

Solutions

2.1 B At fixed amount and volume, pressure is proportional to kelvin temperature. At fixed temperature and amount, pressure is inversely proportional to volume. State which quantities are fixed before choosing a relationship.

2.2 At fixed V, n : $p_2 = p_1 T_2 / T_1 = (120 \text{ kPa}) \times 350 / 300 = 140 \text{ kPa}$.

2.3 False. An ideal gas is a model with conditions of validity. Celsius zero is not zero molecular motion, and internal energy is not determined by pressure alone.

2.4 absolute temperature. absolute temperature means Temperature on the kelvin scale.

3.1 Combined relation $p_2 = p_1 (T_2 / T_1) (V_1 / V_2) = 75 \text{ kPa}$. Volume also changes; the fixed-volume formula does not apply. Use absolute temperature.