Swimming Pool Energy Worksheet

Harvard-Westlake School

Show all pertinent measurements, conversion factors and calculations if you would like to earn full credit for this assignment

For the month of January, 1997, Harvard-Westlake purchased 490,900 cubic feet of natural gas to heat the pool.

1. The heat in one cubic foot of gas is 1,021 BTUs. How much heat was purchased?

2. A British Thermal Unit is the amount of energy required to heat one pound of water 1°F. Also, it is equivalent to 252 calories. One calorie is the amount of energy required to heat 1 gram of water 1°C. The Harvard-Westlake pool holds 325,000 gallons of water. One gallon of water weighs 8 pounds. Determine the number of pounds of water in the Harvard-Westlake pool.

3. If the conversion of natural gas to heat in the pool were 100% efficient, what change in temperature would be produced?

4. The pool is kept at 80°F and the average temperature during January is 58°F. How much energy is needed to raise the temperature of the pool?

5. How much heat is lost in the conversion from chemical energy to heat in the pool?

6. What is the efficiency of heating the pool?

7. The gas furnace is 80% efficient at converting gas energy to thermal energy in the water. How much energy is initially absorbed by the water?_____

8. Heat is lost from the water to the air, despite the fact that the pool cover is employed most of the day. What is the efficiency of the pool cover?