Physics 231 - 20-Oct-99

- Announcements
- Rotational Kinetic Energy
- Torque and Rotation
- Angular Momentum
- Quiz

Torque and Rotation

- Atwood's Machine

- Yo-yo

Rotational Kinetic Energy

Angular Momentum

- Conservation of Angular Momentum

- Examples

Q1 - Answer = a

Q2 - Problem A - Last name A-K

An ice skater is able to increase her rate of spin by a factor of 1.5 by bringing in her outstretched arms. By what factor does this move change her moment of inertia?

A. 0.67

B. 1.5

C. 2.25

D. 1.33

E. 1.25

Q1 - Answer = a
Q2 - Problem B - Last Name L-Z

- An ice skater with arms outstretched is spinning at 2 revolutions per second. If he now brings in his arms and reduces his moment of inertia by a factor of 1.33, what is his new rate of spin?

A. 1.33 rev/s

B. 2.0 rev/s

C. 1.5 rev/s

D. 3.0 rev/s

E. 2.7 rev/s

Q1 - Answer = b

Q2 - Problem A - Last name A-K

A man sitting on a spinning chair is able to increase his rate of rotation by a factor of 2.5 by bringing in his outstretched arms. By what factor has he changed his moment of inertia?

A. 0.4

B. 1.25

C. 2.5

D. 4

E. 2.0

Q1 - Answer = b
Q2 - Problem B - Last Name L-Z

- A man sitting in a spinning chair brings in his outstretched arms and decreases his moment of inertia by a factor of 1.67. By what factor does this change his rate of spin?

A. 0.6

B. 1.33

C. 1.67

D. 0.36

E. 2.8

Q1 - Answer = c

Q2 - Problem A - Last name A-K

Midway through a dive, a diver goes into a tuck position and thereby decreases her moment of inertia by a factor of 1.5. If her initial rate of spinning was 3 rad/s, what is her new rate?

A. 4.5 rad/s

B. 3 rad/s

C. 2 rad/s

D. 1.5 rad/s

E. 0.5 rad/s

Q1 - Answer = c
Q2 - Problem B - Last Name L-Z

- A gymnast in the middle of doing a backflip increases her rate of rotation by a factor of 2. By what factor has she changed her moment of inertia?

A. 0.5

B. 1.0

C. 2.0

D. 4.0

E. 2.5