QUIZ / Mechanics - Inertia

NAME   DATE   CLASS PERIOD

Put a check ✓ in the o next to the correct answer.

1. **Mass moment of inertia is a characteristic of an object to resist ...**

    o Rotation
    o Acceleration
    o Moments
   o Translation
    o Internal forces

2. **If an object is only translating, you don't need to concern yourself with its mass moment of inertia.**

    o True
    o False

3. **Which of the following is an example of units used to describe mass moment of inertia, *I*?**

    o kg•m2
    o m/s^2
    o N•m
    o slug•ft
    o Joules

4. **The thin rod has a mass of 0.5 slugs, and will be rotated about point O. Determine its mass moment of inertia.**
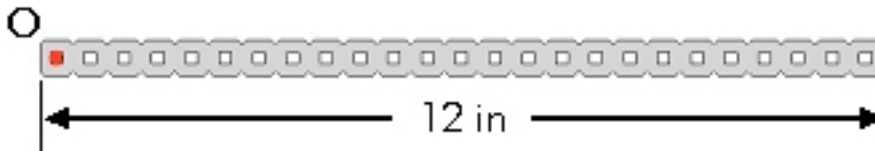
    o 24 slug•ft2
    o 6 slug•ft^2
    o 2 slug•ft^2
    o .5 slug•ft^2
    o 48 slug•ft^2

5. **The greater the mass moment of inertia of an object, the less it resists rotation.**

    o True
    o False

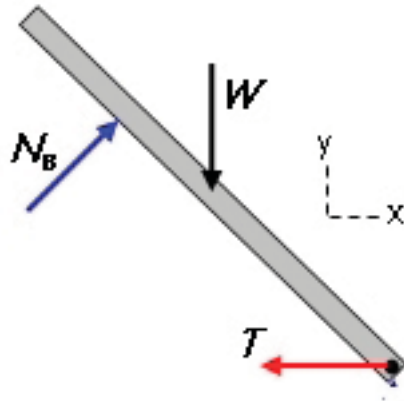## QUIZ / Mechanics - Inertia

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6.   The 8 kg, 1.2 meter long bar below will be subjected to the forces shown. Once acted upon by those forces, it will rotate about its center of mass in the clockwise direction. What is its mass moment of inertia for that rotation?

o **0.96 kg•m2**

o 9.42 kg•m^2

o 30.9 kg•m^2

o 3.84 kg•m^2

o 37.7 kg•m^2

7.   Accuracy is important. The reason you should include mass moment of inertia in your robot design calculation is because ...

o **Rotation requires the use of more force than translation alone**

o It will save you money in buying parts

o It's fun to compute

o It shows you know what you are doing

8.   Mass moment of inertia should be computed for all ...

o **Objects that rotate**

o Objects, if the entire object rotates

o Parts of the robot

o Axles

o Wheels