

Circuits 2

Tuesday, March 30, 2010
8:30 AM

$V = I \cdot R, I = \frac{V}{R}, \frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \dots$ PHYSICS 12

NAME: _____

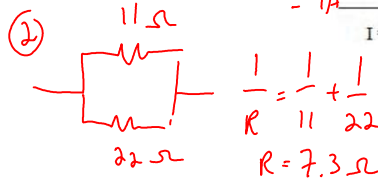
Electric Circuits 2

1. The diagram below shows part of an electrical circuit. What is the current through resistor R_1 ?

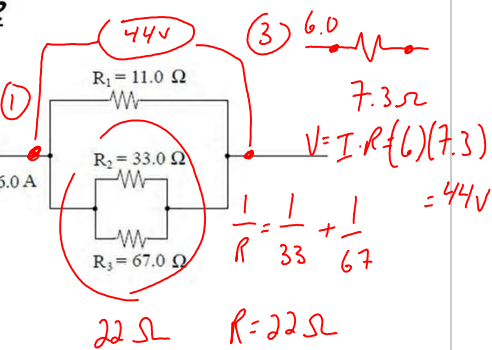
$V_T = ?$

$I_T = 6.0 A$

$R_T =$



$I = \frac{V}{R} = \frac{44V}{11} = 4A$

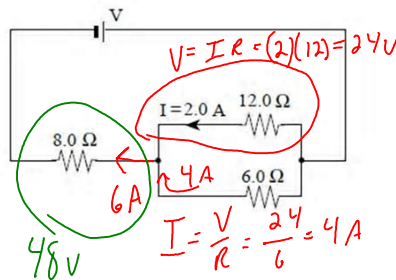


2. What is the voltage, V , of the power supply shown in the circuit?

$V_T = 48V + 24V = 72V$

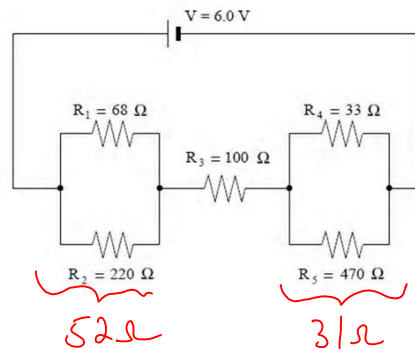
$I_T =$

$R_T =$



3. What is the total resistance of the circuit?
What is the current through the 100Ω resistor?

$R_T = 52 + 100 + 31 = 183 \Omega$
 $I_T = \frac{V}{R} = \frac{6.0V}{183 \Omega} = .033A = 33mA$



PHYSICS 12

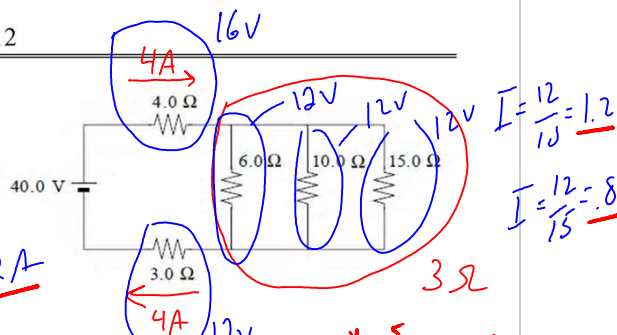
4. Calculate the current through the 6.0Ω resistor in the circuit shown.

$V_T = 40V$

$I_T = 4A$

$R_T = 10 \Omega$

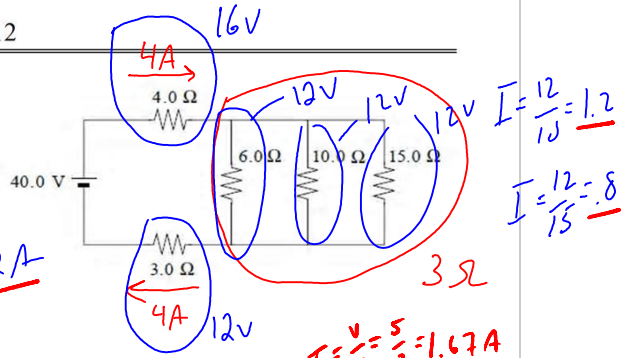
$I = \frac{V}{R} = \frac{12V}{6 \Omega} = 2A$



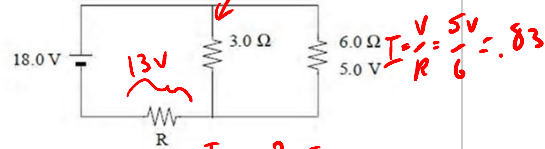
4. Calculate the current through the $6.0\ \Omega$ resistor in the circuit shown.

$V_T = 40\text{ V}$
 $I_T = 4\text{ A}$
 $R_T = 10\ \Omega$

$I = \frac{V}{R} = \frac{12\text{ V}}{6\ \Omega} = 2\text{ A}$

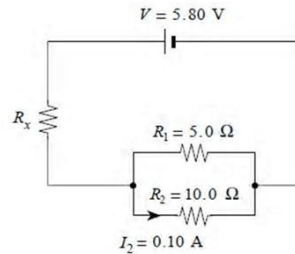


5. In the following circuit, determine the value of resistor R.



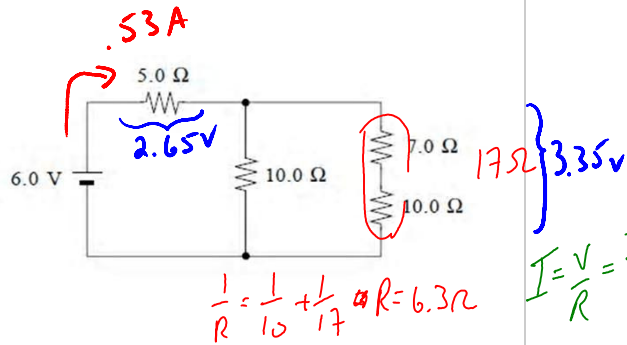
$R = \frac{V}{I} = \frac{13}{2.5\text{ A}} = 5.2\ \Omega$

6. What is the value of the unknown resistor R_x in the circuit below?



7. What is the current through the $7.0\ \Omega$ resistor? How much charge flows through the $7.0\ \Omega$ resistor in a 30 s interval?

$V_T = 6\text{ V}$
 $I_T = \frac{6}{11.3} = .53\text{ A}$
 $R_T = 11.3\ \Omega$



$\frac{1}{R} = \frac{1}{10} + \frac{1}{17} \Rightarrow R = 6.3\ \Omega$

$I = \frac{V}{R} = \frac{3.35}{17\ \Omega} = .197 = 197\text{ mA}$

$I = \frac{Q}{t}, Q = I \cdot t = (.197)(30\text{ s}) = 5.9\text{ C}$