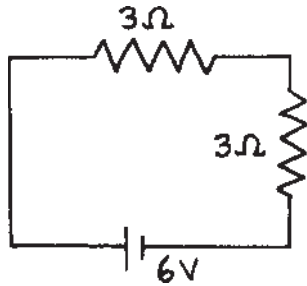
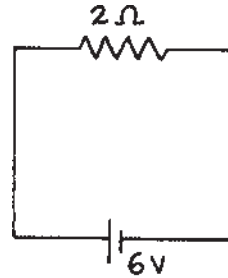


**Concept-Development
Practice Page** **35-1**

Series Circuits

1. In the circuit shown at the right, a voltage of 6 V pushes charge through a single resistor of $2\ \Omega$. According to Ohm's law, the current in the resistor (and therefore in the whole circuit) is _____ A.



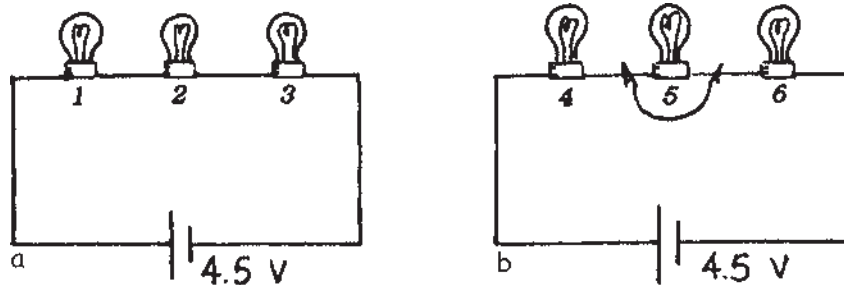
2. If a second identical lamp is added, as on the left, the 6-V battery must push charge through a total resistance of _____ Ω . The current in the circuit is then _____ A.
3. The equivalent resistance of three 4- Ω resistors in series is _____ Ω .

4. Does current flow *through* a resistor, or *across* a resistor? _____

Is voltage established *through* a resistor, or *across* a resistor? _____

5. Does current in the lamps occur simultaneously, or does charge flow first through one lamp, then the other, and finally the last in turn?

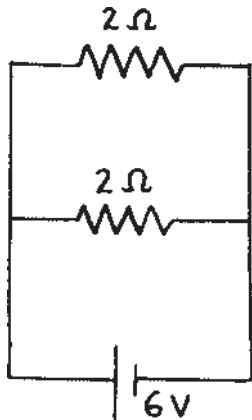
6. Circuits (a) and (b) below are identical with all bulbs rated at equal wattage (therefore equal resistance). The only difference between the circuits is that Bulb 5 has a short circuit, as shown.



- In which circuit is the current greater? _____
- In which circuit are all three bulbs equally bright? _____
- What bulbs are the brightest? _____
- What bulb is the dimmest? _____
- What bulbs have the largest voltage drops across them? _____
- Which circuit dissipates more power? _____
- What circuit produces more light? _____

Parallel Circuits

1. In the circuit shown below, there is a voltage drop of 6 V across *each* 2-Ω resistor.

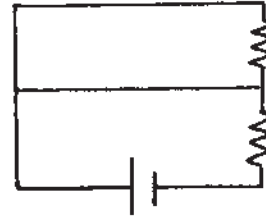
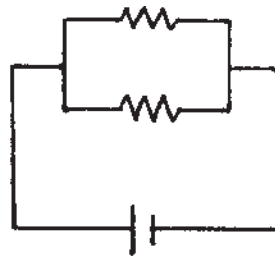
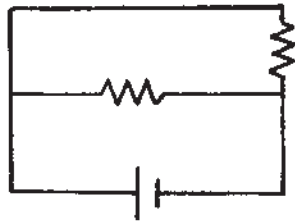
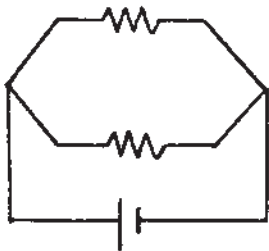


- By Ohm's law, the current in *each* resistor is _____ A.
- The current through the battery is the sum of the currents in the resistors, _____ A.
- Fill in the current in the eight blank spaces in the view of the *same circuit* shown again at the right.

THE SUM OF THE CURRENTS IN THE TWO BRANCH PATHS EQUALS THE CURRENT BEFORE IT DIVIDES.

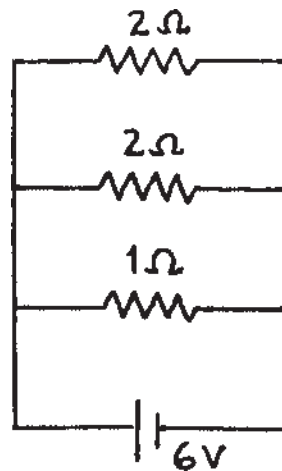


2. Cross out the circuit below that is *not* equivalent to the circuit above.



3. Consider the parallel circuit at the right.

- The voltage drop across each resistor is _____ V.
- The current in each branch is:
 - 2-Ω resistor _____ A
 - 2-Ω resistor _____ A
 - 1-Ω resistor _____ A
- The current through the battery equals the sum of the currents which equals _____ A.
- The equivalent resistance of the circuit equals _____ Ω.



THE EQUIVALENT RESISTANCE OF A PAIR OF RESISTORS IN PARALLEL IS THEIR PRODUCT DIVIDED BY THEIR SUM!



CONCEPTUAL PHYSICS