37.80 **A hot water heating system is rated for $200,000\frac{Btu}{hr}$ at sea level. The system includes a fuel gas burner and a combustion intake fan. What would the heating capacity be if the system was installed at an elevation of $4000ft$ above sea level?**

A. $173MBH$

B. $189MBH$

C. $200MBH$

D. $231MBH$

Since air is less dense at higher elevation, the fuel's heating value will be reduced at $4000ft$ as compared with sea level operation. The reduction in capacity is proportional to the reduction in air density. Use the Altitude Corrections for Air table to obtain the density factor for $4000ft$. Calculate the new capacity, and convert units to MBH.

$$\dot{Q}_{4000ft} = \dot{Q}_{0ft}\,(Density\,Factor)$$

$$\dot{Q}_{4000ft} = \left(200,000\frac{Btu}{hr}\right)(0.864)\left(\frac{1MBH}{1000\frac{Btu}{hr}}\right) = 172.8MBH$$

Answer A