SCIENTIFIC METHOD
WARM UPS
By: Jessica Smith
11 Days of Warm Ups About The Steps of the Scientific Method
Thank you for your purchase! If you have any questions, feel free to contact me on TpT or via e-mail at jessicadsmith1218@gmail.com

Thank You,

Jessica
Write down what you THINK you do for each of the following steps of the scientific method:

**Purpose:** _______________________________________________
________________________________________________________________

**Research:** _______________________________________________
________________________________________________________________

**Hypothesis:** _______________________________________________
________________________________________________________________

**Experiment:** _______________________________________________
________________________________________________________________

**Analysis:** _______________________________________________
________________________________________________________________

**Conclusion:** _______________________________________________
________________________________________________________________

**Follow-Up:** _______________________________________________
________________________________________________________________
The Scientific Method: Warm Up: Background

ANSWER KEY

Write down what you THINK you do for each of the following steps of the scientific method:

Purpose: The objective or problem that you are investigating. Can be written in the form of a question.

Research: Gathering reliable information about your topic to help your experiment.

Hypothesis: Formulating an educated prediction about the outcome of your experiment.

Experiment: Detailed steps that test your hypothesis.

Analysis: Closely studying your results and organizing them in graphs, charts, or tables.

Conclusion: A written explanation of your experiment - whether your hypothesis was accepted or rejected.

Follow-Up: Re-visit and revise your original hypothesis and experiment.
The Scientific Method: Warm Up: Hypothesis

Name: ____________________________ Date: _______________

For each of the following question, write a scientific hypothesis. Remember, do NOT use ‘I think’ or ‘I believe’.

Problem: Will adding more laundry detergent than what is recommended work better?
Hypothesis: ________________________________________________
___________________________________________________________
___________________________________________________________

Problem: What effect does putting salt in a boiling pot of water have on the time it takes to boil?
Hypothesis: ________________________________________________
___________________________________________________________
___________________________________________________________

Problem: Is the direction of root growth related to gravity?
Hypothesis: ________________________________________________
___________________________________________________________
___________________________________________________________
The Scientific Method: Warm Up: Hypothesis

(POSSIBLE) ANSWER KEY

For each of the following question, write a scientific hypothesis. Remember, do NOT use ‘I think’ or ‘I believe’.

Problem: Will adding more laundry detergent than what is recommended work better?

Hypothesis: If you add more laundry detergent than what is recommended, then your clothes would not get more clean because it has been tested that the recommended dose works best.

Problem: What effect does putting salt in a boiling pot of water have on the time it takes to boil?

Hypothesis: If you put salt in boiling water, then the water will not boil faster because salt is only added to boiling water for taste.

Problem: Is the direction of root growth related to gravity?

Hypothesis: Root growth is related to gravity because gravity pulls them towards the center of the earth.
Think about how you would wrap a present. Using the space below, write DETAILED steps of how you would wrap a present. Another person should be able to replicate your steps!
Gather 3 observations from the room you are in right now and record them below:

1. _______________________________________________________
   _______________________________________________________

2. _______________________________________________________
   _______________________________________________________

3. _______________________________________________________
   _______________________________________________________

Make 3 inferences about the room you are in based on your observations:

1. _______________________________________________________
   _______________________________________________________

2. _______________________________________________________
   _______________________________________________________

3. _______________________________________________________
   _______________________________________________________

Circle whether the following are observations or inferences.

1. Her classmate was wearing a red shirt.
   Circle One: Observation   Inference

2. The frog was croaking to talk to her babies.
   Circle One: Observation   Inference

3. The man's favorite food is pizza.
   Circle One: Observation   Inference

4. The teacher wrote “Welcome to School!” on the front board.
   Circle One: Observation   Inference

5. The boy's puppy loved when he rubbed his belly.
   Circle One: Observation   Inference

6. Her friend was mad after she lost the basketball game.
   Circle One: Observation   Inference

7. My mother turned right at the light.
   Circle One: Observation   Inference
Circle whether the following are observations or inferences.

1. Observation
2. Inference
3. Inference
4. Observation
5. Inference
6. Inference
7. Observation
The Scientific Method Warm Up: Observation & Inference 3

Name: ____________________________ Date: _______________

Using the picture below, make 3 observations and 3 inferences based on those observations.

<table>
<thead>
<tr>
<th>3 Observations</th>
<th>3 Inferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>3 Observations</th>
<th>3 Inferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
Possible Answers

Using the picture below, make 3 observations and 3 inferences based on those observations.

<table>
<thead>
<tr>
<th>3 Observations</th>
<th>3 Inferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. He has goggles on his head.</td>
<td>1. He is a chemist.</td>
</tr>
<tr>
<td>2. There is a paper on the desk.</td>
<td>2. The chemicals will explode.</td>
</tr>
<tr>
<td>3. There are bubbles coming from the flask.</td>
<td>3. He is taking detailed notes about his experiment.</td>
</tr>
</tbody>
</table>
Draw a line matching each step of the scientific method with its description.

**Purpose**
- The step that you take a close look at your data and create a graph or chart to organize your data.

**Research**
- Your educated prediction about the outcome of your investigation.

**Hypothesis**
- Re-visiting your original hypothesis & revising your experiment.

**Experiment**
- The objective or problem to investigate.

**Analysis**
- The step where you decide whether your hypothesis was proven or denied - a written explanation of your results.

**Conclusion**
- Collecting reliable information about the topic you are investigating.

**Follow-Up**
- Using detailed steps to test your hypothesis.
The Scientific Method Warm Up: Identifying Steps

ANSWER KEY

Draw a line matching each step of the scientific method with its description.

Purpose

Research

Hypothesis

Experiment

Analysis

Conclusion

Follow-Up

The step that you take a close look at your data and create a graph or chart to organize your data.

Your educated prediction about the outcome of your investigation.

Re-visiting your original hypothesis & revising your experiment.

The objective or problem to investigate.

The step where you decide whether your hypothesis was proven or denied - a written explanation of your results.

Collecting reliable information about the topic you are investigating.

Using detailed steps to test your hypothesis.
Use the following data to create a bar graph of the data.

<table>
<thead>
<tr>
<th>Favorite Superhero</th>
<th>Number of Votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batman</td>
<td>12</td>
</tr>
<tr>
<td>Spiderman</td>
<td>10</td>
</tr>
<tr>
<td>Superman</td>
<td>14</td>
</tr>
<tr>
<td>Captain America</td>
<td>8</td>
</tr>
<tr>
<td>Iron Man</td>
<td>6</td>
</tr>
</tbody>
</table>

The Scientific Method Warm Up: Analysis
Creating a Bar Graph

Name: ____________________________ Date: _______________

Use the following data to create a bar graph of the data.

<table>
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<tr>
<td>Captain America</td>
<td>8</td>
</tr>
<tr>
<td>Iron Man</td>
<td>6</td>
</tr>
</tbody>
</table>

The Scientific Method Warm Up: Analysis
Creating a Bar Graph

Name: ____________________________ Date: _______________
Use the following data to create a line graph of the data.

<table>
<thead>
<tr>
<th>Month</th>
<th>Average Precipitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>August</td>
<td>3.8 inches</td>
</tr>
<tr>
<td>September</td>
<td>2.8 inches</td>
</tr>
<tr>
<td>October</td>
<td>2.7 inches</td>
</tr>
<tr>
<td>November</td>
<td>3.6 inches</td>
</tr>
<tr>
<td>December</td>
<td>3.0 inches</td>
</tr>
</tbody>
</table>
Use the following data to create a circle graph.

<table>
<thead>
<tr>
<th>Animal</th>
<th>Number of Animals</th>
<th>% of Ecosystem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emperor Penguin</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>Leopard Seal</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Skua Bird</td>
<td>213</td>
<td></td>
</tr>
<tr>
<td>Orca Whale</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Krill</td>
<td>348</td>
<td></td>
</tr>
</tbody>
</table>
Identify the control & variables for the following scenarios:

1. Margot wanted to see which laundry detergent got grass stains out of her soccer jersey best. She tested Tide, Gain, and ran a load of clothes without any detergent.

   What is the control?
   What is the independent variable?
   What is the dependent variable?

2. A local restaurant wanted to test a new mozzarella cheese on their pizza to see if it would melt faster. The restaurant tested the new cheese to the old cheese by putting them both on a pizza and in the oven at the same temperature and same amount of time.

   What is the control?
   What is the independent variable?
   What is the dependent variable?
The Scientific Method Warm Up: Variables

ANSWER KEY

Identify the control & variables for the following scenarios:

1. Margot wanted to see which laundry detergent got grass stains out of her soccer jersey best. She tested Tide, Gain, and ran a load of clothes without any detergent.

   What is the control? **The load without detergent.**

   What is the independent variable? **The detergents.**

   What is the dependent variable? **The grass stain.**

2. A local restaurant wanted to test a new mozzarella cheese on their pizza to see if it would melt faster. The restaurant tested the new cheese to the old cheese by putting them both on a pizza and in the oven at the same temperature and same amount of time.

   What is the control? **The pizza with the original cheese.**

   What is the independent variable? **The new cheese.**

   What is the dependent variable? **How long it takes to melt.**