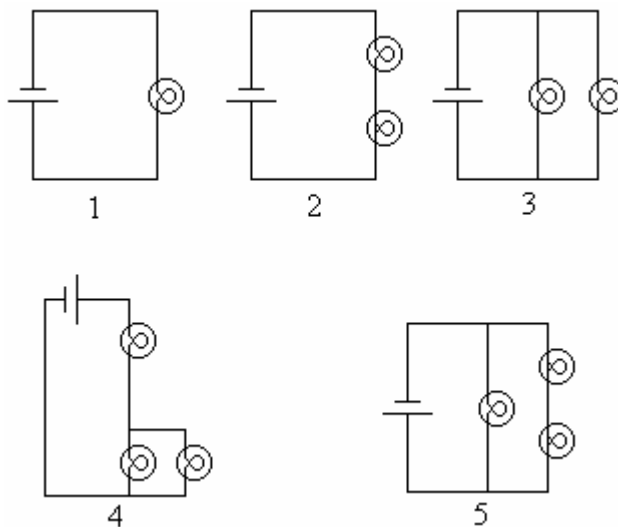


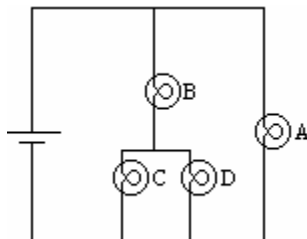
## UNIT 8 EXERCISES

1) (from Lillian C. McDermott and the Physics Education Group, *Physics by Inquiry Volume II*, John Wiley and Sons, NY, 1996.)

Rank the current through the battery for each of the following circuits. Explain your reasoning.



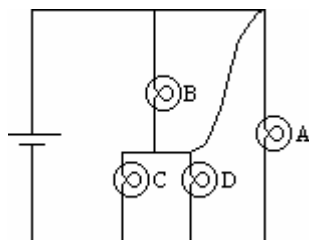
2) Consider the following circuit.



a) If bulb D were removed from the circuit, would the current through

- (i) bulb A increase, decrease or remain the same? Explain your reasoning.
- (ii) bulb B increase, decrease or remain the same? Explain your reasoning.
- (iii) the battery increase, decrease or remain the same? Explain your reasoning.

b) If a wire were added to the circuit as shown in the diagram below,

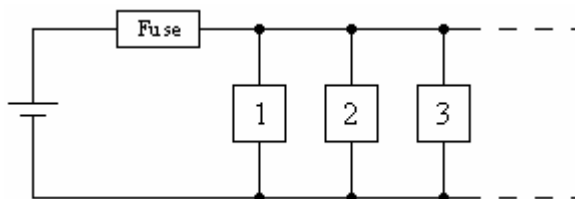


would the current through

- (i) bulb A increase, decrease or remain the same? Explain your reasoning.
- (ii) bulb B increase, decrease or remain the same? Explain your reasoning.
- (iii) the battery increase, decrease or remain the same? Explain your reasoning.

3) (from Lillian C. McDermott and the Physics Education Group, *Physics by Inquiry Volume II*, John Wiley and Sons, NY, 1996.)

Below is a diagram showing a typical household circuit. The appliances (lights, television, toaster, ect.) are represented by boxes labeled 1, 2, 3, and so on.



A fuse or circuit breaker is intended to shut off the circuit if the wires in the circuit get hot enough to pose a threat of fire. The wires in a circuit (which in a house are in the walls) are hotter when more current is flowing through them. A fuse or circuit breaker is sensitive to the amount of current passing through it. A fuse will heat up and burn out (melt) when too large a current flows through it. A circuit breaker will open a switch and break the circuit when too large a current flows.

What happens to the current through the fuse in the circuit above when more appliances are added to the circuit? Explain.