**Calculation questions:**

1) A 1.00 L sample of gas at 101.3 kPa is compressed to 0.80 L at constant temperature. What is the final pressure of the gas?

2) A sample of gas occupies 2.00 L at 1 atm. Calculate the volume it will occupy at 1.25 atm and the same temperature.

3) A sample of gas occupies 4.00 L at 0°C. What volume will the same sample of gas occupy at 100°C and the same pressure.

4) Consider several samples of gas undergoing change as described in the table below. Determine the missing value for each sample.

<table>
<thead>
<tr>
<th>Initial conditions</th>
<th>Final conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>pressure</td>
<td>volume</td>
</tr>
<tr>
<td>a)</td>
<td>760 mmHg</td>
</tr>
<tr>
<td>b)</td>
<td>1.00 atm</td>
</tr>
<tr>
<td>c)</td>
<td>1.23 atm</td>
</tr>
<tr>
<td>d)</td>
<td>600 kPa</td>
</tr>
<tr>
<td>e)</td>
<td>--</td>
</tr>
<tr>
<td>f)</td>
<td>800 kPa</td>
</tr>
</tbody>
</table>

5) Determine the volume occupied by 4.0 g of O$_2$ gas at STP (standard temperature and pressure ≡ 1 atm, 0°C)

6) Calculate the standard molar volume of a gas. (This is the volume of any gas under STP)

7) What is the molar volume of a gas at RTP (room temperature and pressure = 1 atm, 25°C)

8) 1.216 g of SO$_2$ was placed into a vessel with a volume of 457 mL. If the resultant pressure was 755 mmHg, what was the temperature of the vessel?