

47.80 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 .

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

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

Answer A