

Name: _____

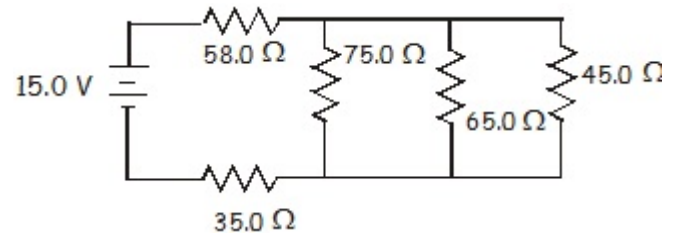
1. A television set draws 2.55 A when operated on 120 V. (a) What is the resistance of the set? (b) How much power does the set use? (c) If the set is operated for 5.0 hours per day, what energy in kWh (kilowatt hour) does it consume in one month (30.0 days). (d) At \$ 0.055 per kWh, what is the cost of operating the set for the one month time period?

2. A 2.50 pF capacitor is connected to a 12.0 V battery. What is the charge on the capacitor?

3. A parallel plate capacitor has an area of 1.90 cm^2 . Plate separation is 0.0850 mm. What is its capacitance?

4. 112.5 μF capacitor connected across 9.00 V battery. Find the potential energy stored in the capacitor.

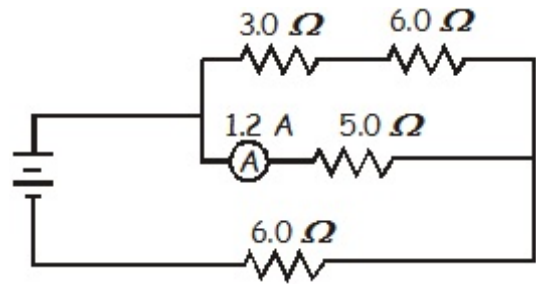
5. Given this lovely circuit: (a) Find the equivalent resistance for this circuit. (b) Find the current supplied by the battery. (c) Find the current through the $65.0\ \Omega$ resistor.



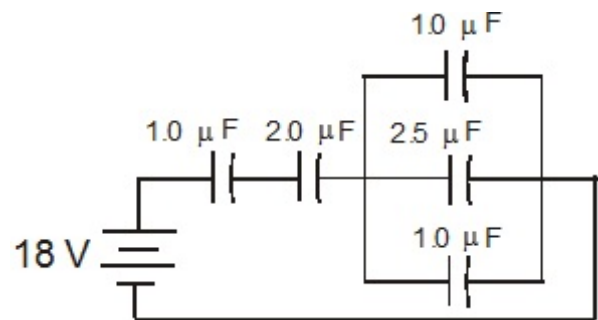
6. An electron is accelerated from rest through a potential difference of 9.0 V. Find (a) the energy of the particle, and (b) the speed of the particle.

7. A battery is rated at 9.00 V. It delivers a current of 117 mA when connected to a $75.0\ \Omega$ load. Find the internal resistance of the battery.

8. Find the electric potential of the battery.



9. The battery is connected to the circuit for a long time so that all the capacitors are fully charged up. Find (a) the total capacitance for this circuit and (b) the charge stored on the $2.5\ \mu\text{F}$ capacitor.



10. Draw in the lines of force between the two identical charges as shown below.



11. In this circuit, A, B, C, and D are identical light bulbs. Assume the battery maintains a constant potential difference between its terminals (the internal resistance of the battery is assumed to be negligible) and the resistance of each light bulb stays constant.

- Draw a diagram of the circuit using the appropriate symbols.
- List the bulbs in order of brightness, from brightest to least bright. If any two bulbs have the same brightness, state which ones. Justify your answers.
- Describe the change in brightness, if any, of bulb A when bulb D is removed from its socket. Justify your answer.
- Describe the change in brightness, if any, of bulb B when bulb D is removed from its socket. Justify your answer.

