The Method's the Key!

By Trista L. Pollard

[1] Some of the best inventions happen by accident, like Toll House cookies. However, most inventions happen after many years of research. Scientists test and retest ideas hoping to solve **scientific** puzzles. Good scientists use a process called the **scientific method**.

[2] The scientific method is a series of problem solving steps that help scientists answer scientific questions. You also use the scientific method when you work on **experiments** in your classroom. Scientists use this method to prove or disprove a scientific question. These questions usually are asked after scientists have made **observations**. An observation happens when you use your senses to notice your environment. For example, as you leave for school, you notice that your mildly curly hair became very curly (almost frizzy) as soon as you walked out of the door. You are not happy about this development, since it took you a long time to get your hairdo just right. Although annoying, this is an observation.

[3] After observing your high hair, you ask yourself, "Why does my hair become very curly when I step outside?" This is your **scientific question**. You start to guess or think about possible reasons for your frizzy hair. The time has come for you to make a good guess or a **hypothesis** based on your observations. You predict that your hair becomes very curly because of the humidity in the air. To prove your hypothesis, you need to develop a **procedure** or plan to test your **prediction**.

[4] Your plan is very simple. Since you heard on the news that the humidity would be high tomorrow, you decide to (1) do your hair again and (2) step outside the door and see what happens. These two steps will allow you to see if humidity causes mildly curly hair to become curlier. When you wake up in the morning, you go through your usual hair routine. When you step outside, you are not disappointed because your hair becomes even curlier today since the humidity is even higher. Now you are ready to **record** your **results**.

[5] Scientists record their results either with pictures or with words. They use charts, graphs, diagrams, and summaries to communicate their results. In this case, you may wish to mentally note what happens to your hair on humid days. You might also choose to share the results or **data** with your friends at the lunch table in school. You could also write a short paragraph about your experiment and give it to your teacher. However, before you record your results make sure you include a **conclusion**. This conclusion or statement tells the results of your experiment. Your conclusion is, "When people with curly hair walk outside on humid days, their hair may become curlier depending on the amount of humidity."

[6] You are probably feeling good about your results and think that your scientific study is over. However, good scientists also ask more questions, record more observations, and offer more suggestions about the subject they are studying. You may ask, "Is there a way to prevent my hair from becoming curlier or frizzy on humid days?" After researching your new question, you could offer suggestions to other people with your dilemma. Keep in mind, that whatever scientists investigate, they know that the scientific method is the key to unlocking scientific secrets.

Name _____ Science Pd: _____

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1. A hypothesis is_____.
   - (A) A prediction or guess that is not based on observations
   - (B) A prediction or guess based on observations
   - (C) A result of an experiment
   - (D) None of the above

2. The scientific method is one step scientists use to solve scientific problems.
   - (A) False
   - (B) True

3. What is an observation?

   _____

   _____

4. Which statement is **not** a prediction?
   - (A) I think the balloon will pop when the chemicals react.
   - (B) I think the wood will float when I put it into the water.
   - (C) I think the salt will dissolve when I add water to the cup.
   - (D) I think I will stay home tonight.

5. What are ways that scientists record their results/data?
   - (A) Pictures
   - (B) Words
   - (C) Both a and b
   - (D) None of the above

6. What is a conclusion?

   _____

   _____

7/8. Fill in the missing words of the flow chart showing the steps of the scientific method:

Make observations → _____ → Write a procedure and test it →

_____ → Write a conclusion → Ask more questions to be tested later.