Observations and Inference Practice

A. Define the following terms to help you on this assignment:

1. Quantitative Observation: ________________________________________________
2. Qualitative Observation: ________________________________________________
3. Inference: _____________________________________________________________

B. Look at the picture of the boy in the pond. Identify the statements below it as follows:

O - Observation  I - Inference

1. _____ The boy is in the water.
2. _____ The weather is cold.
3. _____ If the boy crawled out of the water, the goat would push him.
4. _____ The tree branch is broken
5. _____ The goat is standing by the pond.
6. _____ The branch will fall on the boy’s head.
7. _____ The boy fell off the rocks.
8. _____ The boy fell off the branch.
9. _____ There is a sailboat in the water.
10. _____ The sailboat belongs to the boy.
11. _____ The goat will soon leave the pond.
12. _____ The tree by the pond has no leaves.
13. _____ There are three rocks in the pond.
14. _____ The tree by the pond is dead.
15. _____ If it rains, leaves will grow on the tree.
16. _____ The goat pushed the boy in the pond.
C. Read the following statements. Identify each statement as follows:

QL = Qualitative Observation   QN = Quantitative Observation   I = Inference

1. _____ The hamburger was hot.
2. _____ Jamal must be very popular.
3. _____ The sun set at 7:18pm
4. _____ That sounded like a mean dog.
5. _____ Corn must be her favorite vegetable because she ate a lot.
6. _____ Those clouds look like it is going to rain.
7. _____ The beaker contains 250mL of water.
8. _____ The bark on the birch tree was white.
9. _____ A gas formed when I mixed the solid and liquid.
10. _____ The first-place pumpkin at the County Fair weighed 117lbs!

D. Read the following passage and UNDERLINE THE OBSERVATIONS and CIRCLE (or highlight) THE INFERENCES made by the detective.

The rain had just stopped. Detective Richards arrived at the house at 2:00pm. The front door was locked. He pried open the door and went in. Mrs. Williams was lying in bed. She was dead. The bedroom window faced the garden. The window was open and there were several small puddles of water between Mrs. Williams’ bed and the window. The woman was wearing a pearl necklace, and there was a bottle of pills on the night stand near the bed. Mr. Williams was out of town on business. Because Mrs. Williams was still wearing her pearls, robbery could not have been the motive. It was obviously case of murder. The murderer must have come though the bedroom window and killed Mrs. Williams. The puddles of water were probably left by his shoes.
E. Look at the picture. List in the chart below three (3) OBSERVATIONS and three (3) INFERENCEs that can be made from those observations:

<table>
<thead>
<tr>
<th>Observation</th>
<th>Inference</th>
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<tbody>
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F. Read the following observations. Then make inferences that explain each observation:

<table>
<thead>
<tr>
<th>Observation</th>
<th>Inference Explaining Observation</th>
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</thead>
<tbody>
<tr>
<td>1. I am sitting in my bedroom working on the computer at night. Suddenly the lights and computer turn off, leaving me in darkness. My phone is still on though.</td>
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<tr>
<td>2. I am sitting in the living room on the couch petting my dog and eating a sandwich. The phone rings, so I put down my sandwich on the coffee table and go and answer it. When I come back the dog and the sandwich are gone.</td>
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</tr>
<tr>
<td>3. I am inside and I can hear my brother playing baseball in the backyard with his friend. I hear someone hit the ball really hard and then hear glass shattering.</td>
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</tbody>
</table>
4. An intense storm passes over my house bringing lots of rain. A few days later I notice a brown stain appear on the ceiling in my kitchen.

5. It is summer and I go away for a 2-week vacation. Before I go, I water my vegetable garden one last time and notice that everything is green and healthy. When I get back from vacation, I notice that all the vegetables have gone brown and are dead.

**G. Pre-AP: Answer these questions about using Observations and Inferences in experiments.**

1. I am in the lab timing how long it takes to boil 100mL of water in a beaker on a hotplate. I observe it takes 5:15 minutes to boil the water. I want to get the most accurate answer possible so I repeat the test again, making sure everything is the same. The second time it takes 7:05 minutes to boil the water. I think this is unusual so I repeat the experiment a third time, and it takes 5:20 minutes to boil. **What could we infer about the differences in the times observed?** Support your inference with information from the observations.

2. I am in the lab seeing if adding sugar to water affects how long it takes the water to boil. In the first test I boil 100 mL of **water only** in a beaker on a hotplate and observe it takes 5:15 minutes to boil. Next I add 2 grams of **sugar** to 100 mL of water and stir to dissolve, then boil making sure everything else is the same. This time it takes 7:05 minutes to boil the sugar-water mix. Next I add 4 grams of **sugar** to 100 mL of water. This time it takes 10:35 minutes to boil the sugar-water mix. **What could we infer about the effect sugar has on the boiling time of water?** Support your inference with information from the observations.

3. I want to know what effect salt has on the growth of grass. So, I measure out 3 equal sized squares of grass out of the back of the Cafeteria. The first square of lawn I water with **5 liters of pure water** from a watering can every day. The second square of lawn I water with **5 liters of pure water with 2 grams of salt mixed in** every day. The third square of lawn I water with **5 liters of pure water with 4 grams of salt mixed in** every day. I measure the height of the grass after 14 days and note the following observations. The first square is green and 15 cm tall. The second square is green-yellow and 6 cm tall. The third square is yellow-brown and looks dead and is only 2 cm tall. **What could we infer about the effect salt has on the growth of grass?** Support your inference with information from the observations.