Name: _____ Group: _____

SUPPORT DOCUMENT

CREATING THE CONTEXT

I ask myself questions

1. What is a chemical change?

2. What clues help us to recognize a chemical change?

3. What is a characteristic property?

4. How can we identify a gas?

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CREATING THE CONTEXT (*continued*)

I must

5. Restate in your own words the goal of the problem to solve.

6. What is the independent variable?

7. What is the dependent variable?

I think

8. In your opinion, what gas will be released by the mixture you chose? Formulate a hypothesis and justify it.

Reflection

	Yes	No
Do I fully understand the scientific concepts involved in the problem to solve?	☐	☐

Name: _____ Group: _____

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PLANNING THE PROBLEM SOLVING

I plan

1. Make a list of the materials and substances you will need to conduct your experiment.

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

2. Write up an experimental protocol. Don't forget that you must identify the gas that is released.

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PLANNING THE PROBLEM SOLVING (*continued*)

3. Make a table for recording your observations. Don't forget to give the table a title.

4. What safety rules should you follow during your experiment?

Reflection

	Yes	No
Have I considered other possibilities?	☐	☐

Teacher's approval

Name: _____ Group: _____

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INITIATING THE PROBLEM SOLVING

I experiment

1. Conduct the experiment and record your observations in the table you made.

2. Did you modify your plan of action during the experiment? If yes, why?

3. Did you work in a safe manner during the experiment? Justify your answer with at least two examples.

Reflection

	Yes	No
Did I record and justify all the modifications made to my plan of action?	☐	☐

Name: _____ Group: _____

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ANALYZING RESULTS AND DRAWING CONCLUSIONS

I analyze my results

1. What is the gas that was released? Justify your answer.

2. What clues allow you to say that the change you observed was a chemical one? Justify your answer.

3. Are the conditions under which your experiment was conducted similar to those found on a freight train? Name one factor likely to influence the results. Justify your answer.

4. Is the released gas potentially dangerous?

Name: _____ Group: _____

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ANALYZING RESULTS AND DRAWING CONCLUSIONS (*continued*)

5. What are the possible causes of errors in your experiment? Propose one way to remedy this.

I draw my conclusions

6. Was your hypothesis correct? Explain.

7. What conclusion can you draw from your experiment?

8. What recommendation would you make to the head of safety of the railway company?