



$$K_p = \frac{P_{SO_2}^2 P_{O_2}}{P_{SO_3}^2} \quad \checkmark$$

E) i)  $K_p = ([SO_2]^2 [O_2]) / [SO_3]^2$   $\times$

$$\textcircled{e} K_p = \frac{[SO_2]^2 \cdot [O_2]}{[SO_3]^2}$$

(e) (i)  $K_p = (P_{SO_3(g)})^2 / ((P_{SO_2(g)})^2 * (P_{O_2(g)}))$

$$\text{e.i. } K_p = \frac{(P_{SO_2})(P_{O_2})}{(P_{SO_3})}$$

$$K_p = \frac{(SO_2)^2 (O_2)}{(SO_3)^2} \quad \times$$

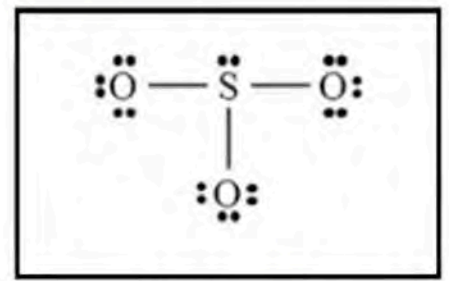
$$K_p = \frac{P_{SO_2} + P_{O_2}}{P_{SO_3}}$$

$$K_p = \frac{(P_{SO_2})^2 (P_{O_2})^2}{\text{zoom}}$$

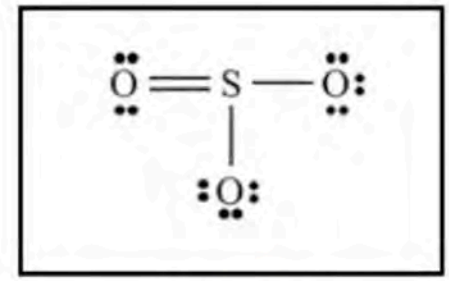


Answer the following questions that are related to sulfur trioxide,  $\text{SO}_3$ .

Two different students attempted to draw the Lewis electron-dot structure for the  $\text{SO}_3$  molecule. The structures are shown in the boxes below.



Student #1



Student #2

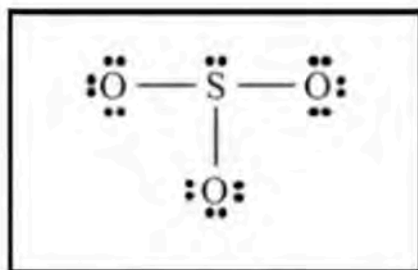
(a) Identify the specific mistake that Student #1 made in drawing the Lewis structure shown above in the box on the left.

$\text{SO}_3$        $\text{S} = 6 \text{ v.e.}$        $24 e^-$   
 $\text{O} = 6 \text{ v.e.}$       zoom

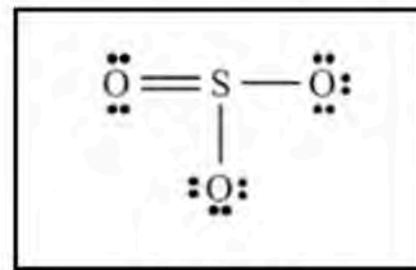


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Student #1



Student #2

- (a) Identify the specific mistake that Student #1 made in drawing the Lewis structure shown above in the box on the left.

**Student #1 used the wrong number of valence electrons to draw the Lewis structure. The student drew a structure that includes a total of 26 valence electrons. However, the  $\text{SO}_3$  structure should only contain 24 valence electrons.**





(a) The student on the left expanded the octet of S.

A) Student one did not add the double bond that fulfills the octet rule on sulfur. He instead used a lone pair which is much less likely to occur, had this student accounted for resonance structures he would have seen that a double bond was much more stable.

a) Student #1 did not account for formal charge, thus the Lewis structure drawn is not favorable and incorrect.

2) Instead of doing a single bond they needed to do one double bond between one set of S and O.