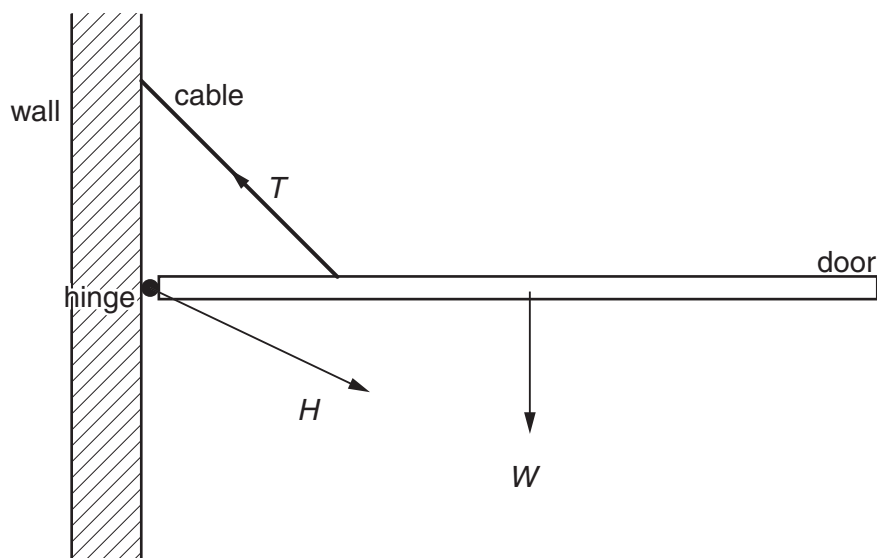


- 15 A force F is applied to a freely moving object. At one instant of time, the object has velocity v and acceleration a .

Which quantities **must** be in the same direction?

- A a and v only
B a and F only
C v and F only
D v , F and a
- 16 A hinged door is held closed in the horizontal position by a cable.
- Three forces act on the door: the weight W of the door, the tension T in the cable, and the force H at the hinge.



Which list gives the three forces in **increasing** order of magnitude?

- A H, T, W B T, H, W C W, H, T D W, T, H
- 17 A mass is raised vertically. In time t , the increase in its gravitational potential energy is E_p and the increase in its kinetic energy is E_k .

What is the average power input to the mass?

- A $(E_p - E_k)t$
B $(E_p + E_k)t$
C $\frac{E_p - E_k}{t}$
D $\frac{E_p + E_k}{t}$