

CHAPTER 4	Combined Gas Law Problems (1)	BLM 4.1.1
ASSESSMENT		

1. Amy is having a birthday party on a mild winter's day. The weather changes and a higher pressure (103.0 kPa) cold front ($-25\text{ }^{\circ}\text{C}$) rushes into town. The original air temperature was $-2.0\text{ }^{\circ}\text{C}$ and the pressure was 100.8 kPa. What will happen to the volume of the 4.2 L balloons tied to the front of the house?
2. Amy's father is blowing up balloons inside the house ($t = 19\text{ }^{\circ}\text{C}$, $P = 102.0\text{ kPa}$) for the party. His lungs have a capacity of 6.0 L and he is able to exhale 80% of this into each balloon. Assuming an internal pressure of 106.5 kPa, what will be the volume of each balloon?
3. In an engine, a fuel-air mixture at atmospheric pressure is compressed rapidly from 500 mL to 60 mL, while the temperature increases from $100\text{ }^{\circ}\text{C}$ to $1000\text{ }^{\circ}\text{C}$.
 - (a) What is the new pressure of the mixture prior to ignition?
 - (b) After ignition, the products of combustion exert a pressure of 3600 kPa. What volume will the exhaust gas occupy at SATP?

