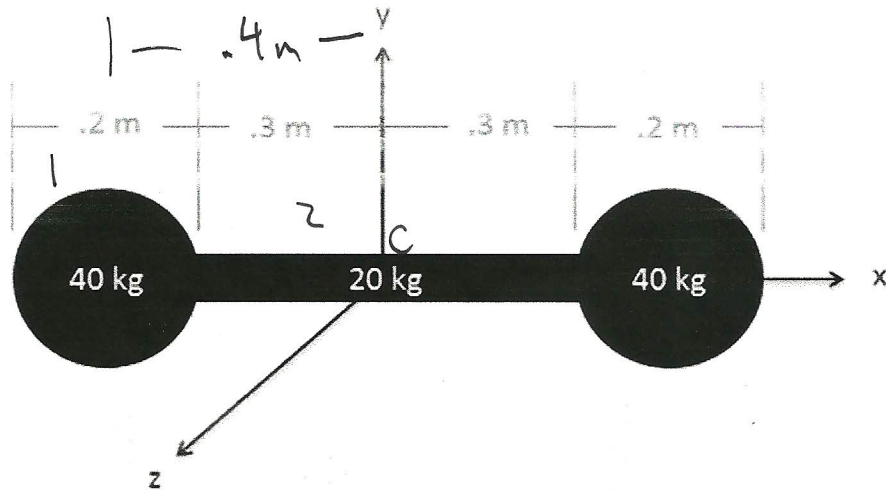A dumbbell consists of two .2 meter diameter spheres, each with a mass of 40 kg spheres attached to the ends of a .6 meter long, 20 kg slender rod. Determine the mass moment of inertia of the dumbbell about the y axis shown in the diagram.

Shape	m	I_{yyc}	r	$I_{yy\,adj}$
x2 1	$40 hs$	$.16\ hsm^2$	$.4m$	$6.56\ hsm^2$
2	$20 hs$	$.6\ hsm^2$	O	$.6\ hsm^2$
Total	$100 hs$			$13.72\ hsm^2$

$$I_{yyc1} = \frac{2}{5}mr^2 = \frac{2}{5}(40hs)(.1m)^2 = .16\ hsm^2$$

$$I_{yyc2} = \frac{1}{12}ml^2 = \frac{1}{12}(20hs)(.6m)^2 = .6\ hsm^2$$

$$I_{yyc_1 adj} = I_{yyc_1} + m \; r^2$$

$$\underset{40 hs}{\uparrow} \qquad \underset{.4m}{\uparrow}$$

$$I_{yy1 \, adj} = 6.56 \, hsm^2$$

$$I_{yy \, total} = 2(6.56 \, hsm^2) + .6 \, hsm^2$$

$$\boxed{I_{yy \, total} = 13.72 \, hsm^2}$$