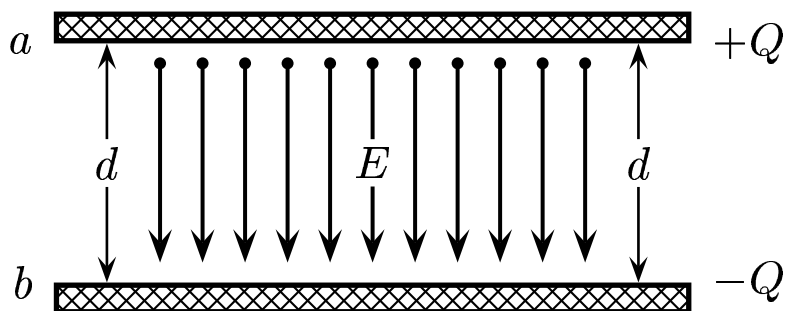


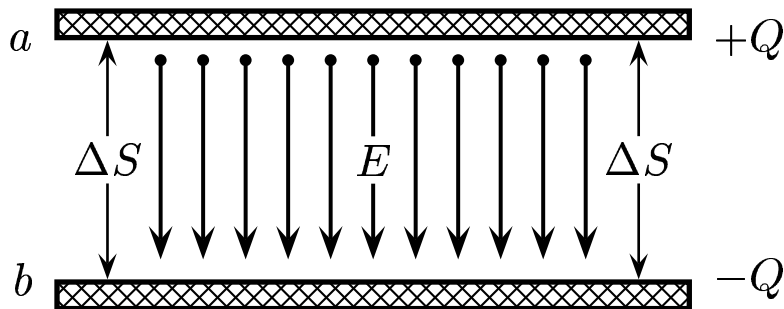
Two plates  $a$  and  $b$  are separated by a distance  $d$ . The “plate charge” is  $Q$ . Between the gap  $E$  is constant.



Find the potential difference  $\Delta V_{ba} = V_a - V_b$ .

- A)  $\Delta V_{ba} = E d$
- B)  $\Delta V_{ba} = -E d$
- C)  $\Delta V_{ba} = \frac{E d}{2}$
- D)  $\Delta V_{ba} = -\frac{E d}{2}$

From the sketch,  $\Delta V_{ba} = V_a - V_b = -E \Delta S \cos 180^\circ = E d$ .



An independent check, we recall that the natural tendency for a positive charge is to move along  $E$ . So  $V_a > V_b$ . The sign is therefore correct.

Answer **A**.

26.02-04 A Parallel Plate Capacitor 2004-3-24