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AP Physics 1 Review Questions

Integrating Content, Inquiry, and Reasoning

- A merry-go-round of mass 100.0 kg and radius 3.00 m is at rest. The merry-go-round resembles a disk and is free to rotate about its central point on frictionless bearings. It is set into rotational motion by a person holding a handle on the outside edge and running counterclockwise for 13.0 seconds. When the handle is released, the angular velocity of the merry-go-round is 45.5 rad/s.
- 1. What is the angular momentum of the merry-go-round when the person releases the handle?
- 2. What is the angular acceleration of the merry-go-round immediately before the handle is released?
- 3. What is the angular acceleration immediately after the handle is released? Explain your answer.
- 4. What amount of torque was applied to the merry-go-round?

In order to stop the merry-go-round, a person pushes a "brake" button. The merry-go-round comes to a stop in 2.50 seconds.

- 5. What is the final angular momentum of the merry-go-round?
- 6. What amount of torque is applied by the brakes?
- 7. What is the angular acceleration of the merry-go-round over the 2.50 seconds?
- 8. What do the signs on the torque and angular acceleration values mean?

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