

- 8 A satellite of mass 6.9×10^2 kg orbits the Earth along a circular path of radius 7.2×10^6 m. Its orbital speed is 7.5 km s^{-1} .

A rocket engine on the satellite is fired. The satellite falls into a lower orbit of radius 6.5×10^6 m where its orbital speed becomes 7.9 km s^{-1} .

Which statement about the change to the total energy of the satellite caused by the rocket burn is correct?

mass of the Earth = 6.0×10^{24} kg

- A The satellite gains approximately 2×10^9 J.
- B The satellite gains approximately 3×10^9 J.
- C The satellite loses approximately 2×10^9 J.
- D The satellite loses approximately 4×10^9 J.

