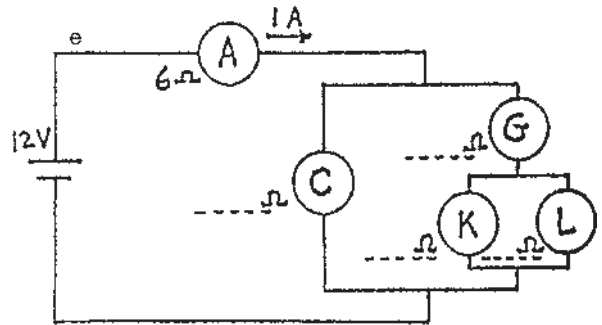
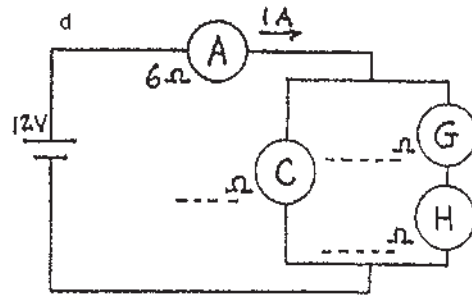
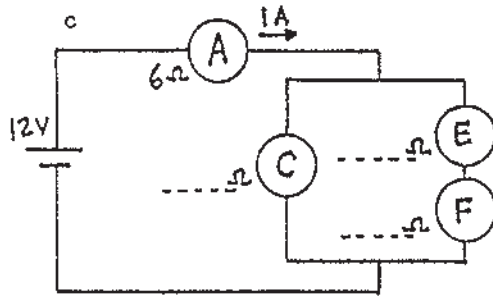
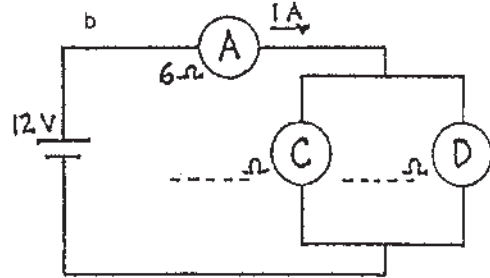
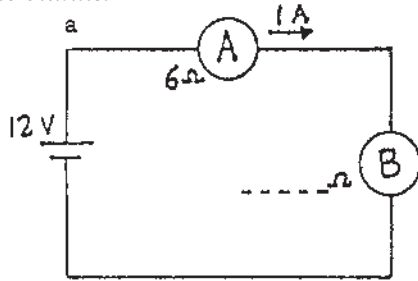


Concept-Development Practice Page 35-3

Circuit Resistance

All circuits below have the same lamp A with resistance of $6\ \Omega$, and the same 12-volt battery with negligible resistance. The unknown resistances of lamps B through L are such that the current in lamp A remains 1 ampere. *Fill in the blanks.*

Figure what the resistances are, then show their values in the blanks to the left of each lamp.



Circuit a: How much current flows through the battery? _____ A

Circuit b: Assume lamps C and D are identical. Current through lamp D is _____ A.

Circuit c: Identical lamps E and F replace lamp D. Current through lamp C is _____ A.

Circuit d: Lamps G and H replace lamps E and F, and the resistance of lamp G is twice that of lamp H. Current through lamp H is _____ A.

Circuit e: Identical lamps K and L replace lamp H. Current through lamp L is _____ A.

Handy rule: For a pair of resistors in parallel:
 Equivalent resistance = $\frac{\text{product of resistances}}{\text{sum of resistances}}$



The equivalent resistance of a circuit is the value of a single resistor that will replace all the resistors of the circuit to produce the same load on the battery. How do the equivalent resistances of the circuits a through e compare?

CONCEPTUAL PHYSICS