

37.74 The volumetric compression ratio of an air-standard diesel engine operated at sea level is 15. What is the pressure in the cylinder after the compression stroke?

- A. 221psia
- B. 235psia
- C. 651psia
- D. 713psia

For an air-standard cycle, assume constant entropy, ideal air, and constant specific heat. Use the Thermodynamic relationship between pressure and volume for a **Constant Entropy Process**.

$$\frac{P_2}{P_1} = \left(\frac{v_1}{v_2}\right)^k$$

$$P_2 = P_1 \left(\frac{v_1}{v_2}\right)^k$$

$$P_2 = (14.7\text{psia})(15)^{1.4} = 651\text{psia}$$

Answer C