Phy 12 Work, Energy and Power Test

1. Calculate the work done when a 52 kg crate is pushed along a frictionless floor with a force of 45 N for 4.5 m.

2. A baseball (m=140 g) travelling 30 m/s moves a fielder's glove backwards 15 cm when the ball is caught. What is the average force exerted by the ball on the glove?

3. A 0.30 kg ball is dropped from a height of 6.0 m. It hits the floor and rebounds to 4.5 m
   a. Find the velocity of the ball just before it hits the floor?

   b. Find the velocity of the ball when it rebounds? (leaves the floor)

   c. Find the change in energy of the ball when it hits the floor and rebounds?

4. How much work is required to accelerate a 2500 kg car from 15 m/s to 25 m/s

5. How much time is required for a 1600 W motor to lift a 350 kg crate to a height of 15 m?

6. A 6500 W electric motor lifts a 25 kg object 5.00 m in 2.50 s. What is the efficiency of the motor?

7. A jogger increases her kinetic energy from 700 J to 1700 J in 25 s. She expends 1600 J of energy during this activity.
    a. What is her power output?

    b. What is the efficiency of the process?