

Purpose:

To *identify* the steps involved in a **scientific investigation**.

Vocabulary:

- **Scientific Question** – A testable question that asks how the responding variable will be affected by a change in the manipulated variable.
- **Scientific method** – A process used to conduct investigations. The process generally involves making a question, developing an hypothesis, performing an experiment, analyzing data, drawing a conclusion, and communicating the results publicly.



1. What question is your team trying to answer?

2. What are the three rules you must follow to successfully save Fred?

- a. _____
- b. _____
- c. _____

3. Brainstorm ways to save Fred with your team. Test your ideas to see what works.

4. Give step-by-step procedures for how to save Fred?

Draw Key Figures Below

Step 1. _____

Step 2. _____

Step 3. _____

Step 4. _____

Step 5. _____

Step 6. _____

Step 7. _____

Step 8. _____

Step 9. _____

Step 10. _____

5. Exchange your procedure with another team. They will complete the Quality Review.

Save Fred Quality Review

Reviewers Name _____

Reviewers Name _____

1. Follow the procedure on the front side of this sheet.

2. Which key steps of this procedure worked well? *Explain using step numbers.*

3. Tell which key step(s) of this procedure did not work well? *Tell why using step numbers.*

4. Describe how the step(s) discussed in 3 above could be improved? Be specific

5. With your group, analyze your own procedure. Make corrections with a red pen.

Analysis Questions

Answer the questions below in complete, quality, and correct sentences using facts, reasons, evidence, or details to support your answer.

1. You can solve problems in many different ways. In fact, you may use more than one way to solve a single problem. You can:

- *develop a plan*
- *find a pattern*
- *draw a picture or diagram*
- *act out the problem*
- *make a list*
- *guess and test*
- *work backward*
- *write an equation*
- *construct a table or graph*
- *simplify the problem*
- *use objects to model the problem*

a. **Circle each of the ways above** that you and your partner used to save Fred.

Choose **three of the ways above and record** a problem that could be solved using each method.

1. _____ _____ _____
2. _____ _____ _____
3. _____ _____ _____

2. The traditional scientific method includes the following steps for solving problems.

- Step 1.** State the problem or question.
- Step 2.** Propose an explanation, also known as the hypothesis.
- Step 3.** Collect evidence. (Conduct an experiment.)
- Step 4.** Analyze data.
- Step 5.** Draw conclusions
- Step 6.** Repeat and Recheck 3x => If necessary revise the experiment.
- Step 7.** Communicate results.

