Energy Homework Problems:
p133: #1, 4, 5, 7

Problems taken from the school's old textbook:
Giancoli, D. (1980). *Physics*, 2nd Ed. Englewood Cliffs, NJ: Prentice Hall.

---

1. What is the momentum of an 18.0-g sparrow flying with a speed of 15.0 m/s?

4. A child throws a 5.40-kg package horizontally from a boat with a speed of 10.0 m/s. Calculate the resulting velocity of the boat assuming it was initially at rest. The mass of the child is 20.0 kg and that of the boat is 80.0 kg.

5. A 15,000-kg railroad car travels alone on a level frictionless track with a constant speed of 23.0 m/s. A 5000-kg additional load is dropped onto the car. What then will be its speed?

7. A 44-g bullet strikes and becomes embedded in a 1.54-kg block of wood placed on a horizontal surface just in front of the gun. If the coefficient of kinetic friction between the block and the surface is 0.28, and the impact drives the block a distance of 18.0 meters before it comes to rest, what was the muzzle speed of the bullet? (Hint: this is very, very similar to the ballistic pendulum problems that were highlighted in the reading).

ANSWERS:

1. .27 kg x (m/s)
4. 0.54 m/s in the direction opposite that of the package
5. 17.25 m/s
7. 357.8 m/s