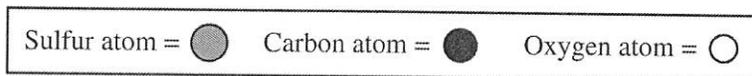


**2018 AP<sup>®</sup> CHEMISTRY FREE-RESPONSE QUESTIONS**

| Compound        | Molecular Structure   | Boiling Point at 1 atm (K) |
|-----------------|---|----------------------------|
| CS <sub>2</sub> |  | 319                        |
| COS             |  | 223                        |

4. The table above gives the molecular structures and boiling points for the compounds CS<sub>2</sub> and COS.
- (a) In terms of the types and relative strengths of all the intermolecular forces in each compound, explain why the boiling point of CS<sub>2</sub>(*l*) is higher than that of COS(*l*).
- (b) A 10.0 g sample of CS<sub>2</sub>(*l*) is put in an evacuated 5.0 L rigid container. The container is sealed and heated to 325 K, at which temperature all of the CS<sub>2</sub>(*l*) has vaporized. What is the pressure in the container once all of the CS<sub>2</sub>(*l*) has vaporized?