

Name:

Partner Name:

## Molecular Shapes

Instructions:

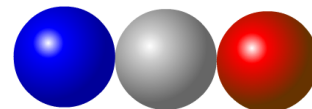
- Click <http://www.simbucket.com/simulation/chemthink-molecular-shapes/>
- Scroll down to the simulation and press the play button.
- Enter a random name in the guest section to access the Chemthink.
- Follow along and answer the questions below. You can physically draw some answers and insert the image in this document, if you prefer.

1. Where in a covalent bond are shared electrons the most likely to be found?

Ans:

2. When you move the red (right) atom, what happens to the blue (left) one?

Ans:

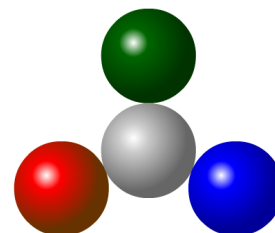


3. What bond angle forms between the red and blue atom?

- 180°
- 120°
- 109.5°
- 90°

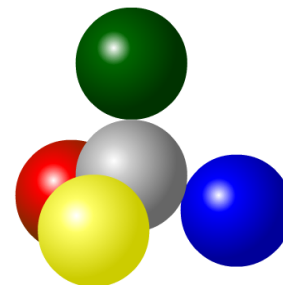
4. If there are **three** atoms bonded to the central atom, what angle forms between them?

- 180°
- 120°
- 109.5°
- 90°

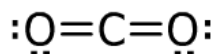


5. If there are **four** atoms bonded to the central atom, what angle forms between them?

- 180°
- 120°
- 109.5°
- 90°

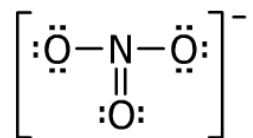


6. **Circle or describe** all the areas of electron concentration around the central atom in this molecule of carbon dioxide.

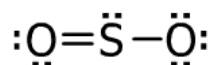


- Carbon dioxide takes a \_\_\_\_\_ molecular shape.
- The bond angle for carbon dioxide is: \_\_\_\_\_.

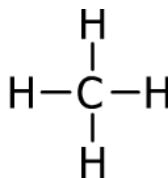
7. **Circle or describe** all the areas of electron concentration around the central atom in this nitrate molecule.



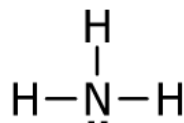
- a. Nitrate takes a \_\_\_\_\_ molecular shape.
- b. The bond angle for nitrate is: \_\_\_\_\_.
8. **Circle or describe** all the areas of electron concentration around the central atom in this sulfur dioxide molecule.



- a. Sulfur dioxide takes a \_\_\_\_\_ molecular shape.
- b. The bond angle for sulfur dioxide is: \_\_\_\_\_.
9. **Circle or describe** all the areas of electron concentration around the central atom in this methane molecule.

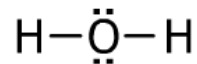


- a. Methane takes a \_\_\_\_\_ molecular shape.
- b. The bond angle for methane is: \_\_\_\_\_.
10. **Circle or describe** all the areas of electron concentration around the central atom in this ammonia molecule.



- Ammonia takes a \_\_\_\_\_ molecular shape.
- a. The bond angle for ammonia is: \_\_\_\_\_.

11. **Circle or describe** all the areas of electron concentration around the central atom in this water molecule.



Water takes a \_\_\_\_\_ molecular shape.

- a. The bond angle for water is: \_\_\_\_\_.

12. **Draw** the diagram for methane (you can insert a picture OR submit a separate document.

Ans:

- a. What does the dashed line represent? Ans:  
b. What does the solid black wedge represent? Ans:

13. Click the “PROBLEMS” Button AFTER exiting the simulation and attempt the questions. Record at least THREE of your correct answers. For each, EXPLAIN why they are correct. Record at least ONE incorrect answer and EXPLAIN the error and the correct answer. (or add an additional correct answer if you have none incorrect).

**ANSWERS (4 total)**

**EXPLANATIONS**

Ans: