Solutions

Each answer shows the steps, then the **result**.

2.1

- $K = \frac{1}{2} I\omega^2 = \frac{1}{2}(2)(3)^2 = 9$ J

2.2

- Nine times (ω is squared)

2.3

- Translational $\frac{1}{2}mv^2$ and rotational $\frac{1}{2}I\omega^2$

2.4

- $\omega = \sqrt{2K/I} = \sqrt{2(18)/4} = \sqrt{9} = 3$ rad s^{-1}

3.1 B

- $K = \frac{1}{2} I\omega^2$

3.2 C

- a rolling object has both terms

3.3

(a)

- $K = \frac{1}{2}(0.8)(5)^2 = 10$ J

(b)

- Four times, 40 J

3.4

(a)

- $12 + 6 = 18$ J

(b)

- $6/18 = \frac{1}{3}$