1. A projectile is fired at an upward angle of 35.0 degrees from the top of a 225-m cliff with a speed of 235m/s . What will be its speed when it strikes the ground below? (Use conservation of energy.)

$\alpha = 35^0$ $h = 225\,m$ $v_0 = 235\frac{m}{s}$ $g = 9.8\frac{m}{s^2}$	*Solution.* Let use the law of conservation and transformation of energy: the increasing of the kinetic energy is due to the decreasing the potential energy of the projectile. $\frac{m v_1^{\,2}}{2} - \frac{m v_0^{\,2}}{2} = mg \cdot h.$ One can find the speed of the projectile when it strikes the ground below: $\boxed{v_1 = \sqrt{v_0^{\,2} + 2gh}}.$
$v_1 - ?$	

Let check the dimension.

$$[v_1] = \sqrt{\left(\frac{m}{s}\right)^2 + \frac{m}{s^2} \cdot m} = \sqrt{\frac{m^2}{s^2}} = \frac{m}{s}.$$

Let evaluate the quantity.

$$v_1 = \sqrt{235^2 + 2 \cdot 9.8 \cdot 225} \approx 244\left(\frac{m}{s}\right).$$

Answer: $224\frac{m}{s}$.