Example 24:

Date _____

Heating the House (Factoring in Efficiency)!

Answer the questions below regarding the heating of a house in the Midwestern United States. Use the assumptions in the table below to perform the calculations that follow.

The house has 2,000 square feet of living space.
80,000 BTUs of heat per square foot are required to heat the house for the winter.
Natural gas is available at a cost of $5.00 per thousand cubic feet.
One cubic foot of natural gas supplies 1,000 BTUs of heat energy.
The furnace in the house is 80 percent efficient.

(a) Calculate number of cubic feet of natural gas required to heat the house for one winter if the furnace was 100% efficient. Show all the steps of your calculations, including units.

(b) Calculate the cost of heating the house for one winter if the furnace was 100% efficient.

(c) Determine the <u>true number of cubic feet of natural gas required and cost of heating</u> being that the furnace is rated at 80% efficiency.