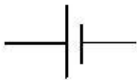
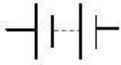



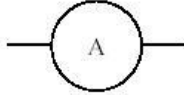
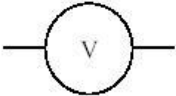

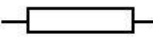
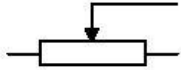
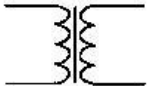



When solving the problems in this set, use this list of IB circuit symbols.

Electrical Circuit Symbols

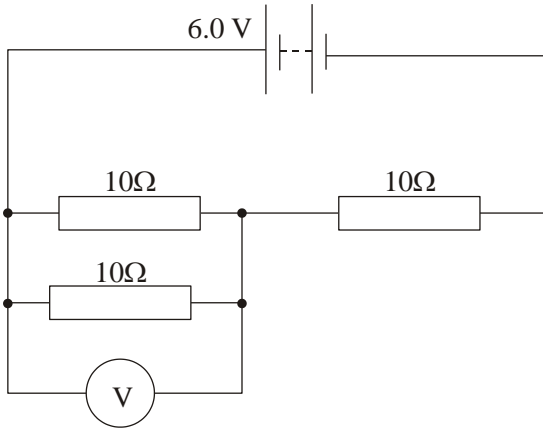
cell		battery	
lamp		ac supply	
switch		ammeter	
voltmeter		galvanometer	
resistor		potentiometer	
transformer		heating element	

- Three resistors, $5.0\ \Omega$, $10.0\ \Omega$, $15.0\ \Omega$, are connected in series across a voltage of $60.0\ \text{V}$.
 - Draw the circuit diagram.
 - Find the total resistance, R_{total} .
 - Find the current in the circuit.
 - Find the potential difference (voltage) across each resistor.

- The same resistors from #1 are now connected in parallel.
 - Draw the circuit diagram.
 - Find the total resistance, R_{total} .
 - Find the total current in the circuit.
 - Find the current through each resistor.

- A $15.0\ \Omega$ resistor is connected in series to two resistors, a $20.0\ \Omega$ and a $10.0\ \Omega$ connected in parallel. The whole circuit is then connected to a voltage of $60.0\ \text{V}$.
 - Draw the circuit diagram.
 - Find the total resistance, R_{total} .
 - Find the total current in the circuit.
 - Find the current through each resistor.

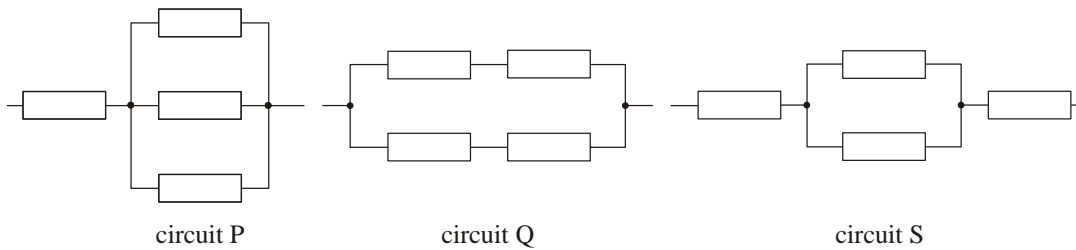
4. In the circuit below the battery has emf 6.0 V and negligible internal resistance. The three resistors each have resistance $10\ \Omega$. A high resistance voltmeter is connected as shown.



The reading of the voltmeter is

- (a) 2.0 V. (b) 3.0 V.
(c) 4.0 V. (d) 6.0 V.

5. The resistors in each of the circuits shown below each have the same resistance, $2.0\ \Omega$.



Which of the following gives the circuits in order of **increasing** total resistance?

- (a) P Q S (b) Q P S
(c) S Q P (d) P S Q
6. The work done on a positive point charge of magnitude $3.0\ \text{nC}$ as it is moved at constant speed from one point to another is $12\ \text{nJ}$. The potential difference between the two points is
- (a) 0.0 V (b) 0.25 V (c) 4.0 V (d) 36 V
7. A conductor of constant resistance dissipates $6.0\ \text{W}$ of power when the potential difference across it is $12\ \text{V}$. The power that will be dissipated in this conductor when the potential difference across it is $24\ \text{V}$ is
- (a) 6.0 W (b) 12 W (c) 24 W (d) 48 W

8. Three resistors, each of resistance $6.0\ \Omega$, are connected as shown below. Calculate the total resistance for this arrangement.

