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Q9. $d_1 = 2.2m - 0.27m = 1.93m$

$E_1 = \frac{1}{2}kx_1^2$

$E_1 = \frac{1}{2}mv_1^2$

$H = \frac{1}{2}gt_1^2$

$D = v_1 t_1 = d_1$

$\therefore d = \sqrt{\frac{2Hkx^2}{mg}}$

$d_1 = 1.93 = \sqrt{\frac{2Hkx^2}{mg}}$

$\therefore \frac{d^2}{x^2} = \frac{2Hk}{mg} = \text{constant}$

$\therefore \frac{d_1^2}{x_1^2} = \frac{d_2^2}{x_2^2} \quad \therefore \frac{(1.93m)^2}{(0.011m)^2} = \frac{(2.2m)^2}{x_2^2}$

$\therefore x_2 \simeq 0.0125m = 1.25cm$

$\therefore$ Compress spring for 1.25 cm