

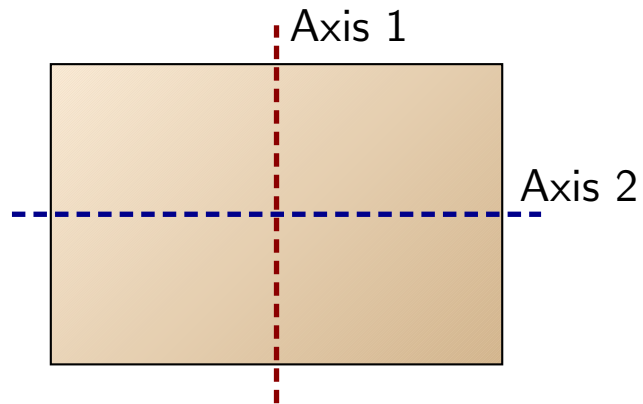
# Warm Up Question 1

A designer considers making bicycle wheels. One possible wheel is a narrow solid hoop with very light spokes. The other possibility is a solid disk of uniform thickness. Both wheels will have the same mass and the same radius. Suppose that the torque on each wheel (via the bicycle drive train) is the same. Which wheel, if any will have the larger angular acceleration? Explain your answer.

1. Same since the torque is the same.
2. Larger for solid wheel. Moment of inertia.
3. Larger for solid wheel. Mass closer to axle.
4. Larger for hoop/spoke wheel. Moment of inertia.
5. Larger for hoop/spoke wheel. Mass further from axle.

# Question 1

A rectangular piece of brass can rotate about two possible axes through its center. The mass in the brass is uniformly distributed.

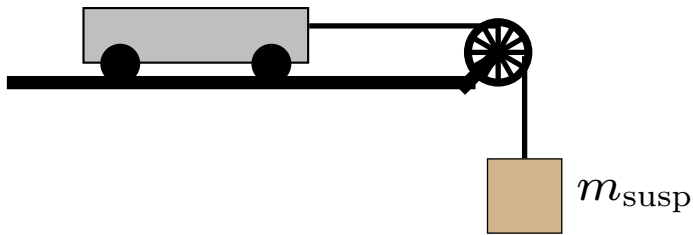


Which of the following is true for the moment of inertia about these axes?

1. They are the same.
2. The moment of inertia about 1 is larger than about 2.
3. The moment of inertia about 1 is smaller than about 2.

## Question 2

A cart is connected to a suspended object via a string that runs over a pulley, with non-negligible mass. All are initially at rest and are then released. The string moves over the pulley without slipping.



Which of the following is true about the tension in the vertical versus the horizontal parts of the string while the objects move?

1.  $T_{\text{vert}} = T_{\text{horiz}}$
2.  $T_{\text{vert}} > T_{\text{horiz}}$
3.  $T_{\text{vert}} < T_{\text{horiz}}$