2007 F=ma Exam: Problem 18

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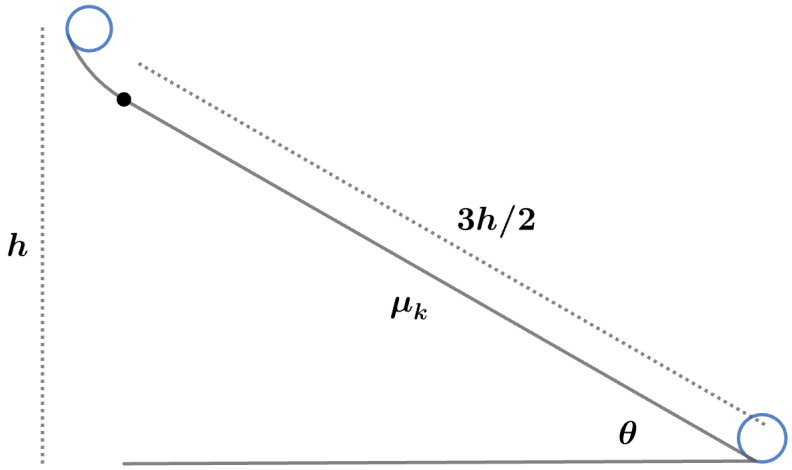

The initial gravitational potential energy of the ice gets dissipated by friction:

$$Mgh = fd = \mu_k N \left(\frac{3h}{2}\right) = \mu_k Mg \cos\theta \left(\frac{3h}{2}\right)$$

$$1 = \frac{3\mu_k \cos\theta}{2}$$

Since $\theta = 30°$,

$$\mu_k = \frac{2}{3\cos\theta} = \frac{4}{3\sqrt{3}} = 0.770$$

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