4-3. The assembly consists of a sphere of $m_B \sim N(10,1^2)$ kg and a rod of $m_{OA} \sim N(5,0.5^2)$ kg. If m_B and m_{OA} are independent, determine the moment of inertia of the assembly about *O*.

Note: The moments of inertia for the sphere and thin rod follow respectively:

$$(I_G)_B = \frac{2}{5}mr^2$$

$$(I_G)_{OA} = \frac{1}{12}ml^2$$

The parallel axis theorem may be applied to find the moment of inertia in each section going through point *O*.

Solution: $I_G \sim N(16.23, 1.47^2)$ kg $\cdot$ m^2