1. A force of 80 N is applied onto one end of a 6.0-m-long lever, lifting a crate placed on the other end.
    a) If the crate is lifted 1.5 m into the air, how much does the box weigh?
    b) What is the mechanical advantage provided by the lever?
    c) If the box weighed twice as much, how high would it be lifted into the air?

2. A pulley system is set up to help construction workers lift heavy furniture.
    a) If a worker applies 1200 N of force to lift two 3000-N chairs at the same time, how many pulleys must there be?
    b) How much force would the worker need to apply in order to lift a 4000-N sculpture? Assume the number of pulleys is the same as that from part a.

3. A system consisting of 6 pulleys is intended to lift a 3000-N dining bed frame.
    a) If two people are lifting the bed frame, how much force would each person need to apply?
    b) If the bed frame needs to be lifted 8.0 m high through a second-story window, what length of rope must be pulled?

4. A car engine uses 3000 J of energy and does 720 J of work. Determine **a)** the amount of heat energy expelled by the engine, **b)** the efficiency of the engine, and **c)** the amount of work the engine would use if it instead did 1800 J of work.