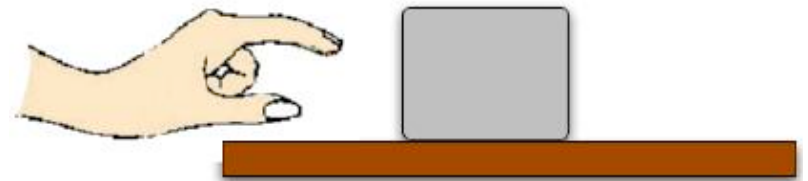


A block sitting on a smooth table was given a push. It slides across the table and comes to a stop. After the push is complete but before the block has stopped, which of the following statements are (pretty close to being) true?



1. The mechanical energy of the block is conserved.
2. The mechanical plus thermal energy of the block is conserved.
3. The mechanical energy of the block plus table is conserved.
4. The mechanical plus thermal energy of the block plus table is conserved.
5. Mechanical + thermal energy is not conserved in this process.



Suppose an isolated box of volume $2V$ is divided into two equal compartments. An ideal gas occupies half of the container and the other half is empty. When the partition separating the two halves of the box is removed and the system reaches equilibrium again, how does the new internal energy of the gas compare to the internal energy of the original system?



1. The internal energy increases
2. The internal energy decreases
3. The internal energy stays the same
4. There is not enough information to determine the answer

