

**Task:**

An airplane's velocity is doubled. a) What happens to its momentum? b) Is the law of conservation of momentum obeyed?

**Solution:**

- a)  $p = mv \rightarrow$  if  $v$  doubles then  $p$  doubles.
- b) The momentum would only stay the same if the mass is halved at the same time the velocity is doubled. But the system can't be called closed. What source added the speed to the plane? If that change of speed resulted in a loss of speed from this other object, then sure, momentum could be conserved. But this mechanism was not made clear in the task.