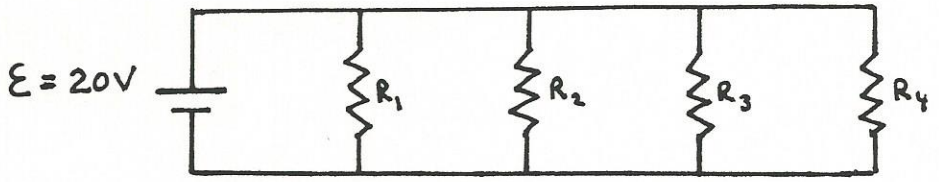
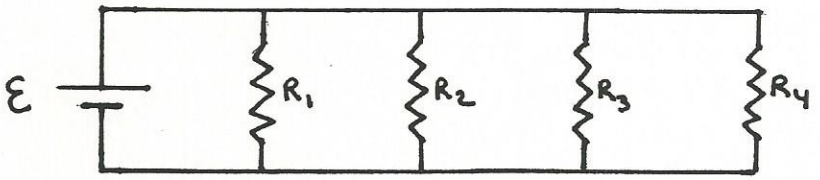
Physical Science Worksheet : Parallel Circuits

1. Do a complete analysis of the following circuit after drawing the corresponding simple equivalent circuit.



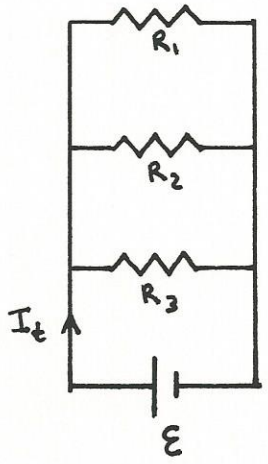
$R_1 = 40\,\Omega$
$R_2 = 20\,\Omega$
$R_3 = 10\,\Omega$
$R_4 = 40\,\Omega$

2. Do a complete analysis of the following circuit after drawing the corresponding simple equivalent circuit.



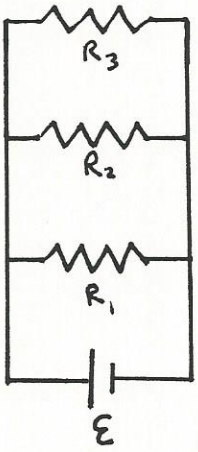
$V_1 = 25\,V$
$I_t = 40\,A$
$I_1 = 14\,A$
$I_2 = 4\,A$
$I_3 = 6\,A$

3. In the circuit diagram below, determine the value of I_t, the current supplied by the source.
Your answer must indicate the formulas used and must include all calculations, including a clear indication of the units of measure throughout the calculations.



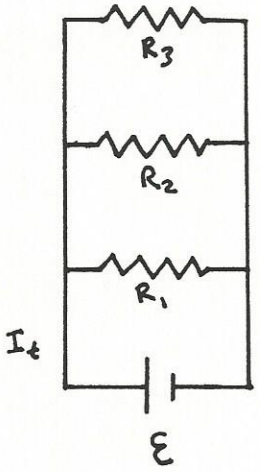
$R_1 = 10\,\Omega$
$R_2 = 10\,\Omega$
$R_3 = 15\,\Omega$
$\mathcal{E} = 60\,V$
$I_t = ?$

4. In the following diagram, determine I_2, the current flowing through R_2. Include all calculations, formulas + units.



$I_t = 7.8A$
$R_1 = 20\,\Omega$
$R_3 = 25\,\Omega$
$\mathcal{E} = 50\,V$
$I_2 = ?$

5. In the circuit diagram given below, determine the value of V the electromotive force. You must include formulas, calculations, and units.



$I_t = 15\ A$

$R_1 = 6\ \Omega$

$R_2 = 8\ \Omega$

$R_3 = 4\ \Omega$

$V = ?$

6. a) Determine the total resistance of the resistors in the circuit shown below.

b) What is the voltage supplied by the power source?