

Worksheet: Rotational Inertia & Change of Speed

<https://study.com/academy/lesson/rotational-inertia-change-of-speed.html>

1. Which of the following defines ROTATIONAL inertia?

- A number that represents how much mass a rotating object has and how it is distributed. An object with more rotational inertia is easier to accelerate.
- A number that represents how much mass a rotating object has, irrespective of how it is distributed. An object with more rotational inertia is harder to accelerate.
- A number that represents how an object's mass is distributed.
- A number that represents how much mass a rotating object has and how it is distributed. An object with more rotational inertia is harder to accelerate.
- It's really just mass.

2. A certain disk has a moment of inertia of $1000 \text{ kg}\cdot\text{m}^2$. What torque would be required to get it to spin from rest to 10 revolutions-per-second in 0.5 sec?

- 125600 N·m
- 600 N·m
- 5600 N·m
- 133600 N·m
- 225600 N·m

3. A spinning top has a moment of inertia of 2 kilogram meters squared. How much torque does it take to accelerate it at a rate of 10 radians per second per second?

- 20 newton meters.
- 5 newton meters.
- 0 newton meters.
- 0.2 newton meters.
- 200 newton meters.

4. Which of the following is the rotational version of Newton's 2nd Law?

- Objects with more mass take more force to accelerate them.
- Objects with more mass take more force to increase or decrease their rotation.
- Objects with more rotational inertia, either through mass or the way it's distributed, take more acceleration to increase or decrease their rotation.
- Objects with more rotational inertia, either through mass or the way it's distributed, take more force to increase or decrease their rotation.
- $F=ma$

5. Which of the following defines inertia?

- The tendency of objects to speed up or slow down.
- The tendency of a mass-less object to resist a change in its motion.
- The tendency of mass not to resist any change in its motion.
- The tendency of an object with mass to resist a change in its motion.
- The tendency of an object with a weight to resist a change in its motion.