I Wish I Had More Power

0. The force that you must apply to lift an object at a constant speed is
   a. equal to the object's mass.
   b. less than the object's mass.
   c. equal to the object's weight.
   d. less than the object's weight.

1. Power is defined as the
   a. work done on an object divided by the time taken to do the work.
   b. distance divided by the time taken to move that distance.
   c. work done times the time taken to do that work.
   d. force on an object times the distance the object moves.
   e. force on an object divided by the time the force acts.

2. Sue pushes a shopping cart 12 m by applying a force of 3N.
   a. How much work does Sue do on the cart?
   b. If it takes Sue 30 s to push the cart 12 m then how much power does she exert?

3. Erica pulls a wagon 30m with a force of 10N. She does this in 60 s. How much power did she exert?

4. Kenny has to exert 3500J of work to walk upstairs. If it took him 2.35 seconds, what power did Kenny exert? (1489.4W)

5. Carly pushes a car for 0.2 meters by applying a force of 300 N. How much work does Carly do on the car?

6. Two physics students, Will N. Andable and Ben Pumpiniron, are in the weightlifting room. Will lifts the 100-pound barbell over his head 10 times in one minute; Ben lifts the 100-pound barbell over his head 10 times in 10 seconds. Which student does the most work? Which student delivers the most power? Explain your answers.

7. If little Nellie Newton lifts her 40-kg body a distance of 0.25 meters in 2 seconds, then what is the power delivered by little Nellie's biceps? (50W)

8. An escalator is used to move passengers from the first floor of a department store to the second floor. The second floor is located 5-meters above the first floor. The average passenger's mass is 60 kg (This is the mass of 1 passenger). Determine the power requirement of the escalator in order to move 20 passengers in 1 minute. (1000W)

9. Harry Potter's Firebolt accelerates at 2 m/s^2. If Harry's mass is 80 kg, find the work done by the Firebolt as he flies 100m. (1600J) (Hint: Use Newton's 2^{nd} Law of Motion)