1. The goal of the solution of this problem is to obtain an expression with q alone on one side of the equation. At the outset q is on the right hand side of the equation where it is multiplied by E.

The inverse operation to multiplication is division, so we must divide the right hand side of the equation by E in order to undo the multiplication. This is the result of a basic law of algebra that states that if we perform an operation, such as division, on one side of the equation we must perform the same operation on the other side of the equation. The steps of the solution are:.

$$F = q\, E$$

$$F / E = q\, (E / E) \qquad \text{(both sides of the equation were divided by E)}$$

$$F / E = q$$

Note that the E / E terms on the right hand side of the equation cancel.

We customarily express an equation with the solitary variable on the left hand side or q = F / E.