

### Answer on Question #68278- Physics / Mechanics | Relativity

A  $m = 5.0$  kg block is dropped from a height of  $h = 0.5$  m onto a vertical spring whose force constant is  $k = 2050$  N/m. Find the maximum distance that the spring will be compressed.

**Solution:**

From the conservation energy law

$$mgh = \frac{kx^2}{2}.$$

Thus the maximum distance that the spring is compressed

$$x = \sqrt{\frac{2mgh}{k}} = \sqrt{\frac{2 \times 5.0 \times 9.8 \times 0.5}{2050}} = 0.15 \text{ m.}$$

**Answer:** 0.15 m.

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