Smithers thinks that a special juice will increase the productivity of workers. He creates three groups of 50 workers each and assigns each group the same task, to staple sets of papers.

Group 1 drinks 100mL of the special juice while they work. Group 2 drinks 50mL of the special juice while they work. Group 3 is not given the special juice while they work.

After an hour, Smithers counts how many sets of papers each group stapled. He made the data table below.

<table>
<thead>
<tr>
<th>Number of sets of paper stapled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
</tr>
<tr>
<td>Group 2</td>
</tr>
<tr>
<td>Group 3</td>
</tr>
</tbody>
</table>

Identify the:
1. Independent Variable:
2. Dependent Variable:
3. Controlled variable:
4. What should Smithers' conclusion be? How did the juice affect the number of papers each group stapled? Use data (numbers) to support your answer.

Homer notices that his shower is covered in a strange green slime. His friend Barney tells him that coconut juice will get rid of the green slime. Homer decides to check this out by spraying half of the shower with coconut juice. He sprays the other half of the shower with water. After 3 days of "treatment" there is no change in the appearance of the green slime on either side of the shower.

Identify the:
1. Independent Variable:
2. Dependent Variable:
3. What is a hypothesis Homer can write about his observation?

If then because

Krusty was told that a new itching powder claims to cause 50% longer lasting itches. Interested in this product, he buys the itching powder and compares it to his usual product. One test subject (A) is sprinkled with the original itching powder. Another test subject (B) was sprinkled with the new experimental itching powder. His results are below.

<table>
<thead>
<tr>
<th>Number of minutes itched</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject A</td>
</tr>
<tr>
<td>Subject B</td>
</tr>
</tbody>
</table>

Identify the:
1. Independent Variable:
2. Dependent Variable:
3. What should Krusty’s conclusion be? Use data (numbers) to support your answer.

5. How could Krusty improve his experiment?
Bart believes that mice exposed to microwaves will become extra strong (maybe he's been reading too much Radioactive Man). He decides to perform this experiment.

He places 10 mice in a microwave for 10 seconds. He places another 10 mice in a microwave for 5 seconds. Lastly, he has 10 mice that have not been put in the microwave.

For his test he placed a heavy block of wood in front of the mouse food. He counted how many mice could move the block of wood away from the food. Below is a chart with his findings.

<table>
<thead>
<tr>
<th>Time in microwave</th>
<th>Number of mice that pushed the block away</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 seconds</td>
<td>8</td>
</tr>
<tr>
<td>5 seconds</td>
<td>7</td>
</tr>
<tr>
<td>0 seconds</td>
<td>7</td>
</tr>
</tbody>
</table>

Identify the:
1. Independent Variable:
2. Dependent Variable:
3. What should Bart’s conclusion be?
4. How could Bart improve his experiment?

Lisa is working on a science project. Her task is to answer the question: "Does Rogooti (a hair cream sold on TV) affect the speed of hair growth (in length)". Her family is willing to volunteer for the experiment.

Identify the:
1. Independent Variable:
2. Dependent Variable:
3. Write a possible hypothesis Lisa could write for this experiment.
   If then because

4. Write a procedure (list of steps) Lisa could follow to complete this experiment. You should have at least 3 steps.
Smithers thinks that a special juice will increase the productivity of workers. He creates three groups of 50 workers each and assigns each group the same task, to staple sets of papers.

Group 1 drinks 100mL of the special juice while they work. Group 2 drinks 50mL of the special juice while they work. Group 3 is not given the special juice while they work.

After an hour, Smithers counts how many sets of papers each group stapled. He made the data table below.

<table>
<thead>
<tr>
<th></th>
<th>Number of sets of paper stapled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>1,030</td>
</tr>
<tr>
<td>Group 2</td>
<td>1,700</td>
</tr>
<tr>
<td>Group 3</td>
<td>2,113</td>
</tr>
</tbody>
</table>

Identify the:
1. Independent Variable: Amount of special juice
2. Dependent Variable: Number of sets of paper stapled
3. What is a controlled variable? Same amount of time, 1 hour
4. What should Smithers' conclusion be? How did the juice affect the number of papers each group stapled? Use data (numbers) to support your answer. The juice made the productivity worse. Group 1 had the most juice, but stapled the lowest amount of papers, only 1,030 sets. Group 3 with no juice stapled the most with 2,113 sets.

Homer notices that his shower is covered in a strange green slime. His friend Barney tells him that coconut juice will get rid of the green slime. Homer decides to check this out by spraying half of the shower with coconut juice. He sprays the other half of the shower with water. After 3 days of "treatment" there is no change in the appearance of the green slime on either side of the shower.

Identify the:
1. Independent Variable: Coconut juice
2. Dependent Variable: Amount of green slime on shower
3. What is a hypothesis Homer can write about his observation?
   If the amount of coconut juice increases then the amount of green slime stays the same because the coconut juice does not kill the slime.

Krusty was told that a new itching powder claims to cause 50% longer lasting itches. Interested in this product, he buys the itching powder and compares it to his usual product.

One test subject (A) is sprinkled with the original itching powder. Another test subject (B) was sprinkled with the new experimental itching powder. His results are below.

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<th>Number of minutes itched</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject A</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Subject B</td>
<td>45 minutes</td>
</tr>
</tbody>
</table>

Identify the:
1. Independent Variable: type of itching powder
2. Dependent Variable: itch time
3. What should Krusty’s conclusion be? Use data (numbers) to support your answer. The new itch powder works better because the new powder made someone itch for 45 minutes, while the old powder someone only itched for 30 minutes.
4. How could Krusty improve his experiment? Krusty could test a larger group of people, or test the same group of people with both powders. Only testing one person for each powder does not give you reliable results.
Bart believes that mice exposed to microwaves will become extra strong (maybe he's been reading too much Radioactive Man). He decides to perform this experiment.

He places 10 mice in a microwave for 10 seconds. He places another 10 mice in a microwave for 5 seconds. Lastly, he has 10 mice that have not been put in the microwave.

For his test he placed a heavy block of wood in front of the mouse food. He counted how many mice could move the block of wood away from the food. Below is a chart with his findings.

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<td>7</td>
</tr>
</tbody>
</table>

Identify the:
1. Independent Variable: *Time in microwave*
2. Dependent Variable: *ability to push block away from food*
3. What should Bart’s conclusion be? **Bart doesn’t have reliable results. There isn’t enough difference between 8 and 7 to know for sure if the microwave caused the mice to get stronger.**
4. How could Bart improve his experiment? **Bart could test the mice before they are microwaved and after they are microwaved to see if they change. Bart could test more mice to have a larger sample.**

Lisa is working on a science project. Her task is to answer the question: "Does Rogooti (a hair cream sold on TV) affect the speed of hair growth (in length)". Her family is willing to volunteer for the experiment.

Identify the:
1. Independent Variable: *amount of Rogooti*
2. Dependent Variable: *hair growth*
3. Write a possible hypothesis Lisa could write for this experiment.
   - If the amount of Rogooti increases then the amount of hair growth increases because Rogooti has vitamins that help hair.
   - OR
   - If the amount of Rogooti increases then the amount of hair growth stays the same because Rogooti does not have anything in it that will help hair.
   - OR
   - If the amount of Rogooti increases then the amount of hair growth decreases because Rogooti damages hair.

4. Write a procedure (list of steps) Lisa could follow to complete this experiment. You should have at least 3 steps.
   - *Example answer*
   1. Measure the starting length of hair of each person in her family. Record the data.
   2. Give half of the people in her family Rogooti to use, and the other half do not use the product. (Or give each person a different amount of Rogooti to use).
   3. Measure each person’s hair length once a week. (students can have a different amount of time, every 2 days, etc)
   4. After a month (or other test period students may write) compare each person’s final hair length to the starting hair length. Determine if Rogooti affects hair growth.