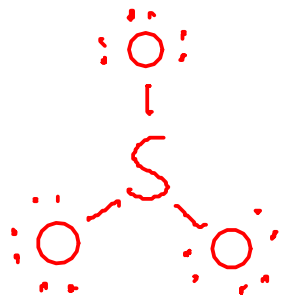
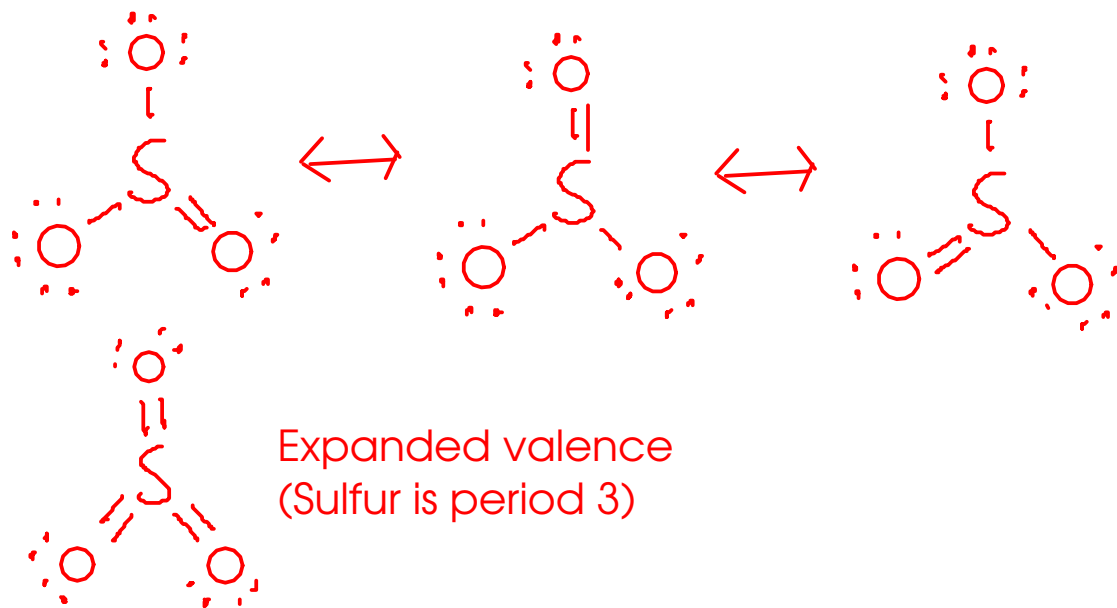


Let's look at sulfur trioxide. SO_3

Skeletal structure:



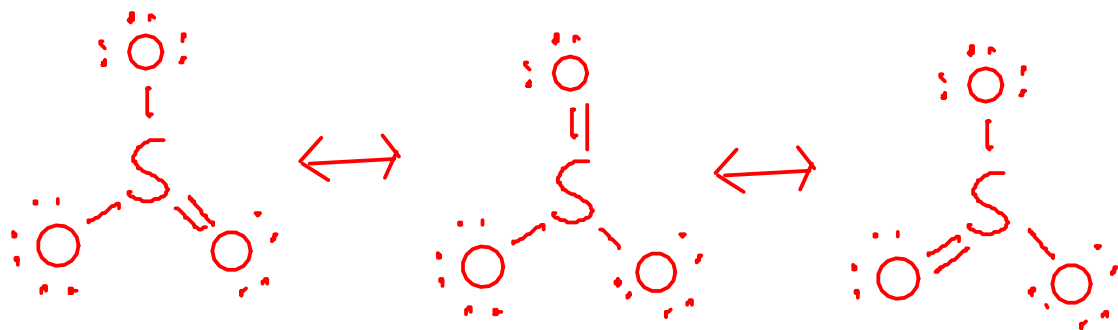
$$\begin{array}{r} \text{S: } 6 \\ \text{O: } 6 \times 3 = 18 \\ \hline 24 e^- \end{array}$$



Resonance structures.

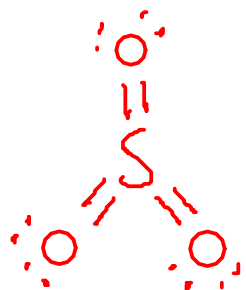
Expanded valence
(Sulfur is period 3)

To decide which structure is preferred, let's look at formal charges.



Resonance structures.

$$\begin{array}{l} \text{S: } 6 - 4 - 0 = +2 \\ \text{O-: } 6 - 1 - 6 = -1 \\ \text{O-: } 6 - 1 - 6 = -1 \\ \text{O=: } 6 - 2 - 4 = 0 \end{array}$$



Expanded valence
(Sulfur is period 3)

$$\begin{array}{l} \text{S: } 6 - 6 - 0 = 0 \\ \text{O=: } 6 - 2 - 4 = 0 \\ \text{O=: } 6 - 2 - 4 = 0 \\ \text{O=: } 6 - 2 - 4 = 0 \end{array}$$

BASED ON FORMAL CHARGE, the preferred structure for this molecule is the expanded valence structure.

The correct (as in, experimentally correct) structure of the molecule does appear to be the expanded valence one, based on bond lengths.

In general, formal charges are a reliable way of determining which of several possible structures is correct, even if one possibility violates the octet rule. (Exception: Period 2 elements like C, N, O, F, etc. can't get more than eight outer electrons!)