Predicting and measuring current

A circuit is composed of two batteries, two identical long bulbs, and an initially uncharged capacitor. Three compasses are placed on the desktop underneath the wires, all pointing north before the circuit is closed. Then the gap in the wire is closed, and the compass on the left immediately shows about a 20° deflection.



Two long bulbs in parallel connected to a capacitor.

(a) On a diagram, draw the new needle positions on all three compasses at this time, and write the approximate angle of deflection beside the compasses labeled A and B. Explain carefully.

When this experiment was performed with one of the bulbs removed from its socket, the single bulb glowed for *T* seconds.

(b) In the two-bulb circuit shown in Figure, predict how long the two bulbs would glow (in terms of *T*). Explain carefully.