



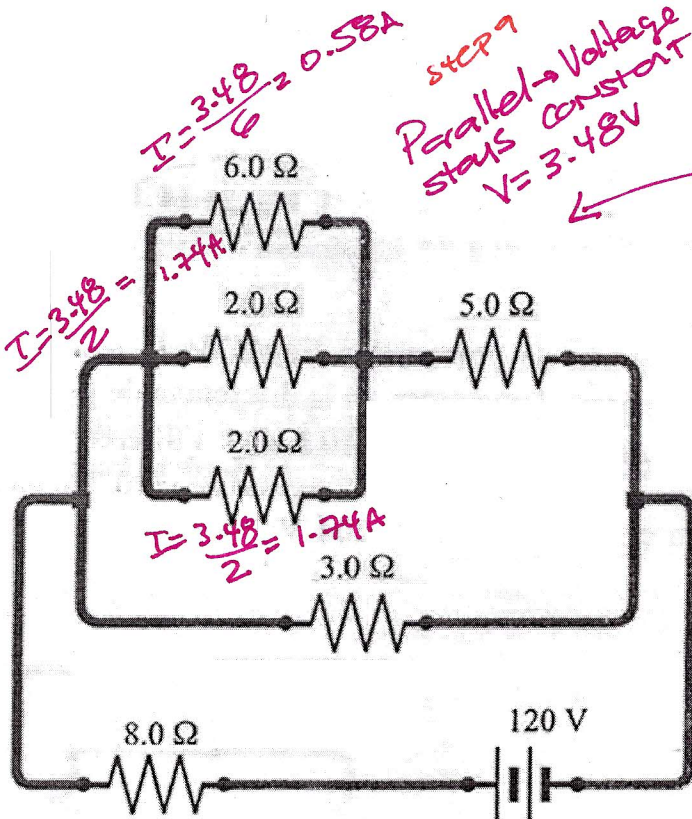
Combined Electric Circuits Quiz

Name: Key Period: _____ Date: _____

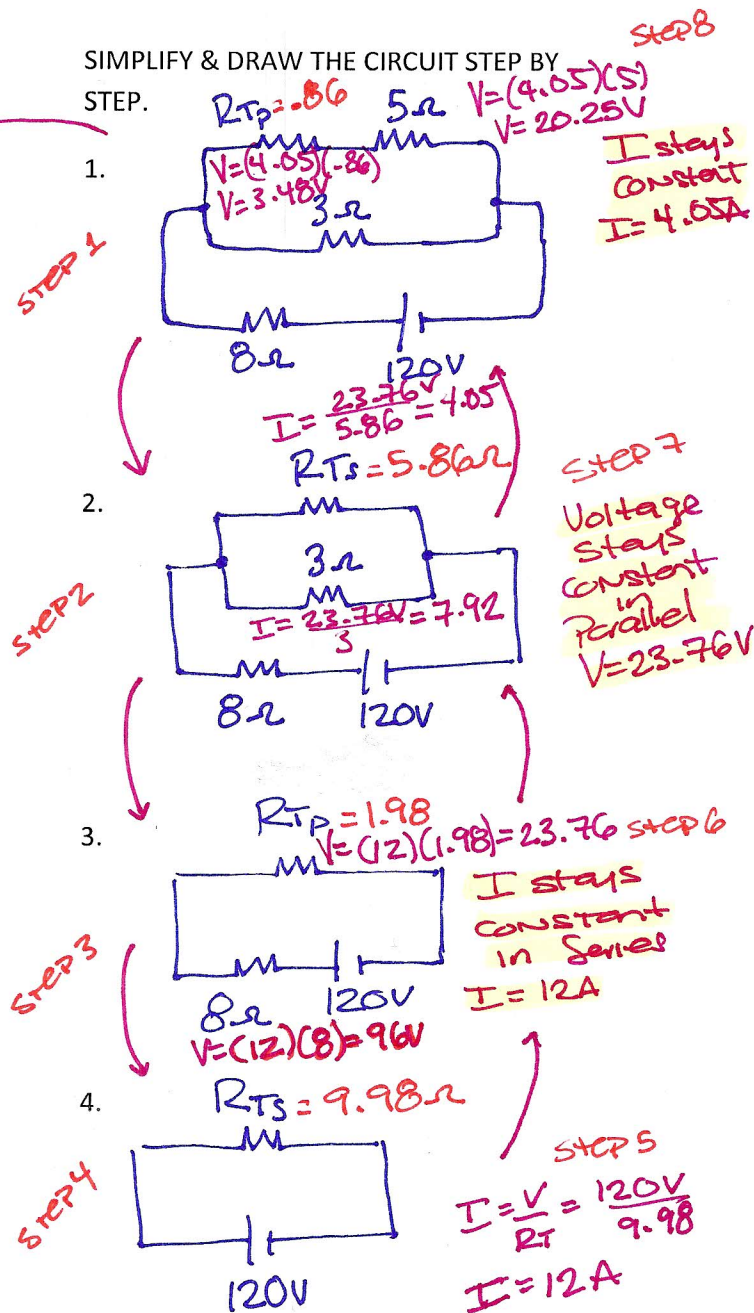
I. Simplify the following electric circuits. Show your work to get full credit.

SERIES	PARALLEL	Formulas
$V=V_1+V_2+V_3+\dots$	$V=V_1=V_2=V_3=\dots$	$V=IR$
$I=I_1=I_2=I_3=\dots$	$I=I_1+I_2+I_3+\dots$	$P=IV=I^2R$
$R=R_1+R_2+R_3+\dots$	$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots$	$E=Pt$

1.



SIMPLIFY & DRAW THE CIRCUIT STEP BY STEP.



- a. Total Resistance in the circuit: 9.98Ω
- b. Current flowing in the circuit: 12A
- c. Voltage on the 8Ω resistor: 96V
- d. Voltage on the 3Ω resistor: 23.76V
- e. Current on the 6Ω resistor: 0.58A
- f. Current on the 5Ω resistor: 7.92A
- g. Current on the 5Ω resistor: 4.05A

① Simplify circuit & find
TOTAL RESISTANCE

STEP 1: Simplify parallel [6Ω, 2Ω & 2Ω]

$$\frac{1}{R_{Tp}} = \frac{1}{6} + \frac{1}{2} + \frac{1}{2}$$

$$\frac{1}{R_{Tp}} = \frac{1+3+3}{6}$$

$$\frac{1}{R_{Tp}} = \frac{7}{6}$$

$$R_{Tp} = \frac{6}{7} = 0.86\Omega$$

Simplify R_{Tp} & 5Ω in Series

$$R_{Ts} = 0.86\Omega + 5 = 5.86\Omega$$

STEP 2: Simplify R_{Ts} & 3Ω in Parallel

$$\frac{1}{R_{Tp}} = \frac{1}{5.86} + \frac{1}{3}$$

$$R_{Tp} = 1.98\Omega$$

STEP 3: Add R_{Tp} & 8Ω in Series

$$R_{Ts} = R_{Tp} + 8 = 1.98 + 8$$

$$R_{Ts} = \underline{\underline{9.98\Omega}}$$

Find Current

$$I = \frac{V}{R_T} = \frac{120V}{9.98} = 12.02A \approx \underline{\underline{12A}}$$

To Find Voltage & current
in each resistor, you have
to go back & split the I or \Rightarrow
V depending on the connection
& the # of resistors