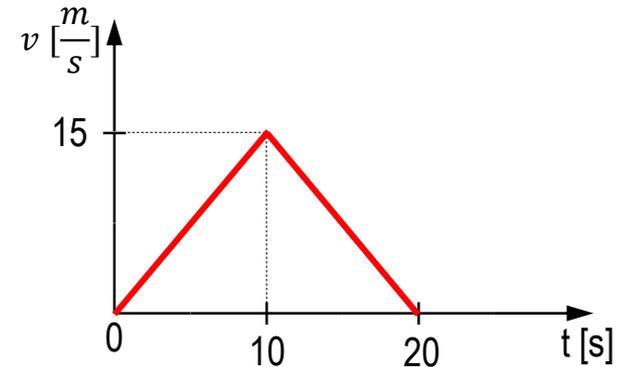


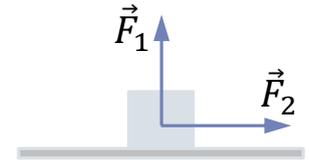
PROBLEMS

1. A car speeds up from 12m/s to 20m/s in $6,4\text{s}$. If its mass is 1200kg , what force must its engine provide?
2. A train with a mass of 500t is uniformly retarded by applying its brake. Its velocity drops from 60km/h to 20km/h in 25 seconds. Find the braking force.
3. An automobile of mass 2000kg moving at 30m/s is braked suddenly with a constant breaking force of 10000N . How far does the car travel before stopping?
4. An initially stationary electron ($m_e = 9,1 \cdot 10^{-31}\text{kg}$) undergoes a constant acceleration through 2cm reaching $4 \cdot 10^6\text{m/s}$. What is the magnitude of the force accelerating the electron?
5. A force produces an acceleration of 10m/s^2 in a body of mass m_1 , and the same force produces an acceleration of 2m/s^2 in another body of mass m_2 . If the same force is applied to $m_1 + m_2$ then the acceleration will be?
6. Graph shows the variation of the velocity of a moving object ($m=1200\text{kg}$) with time. Draw the graph showing the variation of the force with time.



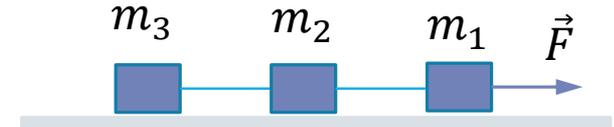
7. A crane is used to hoist a load of mass 500kg. The load is suspended by a cable. The load is lifted upward with constant acceleration $0,5m/s^2$. Find the tension force in the cable.

8. Two forces $F_1 = 3N$ and $F_2 = 4N$ act a 0,5 kg object. Find the acceleration of the object? Friction is negligible.



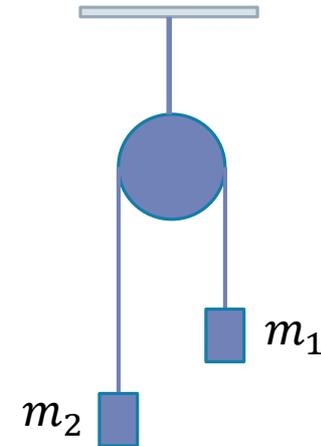
9. Three connected blocks are pulled to the right on a horizontal frictionless table by a force of magnitude $F=12N$. If $m_1 = 1kg$, $m_2 = 2kg$, $m_3 = 3kg$ calculate:

- a) the magnitude of the systems acceleration
- b) the tension force T_1
- c) the tension force T_2



10. Picture shows two blocks connected by a cord (of negligible mass) that pass over a frictionless pulley (also of negligible mass). One block has mass $m_1 = 10g$, other has mass $m_2 = 30g$. Calculate:

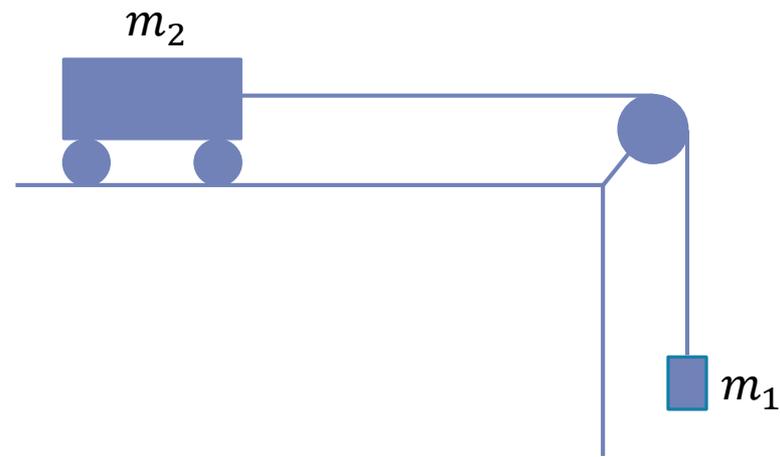
- a) the magnitude of the blocks acceleration
- b) the tension force in the cord



11. In picture, cart of mass $m_2 = 100g$, and block of mass $m_1 = 20g$, are connected with cord. When the system is released from rest, calculate:

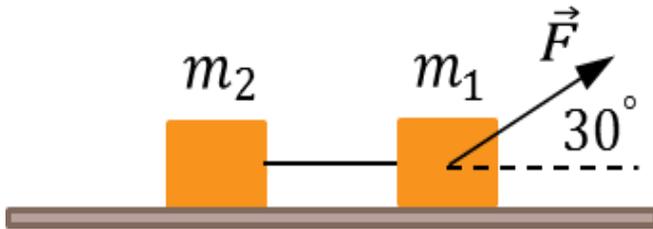
- the magnitude of the system acceleration
- the tension force in the cord

Negligible friction at its axle and negligible the mass of cord.



12. Two connected blocks are pulled to the right on a horizontal frictionless table by a force of magnitude $F=1,73N$ (picture). If $m_1=1kg$, $m_2=2kg$, calculate:

- the magnitude of the system's acceleration
- the tension force



13. A bar is moving downward along a $2.82m$ long frictionless incline plane with a slope 45° . If the bar starts from rest, what will be the bar's velocity when it reaches the bottom of the plane?