## Mechanical work, energy and performance

1. A car with mass $1,2 t$ moves with a constant acceleration of $15 \mathrm{~m} \cdot \mathrm{~s}^{-2}$. Calculate what work the car's engine will do on a 600 m if we neglect the friction between the road and the wheels of the car.
2. A stone weighing $60 m$ falls from a $60 m$ high tower. Definitely the kinetic and potential energy of the stone at the end of the 3 second of its free fall.
3. The roof of the cottage was damaged by a stone weighing 30 kg , which originally hung over the cottage in the amount of 20 m . Calculate the speed at which the stone hit the roof of the cottage. Use Energy conservation law.
4. Determine the performance of a person who has lifted using a fixed pulley a cement bag weighing 50 kg to a height of $1,5 \mathrm{~m}$ for $7,5 \mathrm{~s}$ with a uniform motion.
5. The tractor moves at a speed of $2,88 \mathrm{~km} \cdot \mathrm{~h}^{-1}$ and has an performance of 110 kW . How much force does it influence on the plow?
