21-P-MOM-GD-001

A m kg cannon ball is fired straight up in the air. The cannon ball leaves the barrel at v_2 m/s. What is the impulse exerted on the cannon ball by the explosive charge? If the charge exerts a constant force of F N while exploding, what is the duration of the charge?

(Ignore impulse from gravity)

given m, v_1, v_2, F

find J, t

Impulse and Momentum

$mv_1 + J = mv_2$ ($v_1 = 0$)

$J = mv_2$ $\qquad J = Ft \rightarrow t = J/F$