Task. Skier is going downhill starting from rest and accelerating at a constant $a = 2.0\,m/s^2$. If it takes her $t = 15$ seconds to reach the bottom, what is the length of the slope?

Solution. The skier moved with constant acceleration a and initial velocity $v_0 = 0\ m/s$ during time $t = 15\ s$. The general formula for the distance passed by the skier has the following form:

$$d = v_0 t + \frac{at^2}{2}.$$

Substituting values we get that

$$d = v_0 t + \frac{at^2}{2} = 0 * 15 + \frac{2 * 15^2}{2} = 225\ m.$$