

QUESTION 1

Fill in the blanks with the best answer from the Word Bank to complete the sentence.

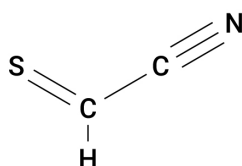
Word Bank			
arcs	triangles	dotted lines	straight lines

When drawing a structural model, covalent bonds between atoms are shown as

straight lines ✓

QUESTION 2

Drag and drop the best terms to complete the diagram.



one sigma bond and

two sigma bonds and a pi bond

two sigma bonds and two pi bonds

three sigma bonds

pi bond

three pi bonds

QUESTION 3

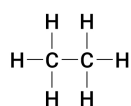
sigma bond ✓

sigma bond and a pi bond ✓

Drag and drop the best terms to label the images.



space-filling model ✓



structural formula model ✓

Bohr atomic model

ball-and-stick model

Lewis structure model

molecular formula model

QUESTION 4



Select the best answer from the drop-down menu to complete the sentence.

The model that emphasizes the volume that each atom in the molecule occupies is the space-filling ✓ ▼ model.

QUESTION 5



Select the best answers from the drop-down menus to complete the sentences.

A single covalent bond forms when one pair ✓ ▼ of electrons are shared between two atoms. Single bonds usually form

sigma ✓ ▼ bonds.

QUESTION 6



Select the best answers.

Which molecular model uses colors to identify the different types of atoms in the model?

☒ ball-and-stick model ✓

☐ Lewis structure

☒ space-filling model ✓

☐ structural formula

☐ skeletal model

☐ molecular formula

QUESTION 7



Select the best answer.

Which of the following are true of triple covalent bonds?

- ☒ Triple bonds form with one sigma bond and two pi bonds. ✓
- ☐ Triple bonds are formed with three sigma bonds.
- ☐ Triple bonds form when three electrons are shared between two atoms.
- ☐ Triple bonds are formed with three pi bonds.
- ☐ Triple bonds are formed with two sigma bonds and one pi bond.
- ☒ Triple bonds form when three pairs of electrons are shared between two atoms. ✓

QUESTION 8



Select the best answers.

Which of the statements comparing the ball-and-stick model and the structural formula model are true?

- ☐ Neither uses symbols or colors for each atom.
- ☒ The ball-and-stick model uses color, while the structural model uses symbols, to identify the atoms. ✓
- ☐ Both are three-dimensional models.
- ☒ The ball-and-stick model is a 3D model, while the structural model is a 2D model. ✓
- ☐ Both are two-dimensional models.
- ☐ Both use symbols and colors for each atom.

QUESTION 9



Select the best answer.

Both the structural formula model and Lewis structure model show bonds between atoms. Which of the following is a difference between the two models?

- ☐ The Lewis structure model shows the colors of the different elements.

☐ The structural formula model shows lone pairs of electrons as dots.

☒ The Lewis structure model shows lone pairs of electrons as dots. ✓

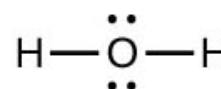
☐ The structural formula model shows the colors of the different elements.

QUESTION 10



Select the best answer.

Which statement describes what the dots in this model of a molecule represent?



☐ The dots represent pi bonds.

☒ The dots represent lone pairs of electrons around an atom. ✓

☐ The dots represent sigma bonds.

☐ The dots represent atoms available for bonding.

QUESTION 11



Select the best answer.

Among the different models commonly used to show molecules, which model does not show the structure of the molecule?

☐ Lewis structure model

☐ ball-and-stick molecular model

☒ molecular formula model ✓

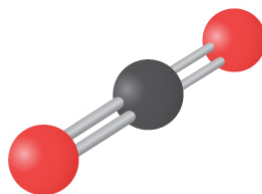
☐ space-filling model

QUESTION 12



Select the best answer.

The ball and stick model and the structural model are both used to show the bonds in molecules. Which of the following is an advantage of the ball-and-stick model?



☐ The ball-and-stick model shows lone pairs of electrons.

☐ The ball-and-stick model is easy to draw.

☒ The ball-and-stick model uses colors to identify the atoms.



☐ The ball-and-stick model shows the atoms.

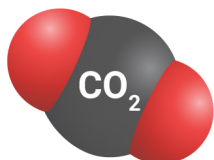
QUESTION 13



Select the best answer.

Which of the following is a Lewis dot model of carbon dioxide?

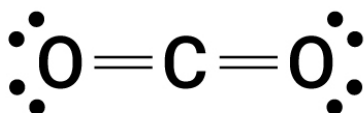
☐



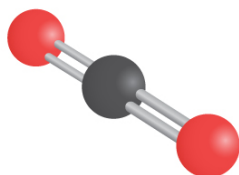
☐



☒



☐



QUESTION 14



Select the best answer.

Which statement about double covalent bonds is true?

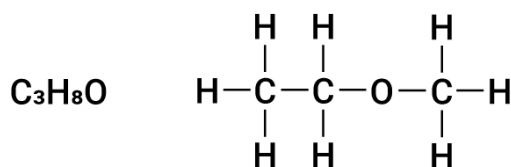
- ☐ One pair of electrons are shared between two atoms, forming two sigma bonds.
- ☐ One pair of electrons are shared between two atoms, forming one sigma and one pi bond.
- ☐ Two pairs of electrons are shared between two atoms, forming two sigma bonds.
- ☒ Two pairs of electrons are shared between two atoms, forming one sigma and one pi bond. ✓

QUESTION 15



Select the best answers.

Which of the following are features of a structural formula and not a molecular formula?



Molecular Formula

Structural Formula

- ☒ The structural formula shows the relative position of atoms. ✓
- ☐ The ratio of the different elements can more quickly be determined in a structural model.
- ☒ The structural formula shows bond types. ✓
- ☐ The structural formula shows you the space occupied by each element.
- ☐ The different elements in the molecule can be determined more quickly in the structural formula.
- ☐ The structural formula is quicker and easier to write.