Functional groups participate in chemical changes and give each molecule unique properties. Circle the functional groups that are discussed in this module in the molecules below. Label an example of each of the following: hydroxyl group, carbonyl group, carboxyl group, amino group, and phosphate group, methyl group. There are a total of ___ hydroxyl group(s), ___ carbonyl group(s), ___ carboxyl group(s), ___ amino group(s), ___ phosphate group(s), and ___ methyl group(s). (The properties of the molecules are described at the right.)

\[ \text{H}_2\text{C}=\text{O} \quad \text{H}_2\text{C}=\text{C}=\text{O} \]

- Formaldehyde is the starting point for making many chemicals.

\[ \text{H}_2\text{C}=\text{C}=\text{O} \]

- Ethylene glycol is in automobile antifreeze.

\[ \text{C}=\text{C}=\text{C}=\text{O} \]

- Acrolein is produced when meat is heated; it is the barbecue smell.

\[ \text{H}\text{N}=\text{C}-\text{C}=\text{O} \]

- Serine is part of many protein molecules.

\[ \text{H}\text{N}=\text{N} \]

- Urea is a waste product in urine.

\[ \text{H}_2\text{N}=\text{C}=\text{C}=\text{C}=\text{N}\text{H} \]

- Putrescine's name is descriptive; it is produced in rotting flesh.

\[ \text{O}^\ddagger\text{C}-\text{C}=\text{O}-\text{P}=\text{O}^\ddagger \]

- G3P is an intermediate step in plants' production of sugar.