PhET INTERACTIVE SIMULATIONS

Clicker Questions for *Molecule Shapes*

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COURSE:

Introductory / Preparatory College Chemistry

What shape is water?

a. Tetrahedral

b. Bent

c. Trigonal planar

d. Linear

What is the ***electron pair*** geometry of NH_3?

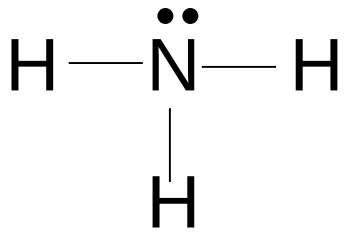
a. Linear

b. Trigonal Planar

c. Tetrahedral

d. Trigonal Pyramidal

N has 4 groups around it;
thus, it is a tetrahedral electron pair geometry



Answer: C

Which of these molecules has a linear molecule geometry?

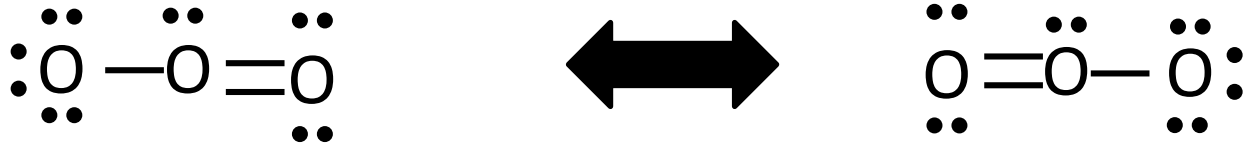
a. CO_2

b. O_3

c. Both

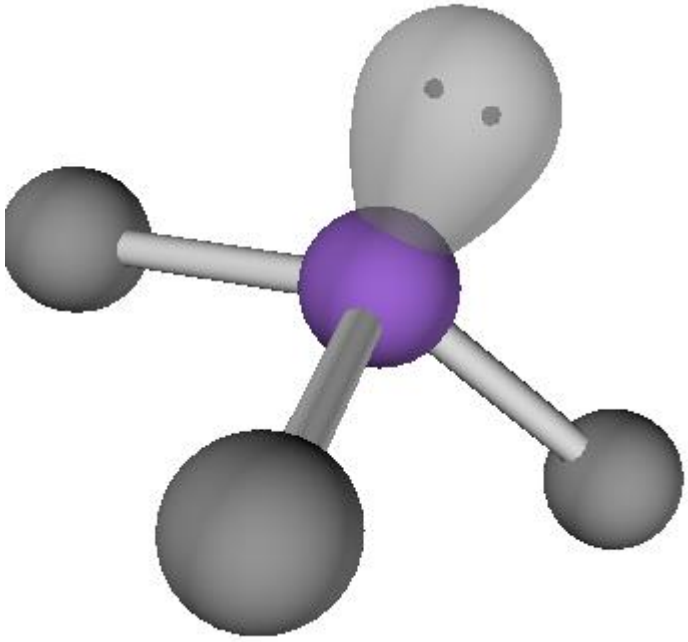
d. Neither

O_3 has 18 valence electrons:



The bonding in ozone is best represented as a
a blend of these two “resonance structures”.

Which molecule could be represented with this diagram?



a. BH_3

b. CH_4

c. NH_3

What is the molecular geometry of H_2S?

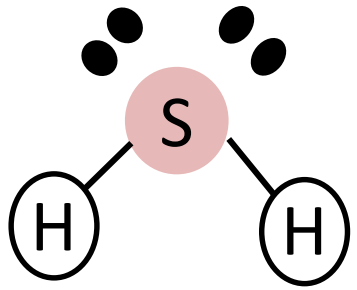
a. Linear

b. Tetrahedral

c. Trigonal pyramidal

d. Bent

Answer: D

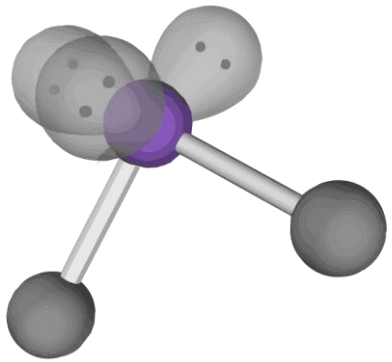


What is the **molecule geometry** and **bond angle** for a molecule AX_2 which has 3 lone pairs on the central atom?

A

Bent

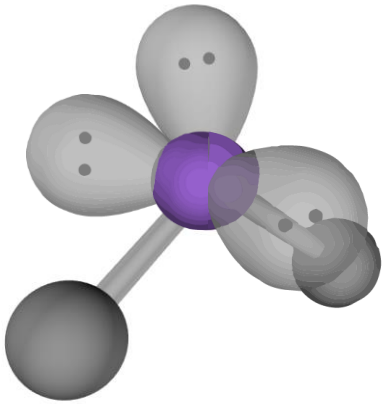
Bond angle ≈ 90°



B

Bent

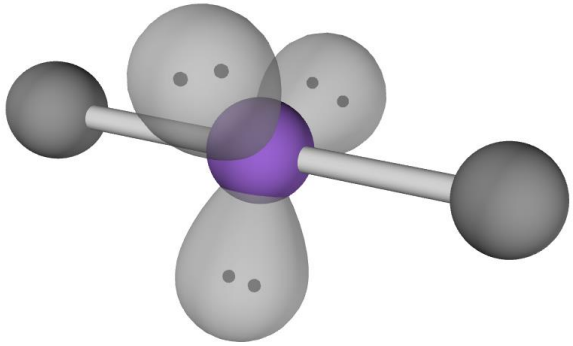
Bond angle ≈ 120°



C

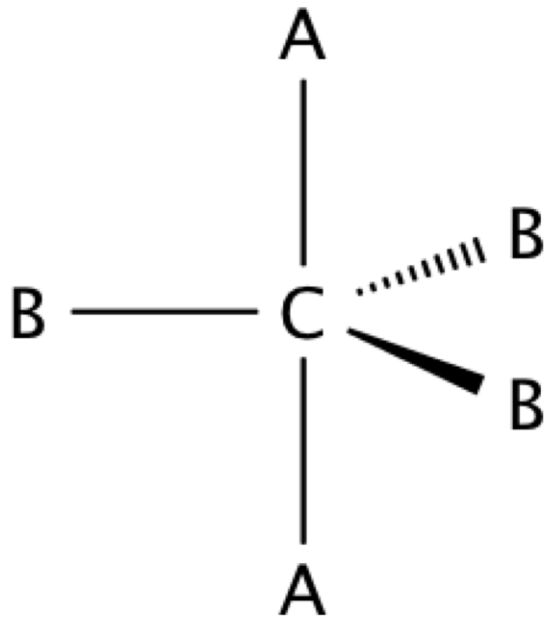
Linear

Bond angle ≈ 180°



Explain your reasoning.

In a system with **4 atoms** and **1 lone pair**, predict the position of the lone pair.



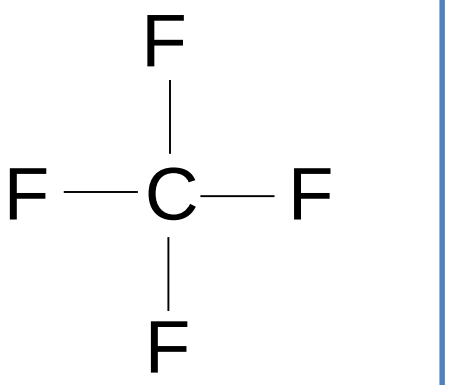
A. One of the A locations

B. One of the B locations

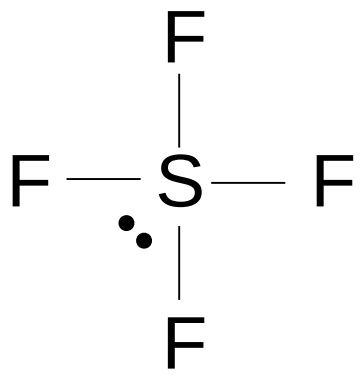
Explain your reasoning.

Which of these molecules would you expect to have *different bond angles in the real world* than are predicted by the model?

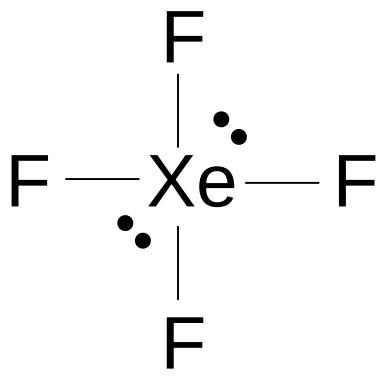
A



B



C



Explain your reasoning.