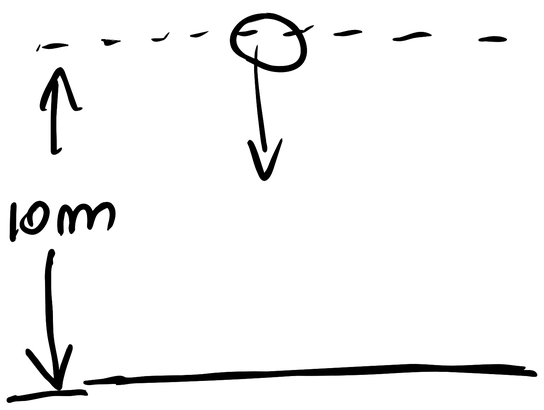
3_ENERGY



A 10m del suelo:

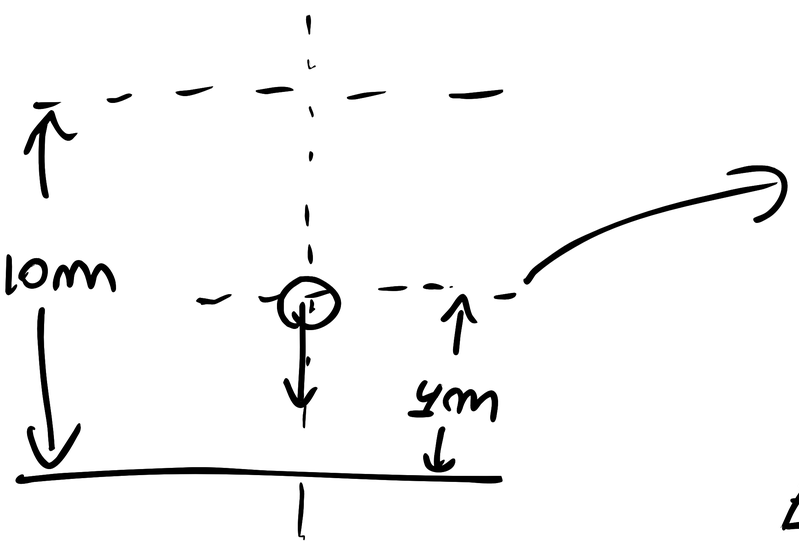
a) $E_p = m \cdot g \cdot h = (1\,kg)\left(9'8\,\frac{m}{s^2}\right)\cdot(10\,m)$

$E_p = 98\ N\cdot m \equiv 98\ J = E_p$

$E_c = \frac{1}{2} m \cdot v^2 = \frac{1}{2}\cdot m \cdot (0)^2 = 0$

$E_T = E_c + E_p = 98\ J$

b) **A 4m del suelo:**



$E_p = m \cdot g \cdot h = (1\,kg)\left(9'8\,m/s^2\right)(4\,m)$

$E_p = 39'2\ J$

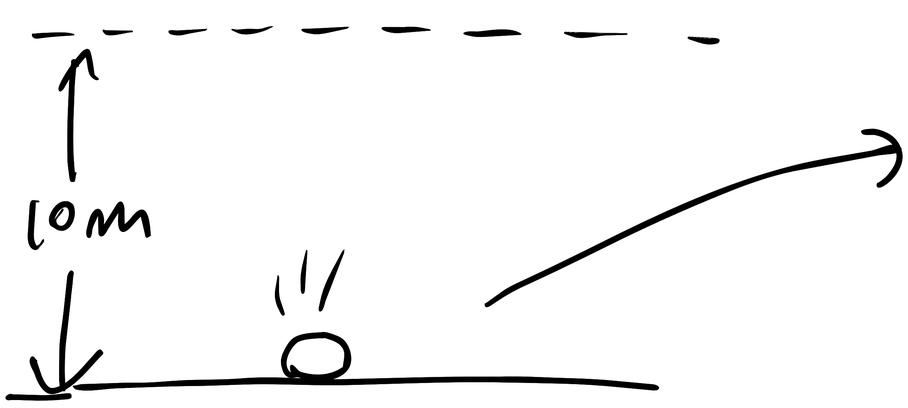
$E_T = 98\ J = E_c + E_p \Rightarrow E_c = E_T - E_p$

$E_c = (98 - 39'2)\ J = 58'8\ J$

$E_c = \frac{1}{2} m v^2 \Rightarrow v^2 = \frac{2 \cdot E_c}{m} \rightarrow v = \sqrt{\frac{2 \cdot E_c}{m}}$

$v = \sqrt{\frac{2\cdot(58'8\,J)}{1\,kg}} = \sqrt{117'6\ \frac{kg \cdot \frac{m^2}{s^2}}{kg}} \Rightarrow v = 10'84\ m/s$

c) **En el suelo:**



$E_p = m \cdot g \cdot h = m \cdot g \cdot 0 = 0$

$E_T = E_c + E_p \Rightarrow E_c = E_T - E_p$

$E_c = 98\,J - 0 = 98\,J$

$E_c = 98\,J = \frac{1}{2} m v^2 \Rightarrow v = \sqrt{\frac{2 \cdot E_c}{m}} = \sqrt{\frac{2 \cdot 98\,J}{1\,kg}} = 14\ m/s$