1. When mercury (II) oxide is heated, it decomposes into mercury and oxygen gas according to the following balanced equation.

\[ 2 \text{HgO} \rightarrow 2 \text{Hg} + \text{O}_2 \]

a. Given that the density of oxygen is 1.439 g/L, how many liters of oxygen gas can be produced if 2.0 moles of mercury (II) oxide are heated?

b. How many molecules of oxygen gas are produced if 25.0 g of mercury (II) oxide are heated?

2. How many molecules of sodium nitrate are produced when 20.0 g of sodium azide, NaN₃, react according to the following balanced equation?

\[ \text{NaN}_3 + \text{AgNO}_3 \rightarrow \text{AgN}_3 + \text{NaNO}_3 \]