Q1 - Answer = c

Q2 - Problem A - Last name A-K

A solid sphere of mass 10 kg and radius 10 cm rolls without slipping at 2.5 m/s. What is its total kinetic energy? Recall that $I_{\text{sphere}} = \frac{2}{5} MR^2$.

\[
KE = \frac{1}{2} MV^2 (1 + \frac{I}{(MR^2)})
\]

\[
= \frac{1}{2} \times 10 \times 2.5^2 (1 + \frac{2}{5})
\]

\[
= 44 \text{ J}
\]
Q1 - Answer = c

Q2 - Problem B - Last Name L-Z

A solid brass cylinder of mass 7.5 kg and radius 20 cm rolls without slipping on the ground at a speed of 3.5 m/s. What is its total kinetic energy? Recall that $I_{cylinder} = \frac{1}{2} MR^2$.

A. 69 J
B. 46 J
C. 35 J
D. 7000 J
E. 92 J

\[
KE = \frac{1}{2} MV^2 \left(1 + \frac{I}{(MR^2)}\right)
\]

\[
= \frac{1}{2} \times 7.5 \times 3.5^2 \left(1 + \frac{1}{2}\right) = 69 \text{ J}
\]