Energy Homework Problems:
p116: #47, 51, 53, 55

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

FOR ALL OF THESE PROBLEMS, USE METRIC HP (1 HP = 750 W)

47. If a car generates 15 hp when traveling at a steady 80 km/h, what must be the average force exerted on the car due to friction and air resistance?

51. A 1200-kg car slows down from 90 km/h to 70 km/h in about 5.0 seconds on the level when it is in neutral. Approximately what power (watts and hp) is needed to keep the car traveling at a constant 80 km/h?

53. How much work can a 2.0-hp motor do in 1.0 hour?

55. How fast must a cyclist climb a 12.5^{o} hill to maintain a power output of 0.23 hp? Ignore friction and assume the mass of the cyclist and bicycle is 85 kg.

ANSWERS:

47. 506.7 N
51. 2.99×10^{4} W, 39.8 hp
53. 5.4×10^{6} J
55. .957 m/s