

## 12 • The Gas Laws

### THE COMBINED GAS LAW

In practical terms, it is often difficult to hold any of the variables constant. When there is a change in pressure, volume and temperature, the combined gas law is used.

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2} \quad \text{or} \quad P_1 \times V_1 \times T_2 = P_2 \times V_2 \times T_1$$

$$K = ^\circ\text{C} + 273$$

Complete the following chart.

	<b>P<sub>1</sub></b>	<b>V<sub>1</sub></b>	<b>T<sub>1</sub></b>	<b>P<sub>2</sub></b>	<b>V<sub>2</sub></b>	<b>T<sub>2</sub></b>
<b>1</b>	1.50 atm	3.00 L	20.0 °C	2.50 atm		30.0 °C
<b>2</b>	720. torr	256. mL	25.0 °C		250. mL	50.0 °C
<b>3</b>	600. mmHg	2.50 L	22.0 °C	760. mmHg	1.80 L	
<b>4</b>		750. mL	0.00 °C	2.00 atm	500. mL	25.0 °C
<b>5</b>	95.0 kPa	4.00 L		101. kPa	6.00 L	471. K or 198. °C
<b>6</b>	650. torr		100. °C	900. torr	225. mL	150. °C
<b>7</b>	850. mmHg	1.50 L	15.0 °C		2.50 L	30.0 °C
<b>8</b>	125. kPa	125. mL		100. kPa	100 mL	75.0 °C