Power!

Use your understanding of work and power to answer the following questions. When finished, click the button to view the answers.
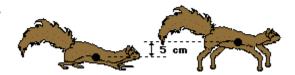
1. Two physics students, Will N. Andable and Ben Pumpiniron, are in the weightlifting room. Will lifts the 100-pound barbell over his head 10 times in one minute; Ben lifts the 100-pound barbell over his head 10 times in 10 seconds. Which student does the most work? _____ Which student delivers the most power? _____ Explain your answers.

2. During a physics lab, Jack and Jill ran up a hill. Jack is twice as massive as Jill; yet Jill ascends the same distance in half the time. Who did the most work? _____ Who delivered the most power? _____ Explain your answers.

3. A tired squirrel (mass of approximately 1 kg) does push-ups by applying a force to elevate its center-of-mass by 5 cm in order to do a mere 0.50 Joule of work. If the tired squirrel does all this work in 2 seconds, then determine its power.

4. When doing a *chin-up*, a physics student lifts her 42.0-kg body a distance of 0.25 meters in 2 seconds. What is the power delivered by the student's biceps?

5. Your household's monthly electric bill is often expressed in kilowatt-hours. One **kilowatt-hour** is the amount of energy delivered by the flow of l kilowatt of electricity for one hour. Use conversion factors to show how many joules of energy you get when you buy 1 kilowatt-hour of electricity. [Note: 1kW = 1000W]

6. An escalator is used to move 20 passengers every minute from the first floor of a department store to the second. The second floor is located 5.20 meters above the first floor. The average passenger's mass is 54.9 kg. Determine the power requirement of the escalator in order to move this number of passengers in this amount of time.