Name:

Physics 11
M. Lam

Power and Efficiency

Block:

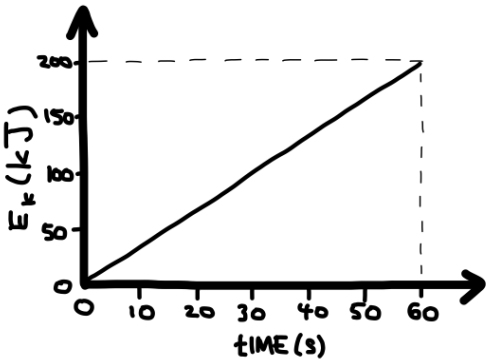
1. What is the power output of a 60. kg person who climbs a 5.0 m high staircase in 15 s?

2. A machine rated at 2500 W lifts a 150 kg object 40.0 m vertically in 1.0 minute. What is the efficiency of this machine?

3. A 65 kg cyclist on a 15 kg bicycle starts from rest and increases his speed to 12 m/s in 20. s.
   a) What is the power output?
   b) If the cyclist provided an average power of 400 W, what is the efficiency of the bicycle?

4. A girl pulls a 5.0 kg wagon with a force of 20. N for 7.0 m. If the final speed of the wagon is 3.5 m/s, determine the efficiency of this process.

5. The graph shows the kinetic energy of a car as the driver steps on the gas pedal.
   a) What is the power output of the car?
   b) If the process is 30% efficient, determine the power delivered to the car.



6. The graph shows the power input for a 2.0 kg remote-controlled car starting from rest.
   a) Determine the energy input.
   b) What is the final speed of the car if the remote-controlled car is 20% efficient?