

Q9.7

A thin, very light wire is wrapped around a drum that is free to rotate. The free end of the wire is attached to a ball of mass  $m$ . The drum has the same mass  $m$ . Its radius is  $R$  and its moment of inertia is  $I = (1/2)mR^2$ . As the ball falls, the drum spins.

At an instant that the ball has translational kinetic energy  $K$ , the drum has rotational kinetic energy



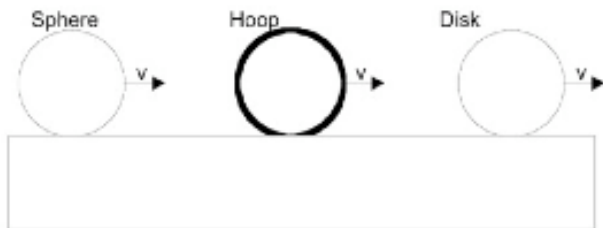
A.  $K$ .

B.  $2K$ .

C.  $K/2$ .

D. none of these

A sphere, a hoop, and a cylinder, all with the same mass  $M$  and same radius  $R$ , are rolling along, all with the same speed  $v$ .



Which has the most kinetic energy?