

Sent: Thursday, October 09, 2003 1:02 AM

Question:

Problem 8-42 (a): It asks for the work done. Shouldn't F be multiplied by $d \cos \theta$?

Response:

Your point is well taken - The solution is written with some confusion. To clarify, the solution gives the work done in part(b), but the question is first asked in part (a). The work done is equal to the thermal energy increase asked for in part (b).

Question:

Problem 8-58 (b): Isn't N equal to $mg \cos \theta$?

Response:

Yes ... if you look at where the work due to friction is calculated in the first part, it equals the friction force times D. The friction force is μ times the Normal force, and the substitution for the normal force is made with exactly what you write above.

Question:

Problem 8-48 (c): I'm not familiar with kW-h conversion, but I followed the rate on page 131 (equation 7-46). Because the problem started with water flow per second, I figured you had to divide by 3600 to get the flow per hour (in addition to other conversions). I guess I missed something?

Response:

I personally find the method of dimensional analysis that I illustrated back in the first lecture to be the best way to deal with mixed units. The equation I write reflects this. It gives
$$\backslash \text{Total Cost for one year (in \$)} = \text{Cost (\$/watt-hrs)} \times \text{Power (watts)} \times 1 \text{ year} \times \text{(hrs/year)}$$
Notice that all units on the right-hand side cancel except for \$ (and seconds need not even enter into it). I think this approach is (relatively) foolproof.
