What is their equiv		
		resistance?	,	F
		a. 9.2 Ω	c.	$60\Omega$
		b. 53 Ω	d.	13 Ω
	9.	. Three resistors with values of 15 $\Omega$ , 41 $\Omega$ , 58 $\Omega$ , respectively, are connected in parallel. What is the over resistance of this combination?		
		a. 9.2 Ω	c.	$60\Omega$
		b. 53 Ω	d.	13 Ω
	10.	Two resistors with values of 6.0 $\Omega$ and 12 $\Omega$ a	re co	onnected in parallel. This combination is connected in series
		with a 2.0 $\Omega$ resistor and a 24 V battery. What is the current in the 2.0 $\Omega$ resistor?		
		a. 2.0 A		6.0 A
		b. 4.0 A		12 A