Semester Two Final Review

FORMAT

The final has been constructed in a way to check your knowledge and retention of physics. It will contain several Gedanken problems and a couple of work problem. Use this study guide in conjunction with past cycle sheets and class notes to prepare for the final. Start now, so you won't have to cram. Do not procrastinate!

TOPICS

Momentum and Collisions
Conservation of Momentum
Energy, Work and Power
Torque and Rotation
Rotational Inertia
Circular Motion

CONCEPTS

momentum	conservation of momentum	work and power
systems	inelastic and elastic collisions	conservation of energy
collisions	potential and kinetic energy	work and potential energy
impulse	energy and work	simple machines

angular position	centripetal force
angular velocity	centripetal acceleration
angular acceleration	centripetal force

BE ABLE TO

calculate momentum	determine potential energy	use the motion equation
determine the system	determine kinetic energy	use the position equation
calculate collisions	determine energy loss	
calculate work	calculate angular position	
calculate power	calculate angular velocity	
calculate velocity	calculate angular acceleration	

Physics Practice

_____1.   A go-cart has a mass of 250.0 kg. A constant force acts on it for 60.0 s.
                              The go-cart's initial velocity is 6.00 m/s and its final velocity is 28.0 m/s?
_____2.
                              a) What is its change in momentum?
                              b) What is the magnitude of the force that acts upon it?

_____3.   A force of 43.0 N acts on a 13.00 kg object for 10.0 s. Find the object's
                              impulse.

_____4.   A bullet with a mass of 100.0 g strikes a wooden block with a mass of
                              15.0 kg and becomes embedded in the block. The block and the bullet
                              then fly off at 25.0 m/s. Find the initial velocity of the bullet.

_____5.   A constant force of 120 N was applied at an angle of 15.0° to the horizontal to
                              move a 150.0 kg block a distance of 30.0 meters in 12.0 seconds.
_____6.
                                  a) Find the amount of work.
                                  b) Determine the average power consumption.

_____7.   A 500.0 gram ball was released from a height of 10.5 m. The ball hit the
                              ground and rebounded to a height of 8.25 m.

_____8.
                                  a) Find the vertical velocity of the ball just before it hits.

_____9.   b) Calculate the energy change.

                                  c) How was the energy lost?

_____ 10.   Forces of 3, 7, 4, and F N are applied to a weightless board that rests a
                          fulcrum. The board is in equilibrium (does not rotate). Find the
                          magnitude of F.
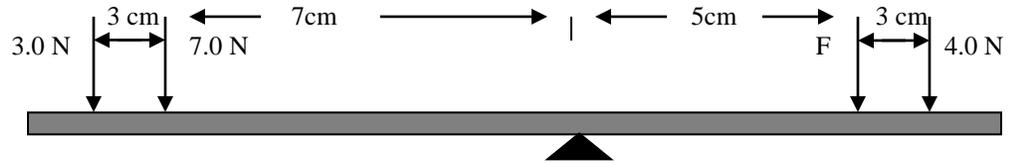
_____ 11.   A bicycle wheel of radius 0.325 meters rotates at a speed of 10.0 m/s.

_____   a. If a person is riding the bike, how fast are they traveling?

                          b. What is the angular velocity of the bicycle's wheel?

_____ 12.   A 10.0 kg dog is chasing his tail. The radius of the circle that dog makes is
                          0.62 meters. The dog runs in a circle 10 times in 7.2 seconds.

_____   a) What is the centripetal acceleration?

Directions: Explain to a friend how to prepare a presentation properly.

"Don't water your weeds." -- Harvey Mackay