

**Answer on Question 49994, Physics, Mechanics — Kinematics — Dynamics** An object of 2 kg released from a height of 80 m falls on a soft ground and comes to rest after penetrating to a depth of 20 cm. Calculate the force offered by the ground.

Solution

We will use energy conservation law here. Potential energy of object  $mgh$  at the beginning is equal to work done, during penetrating the ground. Hence

$$mgh = F\Delta l$$

$$F = \frac{mgh}{\Delta l} = \frac{2 \cdot 9.8 \cdot 80}{0.2} \approx 7840 \text{ N}$$