TPHYS 121 Workshop Week 7

Module 4 Problems

Exercise 1

For each of the following let $g = 10m/s^2$ unless otherwise stated.

A $5kg$ object is moving at a speed of $10m/s$

a Calculate the total energy of the object.

b How much work is required to bring the object to a stop?

Exercise 2

A $1.5kg$ cart moving at $4m/s$ collides with a $2.5kg$ cart initially at rest. After the collision, the two carts stick together and move as one.

a Find the velocity of both carts after the collision.

b Calculate the total kinetic energy before and after the collision. Is the kinetic energy conserved?

Exercise 3

A basketball with mass m is dropped from a hieght of $10m$. It hits the floor and bounces back.

1. Assuming the collision is perfectly elastic, what is the max height of the ball after it bounces.
2. What is the velocity of the basketball right before it hits floor.
3. what is the velocty of the basketball when it is at it's max hieght(after the bounce).

Additional Resources

- Flipping Physics on youtube: `https://www.youtube.com/user/flippingphysics`