Energy Homework Problems:
p113: #1, 3, 5, 9, 17, 19

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

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1. A 50-kg woman climbs a flight of stairs 6.0-m high. How much work is required?

3. How much work did a horse do that pulled a 200-kg wagon 80 km without acceleration along a level road if the effective coefficient of friction was 0.060?

5. What is the minimum work needed to push a 1000-kg car 45.0 meters up a 12.5^o incline?
   a) Ignore friction.
   b) Assume the effective coefficient of friction is 0.30.

9. A 300-kg piano slides at constant speed 4.5 meters down a 25^o incline. It is kept from accelerating by a man who is pushing back on it. The effective coefficient of friction is 0.39. Calculate
   a) the net work done on the piano.
   b) the work done by the man on the piano.
   c) the work done by gravity on the piano.

17. How much work must be done to stop a 1000-kg car traveling at 100 km/hr?

19. A baseball (m = 140 grams) traveling 30 m/s moves a fielder's glove backward 35 cm when the ball is caught. What was the average force exerted by the ball on the glove?

ANSWERS:

1. 2940 J
3. 9.41×10^6 J
5a. 9.54×10^4 J
5b. 2.25×10^5 J
9a. 0 J (if it isn't accelerating, its storage of energy as KE isn't changing which only occurs if the energy transfers, work, sum to zero; $W_{man} + W_{friction} + W_{gravity} = W_{net} = 0$ J)
9b. -915 J
9c. 5591 J
17. -3.86×10^5 J
19. -180 N (negative only because the force must be directed opposite the original velocity. Your answer may be positive if your reference frame is reversed).