Student Worksheet # 1
Walking magic (30 points possible)

Name -------------------------------------    Period --------------------------------------

Date ----------------------------------------   Points --------------------------------------

Overview
This lesson plan is designed with the intention of engaging you to discover that science is based on inquiry and discovery. You will have the opportunity to observe a phenomenon and use it to develop experiments, which could explain your observations. Also, you will be introduced to relevant, cutting edge research based on the principle that you investigated. This activity will allow you to observe and develop hypotheses, and to manipulate variables in different experimental settings, to develop answers to your own questions.

Objectives
You will learn to identify and develop a researchable question, collect data through conducting experiments, and formulate conclusions. This activity will foster an understanding of the relationship between form and function in the natural environment and how this relationship can be used to develop new products. Moreover, you will gain an introduction to the scientific method, and will discover the excitement of science.
Student Worksheet # 1

The objectives of this lesson are:
- To make observations on a given phenomenon
- Propose possible explanations (hypotheses) for your observation

Materials
- Water striders
- Water
- Sodium Dodecyl Sulfate (SDS) or any other detergent or liquid soap
- Glass slides
- Pipettes
- Small rulers and protractors

Day 1

Obtain from your teacher or locate on your bench the polystyrene box and two cups with solution (one labeled A and one B)
Obtain from your teacher a polystyrene box that contains a water strider
Pour the solution from the cups in the polystyrene box, the A cup in one side which you should label A and the other in the second half which you should label B. Place the polystyrene box that contains the water strider (the mesh side down) in the side A and make observations
Remove from the box from side A and place it in side B and make observations
Remove from side B and rinse off the bug with regular water and place the box on a paper towel, with the mesh side down
Discuss amongst your group the observations that you made and brainstorm possible explanations that could account for them
Formulate a specific question that you are interested in examining

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<tr>
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<th>Setting A</th>
<th>Setting B</th>
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<tr>
<td>Observations</td>
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Describe possible explanations for your observations:
Student Worksheet # 2
Walking magic (70 points possible)

Name -------------------------------------    Period ------------------------------

Date ----------------------------------------   Points -----------------------------

Overview
This lesson plan is designed with the intention of engaging you to discover that science is based on inquiry and discovery. You will have the opportunity to observe a phenomenon and use it to develop experiments, which could explain your observations. Also, you will be introduced to relevant, cutting edge research based on the principle that you investigated. This activity will allow you to observe and develop hypotheses, and to manipulate variables in different experimental settings, to develop answers to your own questions.

Objectives
You will learn to identify and develop a researchable question, collect data through conducting experiments, and formulate conclusions. This activity will foster an understanding of the relationship between form and function in the natural environment and how this relationship can be used to develop new products. Moreover, you will gain an introduction to the scientific method, and will discover the excitement of science.
Student Worksheet #2

Objectives of this lesson are:

Design an experimental protocol, to test your hypothesis.
Create a short presentation to describe what you discovered.

Materials:
- Water striders
- Water
- Sodium Dodecyl Sulfate (SDS) or any other detergent or liquid soap
- Glass slides
- Pipettes
- Glass jars with tops that have center cut out (Plastic cups, and rubber bands could be used as substitutes)
- Meshes of different sizes cut to fit the tops or to cover the cups
- Small rulers and protractors
- Tubs, or large containers
- Presentation materials

Day 2
Create a diagram to illustrate your experimental protocol
Check with your teacher for approval of your experimental protocol
Perform your experiment
Collect data
Organize and analyze your results and establish if it does support your hypothesis

Day 3
Develop a short presentation through which you should communicate the following points:
- The problem that you investigated
- The experimental design that you implemented
- The observations that you collected through the experiment
- The correlation between the experiment outcomes and the question that you set to investigate

[Materials for presentation: white board and colored markers, poster board, presentation easels, colored markers]
Present results to the rest of the class
Outline your experimental protocol

Reminder: check the list of available materials, and keep them in mind as you design your experiment. If you think that you might need some other materials ask your teacher to see if it might be possible to get them.

Teacher’s signature signifies approval of outline. -------------------------------
Data Collection

<table>
<thead>
<tr>
<th>Observations</th>
<th>Set up #1</th>
<th>Set up #2</th>
<th>Set up #3</th>
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Please answer the following questions:

1. In what way did your experiment answer your question? Please provide a detailed answer.

2. Use your results to explain the initial observations made at the beginning of this lesson.