**Task #1**

A 10-kg ball rolling down a hill accelerates from rest to 25 m/s in a time period of 2.7 seconds. How much work was done if it rolled a total distance of 33.75 m?

**Solution:**

$$a = \frac{25 - 0}{2.7} = 9.26\,\mathrm{m/s^2}$$
$$F_{NET} = (10)(9.26) = 92.6\,\mathrm{N}$$
$$W = (92.6)(33.75) = 3125.25\,\mathrm{J}$$

Extension: what is the kinetic energy? (should be same as work

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**Task #2**

A certain cart has a mass of 450 kg and a kinetic energy of 100 000 J. How far will it go in 3.25 s?

**Solution:**

$$100000 = \frac{1}{2}(450)v^2$$
$$444.44 = v^2$$
$$21.08\,\mathrm{m/s} = v$$

$$21.08 = \frac{d}{3.25}$$
$$68.51\,\mathrm{m} - d$$