72. (a) We use Table 11-2(e) and the parallel-axis theorem to obtain the rod's rotational inertia about an axis through one end:

$$I = I_{\text{com}} + Mh^2 = \frac{1}{12}ML^2 + M\left(\frac{L}{2}\right)^2 = \frac{1}{3}ML^2$$

where $L = 6.00$ m and $M = 10.0/9.8 = 1.02$ kg. Thus, $I = 12.2$ kg·m^2.

(b) Using $\omega = (240)(2\pi/60) = 25.1$ rad/s, Eq. 12-31 gives the magnitude of the angular momentum as $I\omega = (12.2)(25.1) = 308$ kg·m^2/s. Since it is rotating clockwise as viewed from above, then the right-hand rule indicates that its direction is down.