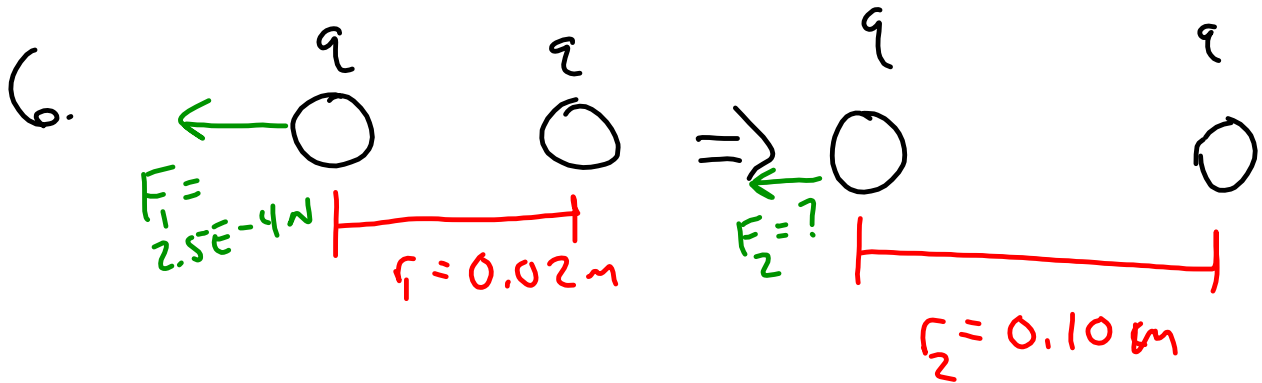


# Coulomb's Law PS



$$F_1 = \frac{kq^2}{r_1^2}$$

$$F_1 = \frac{kq^2}{r_1^2}$$

$$q = \sqrt{\frac{F_1 r_1^2}{k}}$$

$$F_2 = \frac{kq^2}{r_2^2}$$

$$F_2 = \frac{kq^2}{r_2^2}$$

$$F_2 = \frac{k \left( \sqrt{\frac{F_1 r_1^2}{k}} \right)^2}{r_2^2}$$

$$F_2 = \frac{\cancel{k} F_1 r_1^2}{\cancel{k} r_2^2}$$

$$F_2 = \frac{F_1 r_1^2}{r_2^2}$$

$$= \frac{(2.5 \times 10^{-4} \text{ N})(0.02 \text{ m})^2}{(0.1 \text{ m})^2}$$

$$= 1 \times 10^{-5} \text{ N}$$

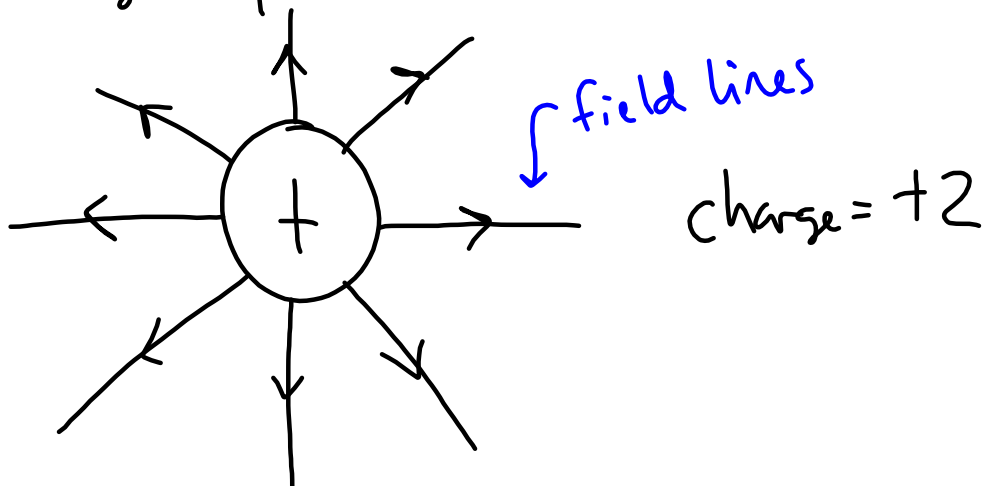
# ELECTRIC FIELDS

- In general, fields and forces are related:

$$- F = -\frac{dU}{dx} \quad \begin{array}{l} U \rightarrow \text{field} \\ x \rightarrow \text{position} \end{array}$$

$$- U = \int F dx$$

- Charged particles:



Draw number of field lines proportional to charge.

