Exercise 8.5
Determining Geometry Using VSEPR

1.   For each of the molecules listed below:
   - Draw one valid Lewis diagram.
     Include any non-zero formal charges on the appropriate atoms.
   - Identify the electron group geometry of the central atom.
   - Identify the molecular geometry.
   - Redraw the molecule to show the molecular geometry. Label bond angles.
     Angles should be accurate to the number of sig. fig. shown. (e.g. 109.5˚)
     Use the ~ symbol to indicate approximate angles. (e.g. ~109.5˚)
     Use the < symbol to indicate that an angle is close to – but definitely smaller than – a given value. (e.g. <109.5˚)
     Use the > symbol to indicate that an angle is close to – but definitely larger than – a given value. (e.g. >109.5˚)

(a) SO_2

(b) $BeCl_2$

(c) OF_2

(d) XeF_2

(e) BBr_3

(f) XeO_3

(g) ClF_3

(h) SF_4

(i) XeF_4

(j) XeO_4

(k) ClF_5

(l) PCl_5

(m) SCl_6