

1. For the molecule pictured here, write C, N, or O next to the appropriate shape around each of these three elements. (Three of the lines should remain blank. Write C, N, and O in the other three spaces.)

_____ Linear

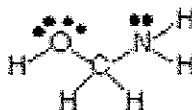
O Bent, 109°

_____ Bent, 120°

N Trigonal pyramid

C Tetrahedral

_____ Trigonal planar

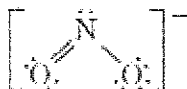


2 each

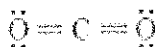
2. The nitrogen trifluoride molecule is B.
- a. Nonpolar
- (b) Polar

3

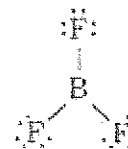
3. Please identify the molecular shape for each of the following molecules or ions. Possible shapes include: bent (120°), bent (109°), linear, trigonal pyramidal, trigonal planar, and tetrahedral. Write the appropriate geometry name beneath each Lewis structure.



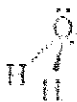
Bent 120°



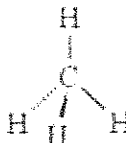
Linear



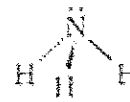
trigonal planar



Bent 109°



Tetrahedral



trigonal pyramid.

3 each

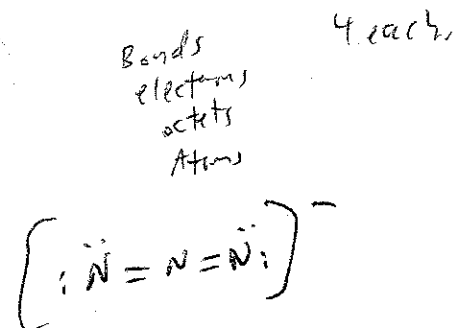
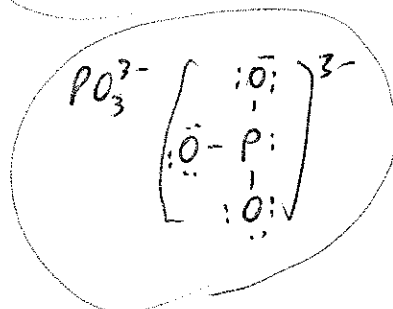
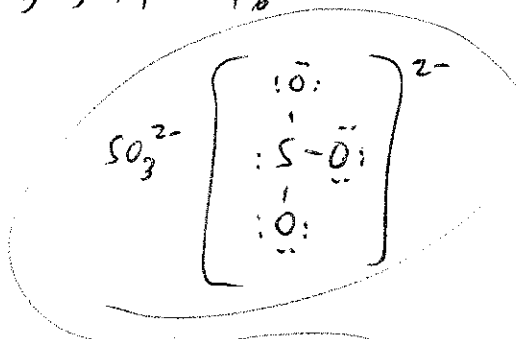
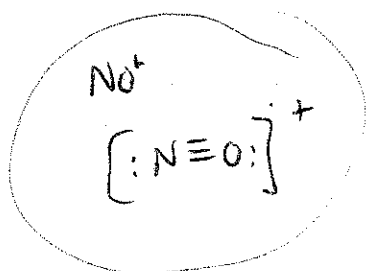
4. How many valence electrons are in:
 (Show calculation.)

- a. sulfite ion (SO_3^{2-}) $6 + (3 \times 6) + 2 = 26$
 b. nitrosyl ion (NO^+) $5 + 6 - 1 = 10$
 c. phosphite ion (PO_3^{3-}) $5 + (3 \times 6) + 3 = 26$
 d. azide ion (N_3^-) $5 \times 3 + 1 = 16$

2 each

5. Draw Lewis structures for:

- a. sulfite ion
 b. nitrosyl ion
 c. phosphite ion
 d. azide ion



6. Write the name for the molecular geometry of each ion in the previous problem.

(Possible names are: tetrahedral, trigonal pyramidal, bent 109°, trigonal planar, bent 120°, and linear.)

Draw a circle around the ion's name below if the ion is polar.

- a. Sulfite ion Trigonal pyramidal
 b. Nitrosyl ion Linear
 c. Phosphite ion Trigonal pyramidal
 d. Azide ion Linear

2 each
 based on #5