1. (a) SE (b) P (c) M (d) WE
2. \( \text{BaCO}_3(s) + 2 \text{H}^+(aq) \rightarrow \text{Ba}^{2+}(aq) + \text{CO}_2(g) + \text{H}_2\text{O}(l) \)
3. D
4. 54.8 g
5. To reduce air pollution or increase the efficiency of combustion of gasoline are both acceptable answers.

#1 is 3 No partial credit.

2. Take at 1/2 if one or more states (aq), (g), (s) are missing. 

Take at one point if \( \text{H}_2\text{CO}_3(aq) \) is not broken down to \( \text{H}_2\text{O}(l) + \text{CO}_2(aq) \)

Take at 1 point if \( \text{BaCO}_3(s) \) is broken up on the left side of the equation.

A.

\[
\text{Mg}(s) + \text{I}_2(g) \rightarrow \text{MgI}_2(s)
\]

5.15 g Mg \( \frac{\text{1 mol Mg}}{24.31 g} \) \( \frac{\text{1 mol MgI}_2}{\text{1 mol Mg}} \) \( \frac{278.11 g}{\text{1 mol MgI}_2} \) = 58.9 g

50.0 g I\(_2\) \( \frac{\text{1 mol I}_2}{253.81 g} \) \( \frac{\text{2 mol MgI}_2}{\text{1 mol I}_2} \) \( \frac{278.11 g}{\text{1 mol MgI}_2} \) = 54.8 g MgI\(_2\)

Ans: 54.8 g MgI\(_2\)

Both calc's must be shown for credit.

If only the 2nd is shown, only 1/2