$\qquad$
Part A: Identify the following parts of each chemical formula by circling the subscripts and drawing a square around the coefficients.
$\mathrm{H}_{2}$
2 HCl
$4 \mathrm{O}_{2}$
$\mathrm{CH}_{4}$
$3 \mathrm{CO}_{3}$
2 NaOH

Part B: List the symbols for the atoms in each formula and give the number of each.
$\mathrm{C}_{2} \mathrm{H}_{6}$
2 MgO
$\mathrm{NH}_{3}$
$3 \mathrm{Al}(\mathrm{OH})_{3}$
$2 \mathrm{H}_{2} \mathrm{O}_{2}$

Part C: Balance each of the following equations following the procedure described in class. Be sure to show your work.

$$
\begin{aligned}
& \mathrm{P}+\mathrm{O}_{2} \rightarrow \mathrm{P}_{4} \mathrm{O}_{10} \\
& \mathrm{Mg}+\mathrm{O}_{2} \rightarrow \quad \mathrm{MgO} \\
& \mathrm{P}=\quad \mathrm{P}=\quad \mathrm{Mg}=\quad \mathrm{Mg}= \\
& \mathrm{O}=\quad \mathrm{O}= \\
& \mathrm{O}= \\
& \mathrm{O}= \\
& \mathrm{HgO} \rightarrow \mathrm{Hg}+\mathrm{O}_{2} \\
& \mathrm{Al}_{2} \mathrm{O}_{3} \rightarrow \mathrm{Al}+\mathrm{O}_{\mathbf{2}} \\
& \mathrm{Hg}= \\
& \mathrm{Hg}= \\
& \mathrm{O}= \\
& \mathrm{Al}= \\
& \mathrm{Al}= \\
& \mathrm{O}= \\
& \mathrm{O}= \\
& \mathrm{O}= \\
& \mathrm{BaCl}_{2}+\mathrm{H}_{2} \mathrm{SO}_{4} \rightarrow \mathrm{BaSO}_{4}+\mathbf{H C l}
\end{aligned}
$$

Part D: Practice Problems - Balance each equation using the process from Part C.
$\mathrm{Cl}_{2}+\mathrm{NaBr} \rightarrow \mathrm{NaCl}+\mathrm{Br}_{2} \quad \mathrm{H}_{2}+\mathrm{N}_{2} \rightarrow \mathrm{NH}_{3}$
$\mathrm{Na}+\mathrm{Br}_{2} \rightarrow \mathrm{NaBr}$
$\mathrm{CuCl}_{2}+\mathrm{H}_{2} \mathrm{~S} \rightarrow \mathrm{CuS}+\mathrm{HCl}$
$\mathrm{HgO}+\mathrm{Cl}_{2} \rightarrow \mathrm{HgCl}+\mathrm{O}_{2}$
$\mathrm{C}+\mathrm{H}_{2} \rightarrow \mathrm{CH}_{4}$

Challenge Droblem: Give it your best shot:

$$
\mathrm{C}_{2} \mathrm{H}_{6}+\mathrm{O}_{2} \rightarrow \mathrm{CO}_{2}+\mathrm{H}_{2} \mathrm{O}
$$

Part A: Identify the following parts of each chemical formula by circling the subscripts and drawing a square around the coefficients.
H2
2 HCl

$\mathrm{CH}_{4}$

2 NaOH

Part B: List the symbols for the atoms in each formula and give the number of each.
$\mathrm{C}_{2} \mathrm{H} 6$
$\mathrm{C}=2$
$\mathrm{H}=6$
$\mathrm{Mg}=2$
$\mathrm{O}=2$

$$
\begin{aligned}
& 4 \mathrm{P}_{4} \mathrm{O}_{10} \\
& \mathrm{P}=16 \\
& \mathrm{O}=40
\end{aligned}
$$

$\mathrm{NH}_{3}$
$\mathrm{N}=1$
$\mathrm{H}=3$
$3 \mathrm{Al}(\mathrm{OH})_{3}$
$2 \mathrm{H}_{2} \mathrm{O}_{2}$
$\mathrm{Al}=3$
$\mathrm{H}=4$
$\mathrm{O}=9$
$\mathrm{O}=4$

Part C: Balance each of the following equations following the procedure described in class. Be sure to show your work.

$$
\begin{aligned}
& \mathbf{4 P}+\mathbf{5 O}_{\mathbf{2}} \rightarrow \mathbf{P}_{\mathbf{4}} \mathrm{O}_{\mathbf{1 0}} \\
& \mathrm{P}=\quad \mathrm{P}=\quad \mathrm{Mg}=\quad \mathrm{Mg}= \\
& \mathrm{O}=\quad \mathrm{O}=\quad \mathrm{O}=\quad \mathrm{O}= \\
& 2 \mathrm{HgO} \rightarrow 2 \mathrm{Hg}+\mathrm{O}_{2} \\
& \mathbf{2 A l}_{2} \mathrm{O}_{\mathbf{3}} \rightarrow \mathbf{4 A I}+\mathbf{3 O}_{\mathbf{2}} \\
& \mathrm{Hg}= \\
& \mathrm{Hg}= \\
& \mathrm{O}= \\
& \mathrm{O}= \\
& \mathrm{BaCl}_{2}+\mathbf{H}_{2} \mathrm{SO}_{4} \rightarrow \mathbf{B a S O}_{4}+\mathbf{2 H C l} \\
& \begin{array}{ll}
\mathrm{Ba}= & \mathrm{Ba}= \\
\mathrm{Cl}= & \mathrm{Cl}= \\
\mathrm{H}= & \mathrm{H}= \\
\mathrm{S}= & \mathrm{S}= \\
\mathrm{O}= & \mathrm{O}=
\end{array}
\end{aligned}
$$

Part D: Practice Problems - Balance each equation using the process from Part C.
$\mathrm{Cl}_{2}+2 \mathrm{NaBr} \rightarrow 2 \mathrm{NaCl}+\mathrm{Br}_{2} \quad 3 \mathrm{H}_{2}+\mathrm{N}_{2} \rightarrow 2 \mathrm{NH}_{3}$
$2 \mathrm{Na}+\mathrm{Br}_{2} \rightarrow 2 \mathrm{NaBr}$
$\mathrm{CuCl}_{2}+\mathrm{H}_{2} \mathrm{~S} \rightarrow \mathrm{CuS}+2 \mathrm{HCl}$
$2 \mathrm{HgO}+\mathrm{Cl}_{2} \rightarrow 2 \mathrm{HgCl}+\mathrm{O}_{2}$
$\mathrm{C}+2 \mathrm{H}_{2} \rightarrow \mathrm{CH}_{4}$

## Challenge Droblem:

$$
2 \mathrm{C}_{2} \mathrm{H}_{6}+7 \mathrm{O}_{2} \rightarrow 4 \mathrm{CO}_{2}+6 \mathrm{H}_{2} \mathrm{O}
$$

