

16 Internal energy – Part 1 —Answers

Answers

Work through these after trying the questions yourself.

16.1 The random kinetic energy of the molecules and the potential energy between them.

16.2 Zero (intermolecular forces are ignored).

16.3 Their random kinetic energy.

16.4 The thermodynamic temperature (in kelvin).

16.5 $U \propto T$, and T rises from 200 to 800 K —a factor of 4 —so U rises by a factor of 4.

16.6 Internal energy is the *random* kinetic and potential energy of the molecules inside the ball. The kinetic energy of flight is the *ordered* motion of the whole ball moving together —a separate thing. Throwing the ball faster adds flight energy but does not change its internal energy.