

**21-P-WE-AG-020**

A  $W$  kg rock-climber cautiously begins their descent down the steep slope of Stawamus Chief mountain in Squamish. If the rock-climber does  $W$  Joules of work, how far down did they descend in feet?

ANSWER:

The work done by a weight is described by the equation:

$$U_{1-2} = F \cdot d = -W \cdot 9.81 \frac{m}{s^2} \cdot \Delta y$$

Therefore, the distance of descent can be found via

$$\Delta y = \frac{U_{1-2}}{-W \cdot 9.81 \frac{m}{s^2}}$$

Then, the distance should be converted into feet.

$$\frac{\Delta y \text{ meters}}{0.3048 \frac{\text{meters}}{\text{foot}}} = \Delta y \text{ feet}$$