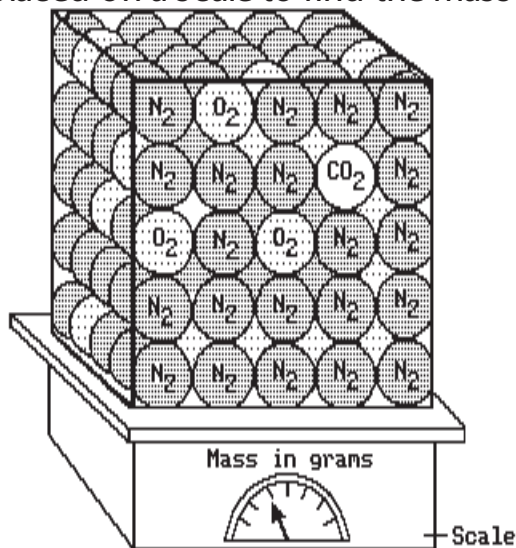






The diagram below represents a model that shows how air density is affected by the addition of water vapor to the air. Marbles with different masses, representing nitrogen, oxygen, and carbon dioxide, were used to fill a container to show a certain volume of dry air. The container was placed on a scale to find the mass of this volume of dry air.



MOLECULE SYMBOL	GAS	MASS
	Nitrogen	28 g
	Oxygen	32 g
	Carbon Dioxide	44 g
	Water Vapor	18 g

A few marbles representing nitrogen ( $N_2$ ) and oxygen ( $O_2$ ) were removed and replaced with marbles representing water vapor ( $H_2O$ ) to show the same volume of air with water vapor present. The relative mass of each gas, as represented by the marbles, is shown in the data table.

According to the data table, which gas molecule has the least mass?

- A) oxygen
- B) water vapor
- C) nitrogen
- D) carbon dioxide

When a few of the marbles representing nitrogen and oxygen are replaced with marbles representing water vapor, the air model will become

- A) heavier and less dense
- B) lighter and less dense
- C) heavier and more dense
- D) lighter and more dense