Question #53035, Physics

You get fed up and throw your 1.5kg science text book 10 m into the air. For punishment, your teacher makes you calculate the speed of the book as it hits the ground. What is the answer?

Answer the question:

According to the law of conservation of energy, the potential energy of the books at the height *h* of 10 m, converted into kinetic energy that is:

$E_p = E_k$,

$E_p = mgh$, - the potential energy of the body at the height *h* above the ground.

$E_K = \frac{mv^2}{2}$, - the kinetic energy of the book as it hits the ground,

where m – mass of the book, v – speed of the book.

$mgh = \frac{mv^2}{2}$,

$2gh = v^2$,

$v = \sqrt{2gh}$,

$v = \sqrt{2 \cdot 9{,}8 \frac{m}{s^2} \cdot 10m} = 196\ m/s.$

A: The speed of the books as it hits the ground is 196 m / s.