A 68 kg snowboarder is moving down the incline shown at 7.2 m/s. While sliding down the incline he generates 680 J of heat. At the base of the incline he hits a jump and becomes airborne. At the top of his arc he is traveling at 4.4 m/s. What is his maximum height? (Ignore air resistance)

$$h = 9.0\text{ m}$$

$$h = ?$$
\[ E_{ki} + E_{pi} = E_{kf} + E_{pf} + E_h \]

\[ E_{pf} = E_{ki} + E_{pi} - E_{kf} - E_h \]
\[ = \frac{1}{2}mv_i^2 + v_i h_i - \frac{1}{2}mv_f^2 - E_h \]
\[ = \frac{1}{2}(68)(7.2)^2 + (68)(9.8)(9.0) - \frac{1}{2}(68)(4.4)^2 - 680 \]
\[ = 6422 \text{ J} \checkmark \]

\[ E_{pf} = mgh_f \quad h_f = \frac{E_p}{mg} = \frac{6422}{(68)(9.8)} = 9.6 \text{ m} \]