2020B F=ma Exam: Problem 2

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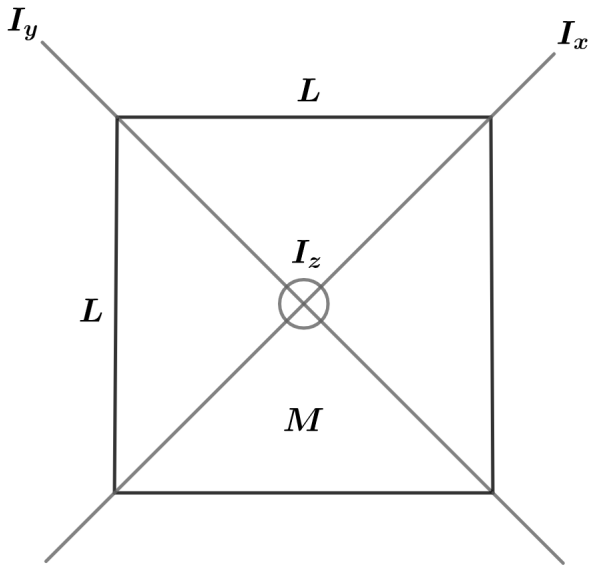

Recall the moment of inertia of a square (perpendicular axis though center) is given by

$$I_z = \frac{1}{6}ML^2$$

By the perpendicular axis theorem,

$$I_z = I_x + I_y = 2I_x$$

Thus,

$$I_{\text{diag}} = I_x = \frac{1}{12}ML^2$$

so the answer is $\boxed{\text{A}}$.