

**Task.** A body X of mass 5 kg is moving with velocity 20 m/s, while another body Y of mass 20 kg is moving with velocity 5 m/s. Compare the momentum of the two bodies.

**Solution.** If the body of mass  $m$  is moved with velocity  $v$ , then, by definition, its momentum is equal to

$$p = mv.$$

Thus for the body X its momentum is

$$p_X = 5 * 20 = 100 \text{ kg m/s},$$

and the momentum of the body Y is

$$p_Y = 20 * 5 = 100 \text{ kg m/s}.$$

So they have the same momentums, though their masses and velocities are different.