Answer **on Question #67761 – Physics – Mechanics | Relativity**

A block of $10\ g$ slides on smooth horizontal surface with $20\ ms^{-1}$ towards a spring of a spring constant $100\ N/m$ placed horizontally . What the maximum compression in the spring is?

Solution.

The law of conservation and transformation of energy can be applied. The kinetic energy of the block is converted into the potential energy of the spring:

$$\frac{Mv^2}{2} = \frac{kx^2}{2}; Mv^2 = kx^2; x = v\sqrt{\frac{M}{k}} = 20 \times \sqrt{\frac{0.01}{100}} = \frac{20}{100} = 0.2\ m.$$

Answer: $0.2\ m$