Trapezoid in Constant Field + Q

$$\vec{E} = E_0 \hat{x}$$

Label faces:
1: $x = 0$
2: $z = +a$
3: $x = +a$
4: slanted

Define Φ_n = Flux through Face n
Φ = Flux through Trapezoid
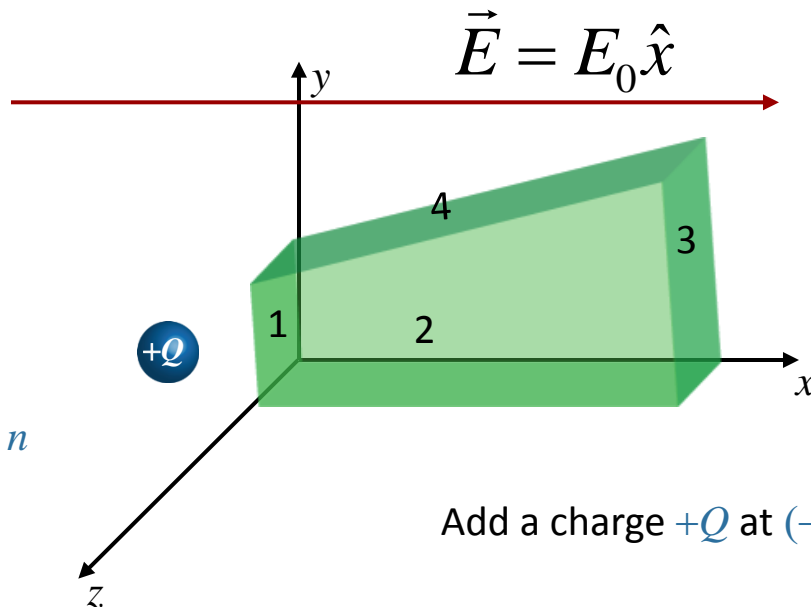
Add a charge $+Q$ at $(-a, a/2, a/2)$

How does Flux change?
Note (-6 < -4) sign matters

A) Φ_1 increases

B) Φ_1 decreases

C) Φ_1 remains same

A) Φ_3 increases

B) Φ_3 decreases

C) Φ_3 remains same

A) Φ increases

B) Φ decreases

C) Φ remains same