Answer on Question #69668 – Physics – Classical Mechanics | Relativity

A ball thrown vertically upwards from the ground level hits the ground after 4 seconds. Calculate the maximum height it reached during its journey.

Solution. The time and the distance of the climb is equal to the time of the fall, because all motion happens in the same gravitational field, i.e. with the same acceleration. At the top of the trajectory speed is zero, so we have then:

$$s = \frac{gt^2}{2} \approx 9.81 \ ms^{-2} \times (2s)^2 \times \frac{1}{2} = 19.62 \ m.$$

Answer. $19.62 \ m.$