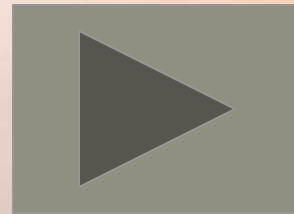
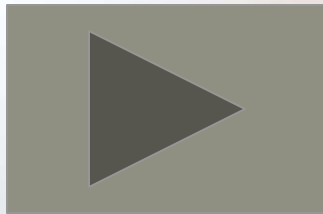
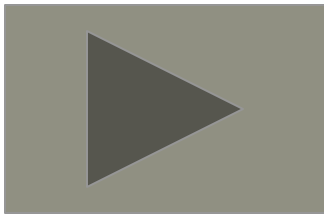


# Intro. Unit





**Observation -**

**Something you can tell with your senses. Never a guess.**

**Make some observations...**





**Inference -**

**A guess that you make from your observation.**

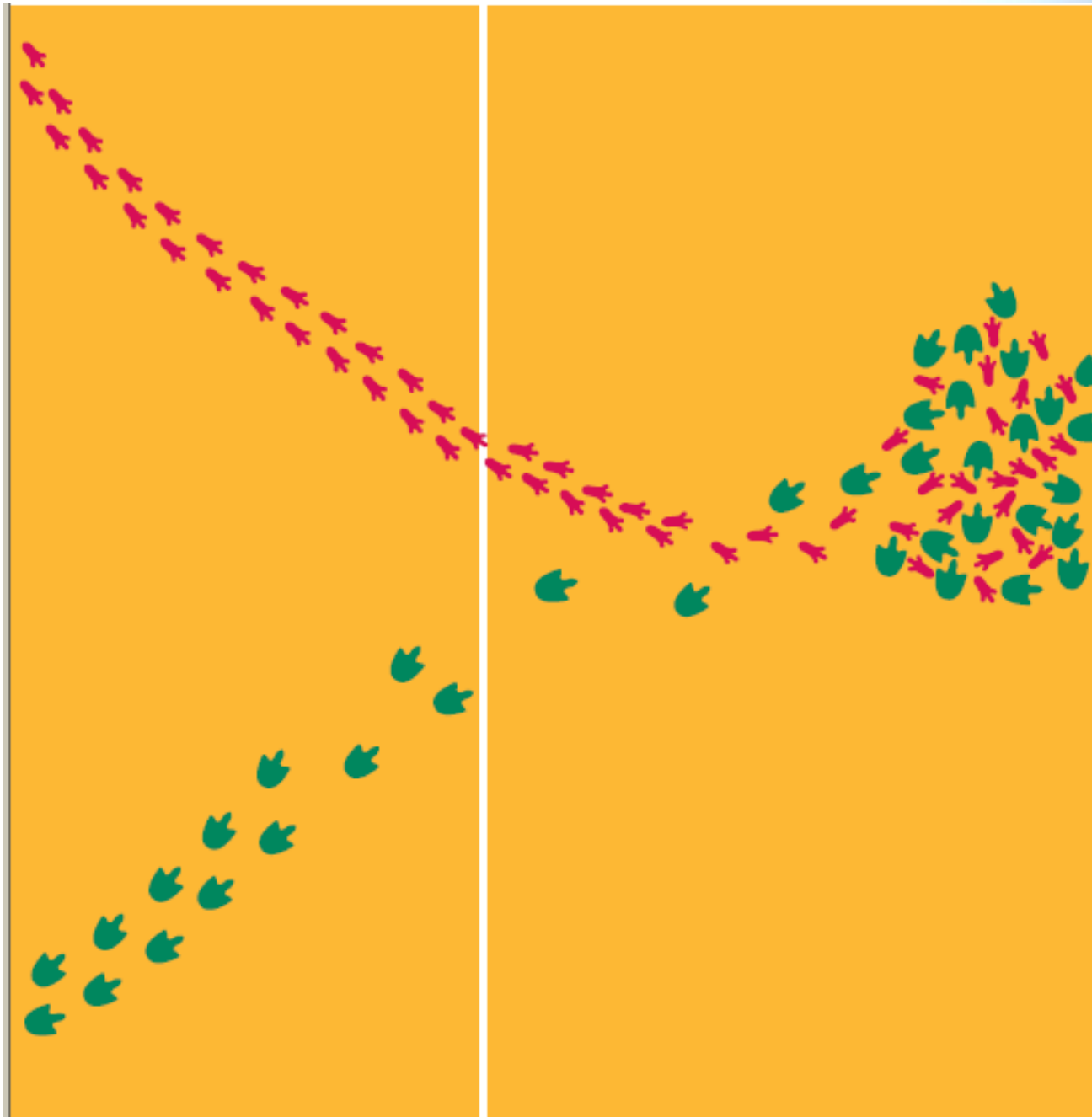
**Make some inferences...**



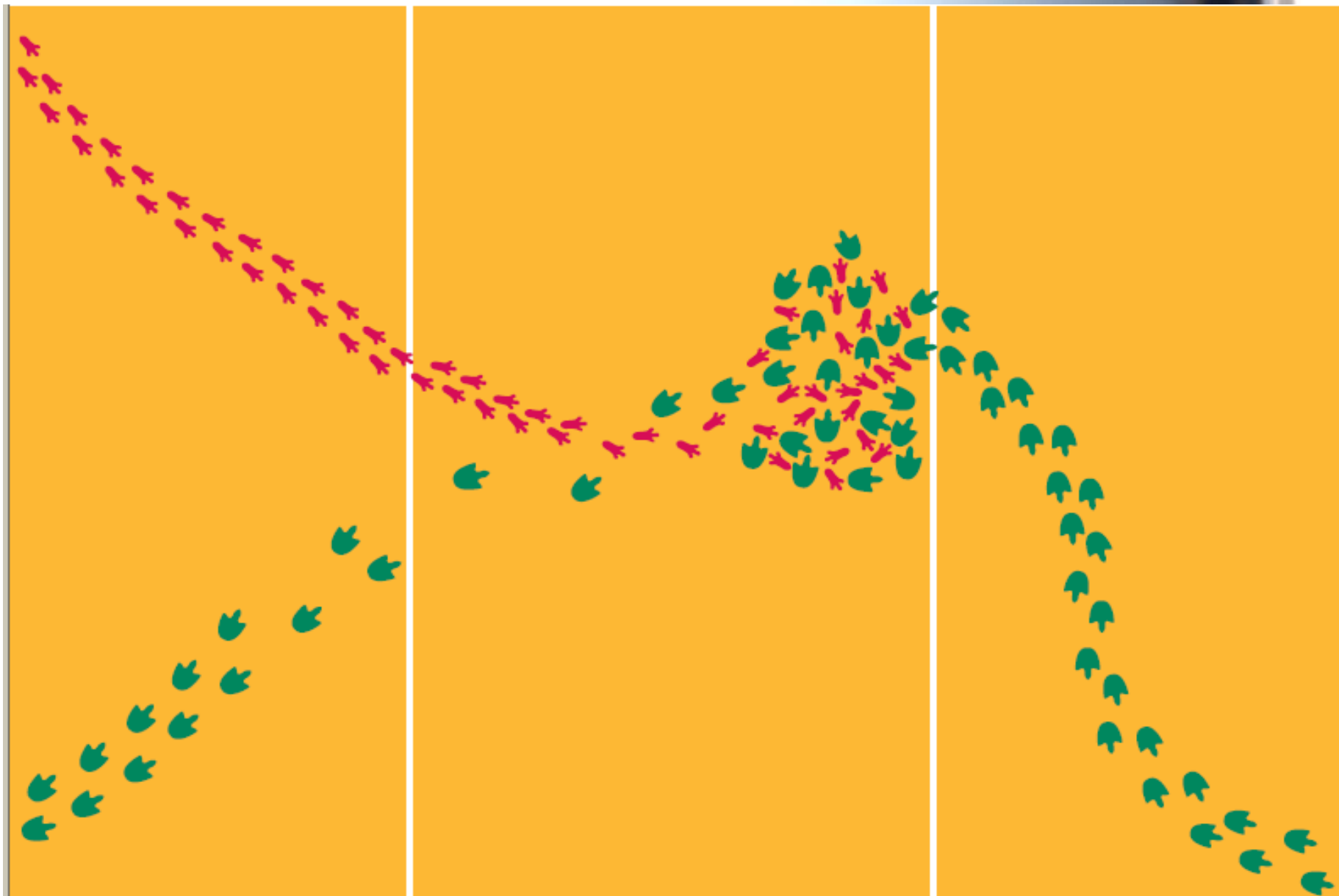


**With your partner, make three observations about these tracks.**

**Then, make an inference.**



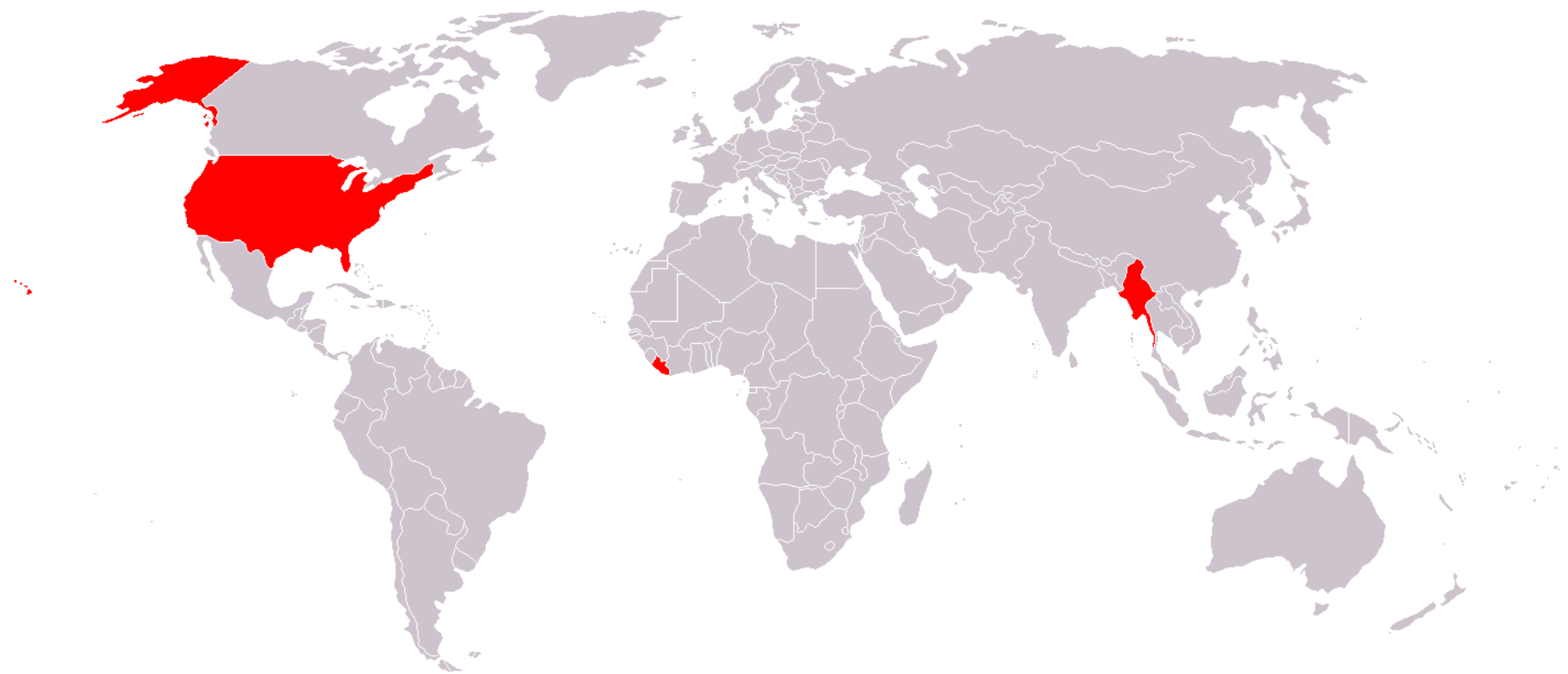
**Make some  
more  
observations  
with your  
partner.  
Then, make  
an inference.**



A close-up, blurred image of a hand holding a glass, with a bright light source creating a lens flare effect. The word "Measurement" is overlaid in a bold, brown, 3D-style font.

# Measurement

# Countries using the English System



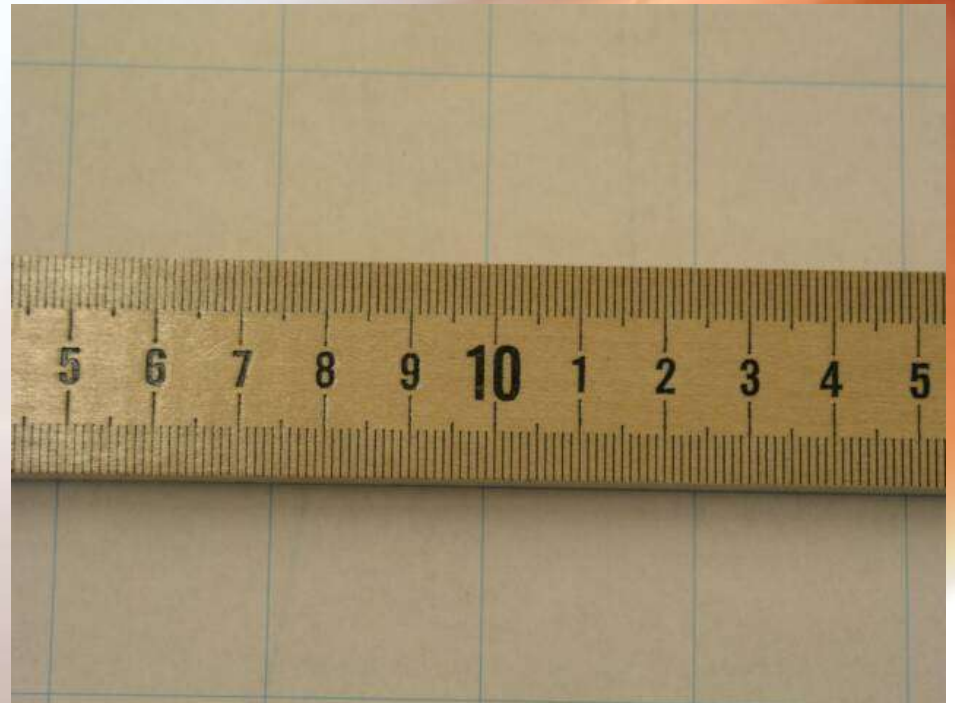
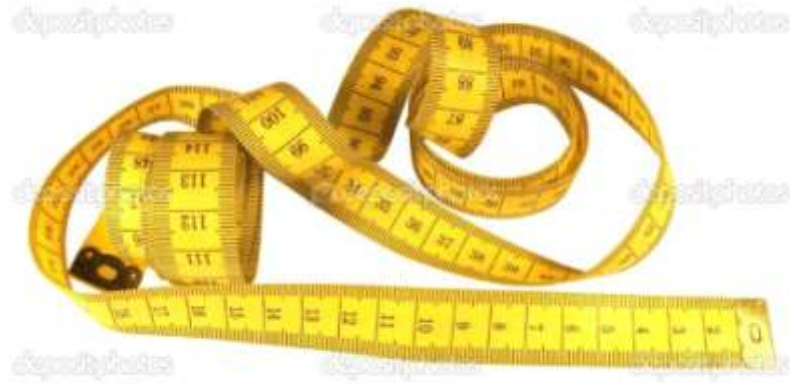
**USA, Liberia and Burma**

**Metric unit of length -**

**The centimeter (cm), meter (m) and kilometer (km).**

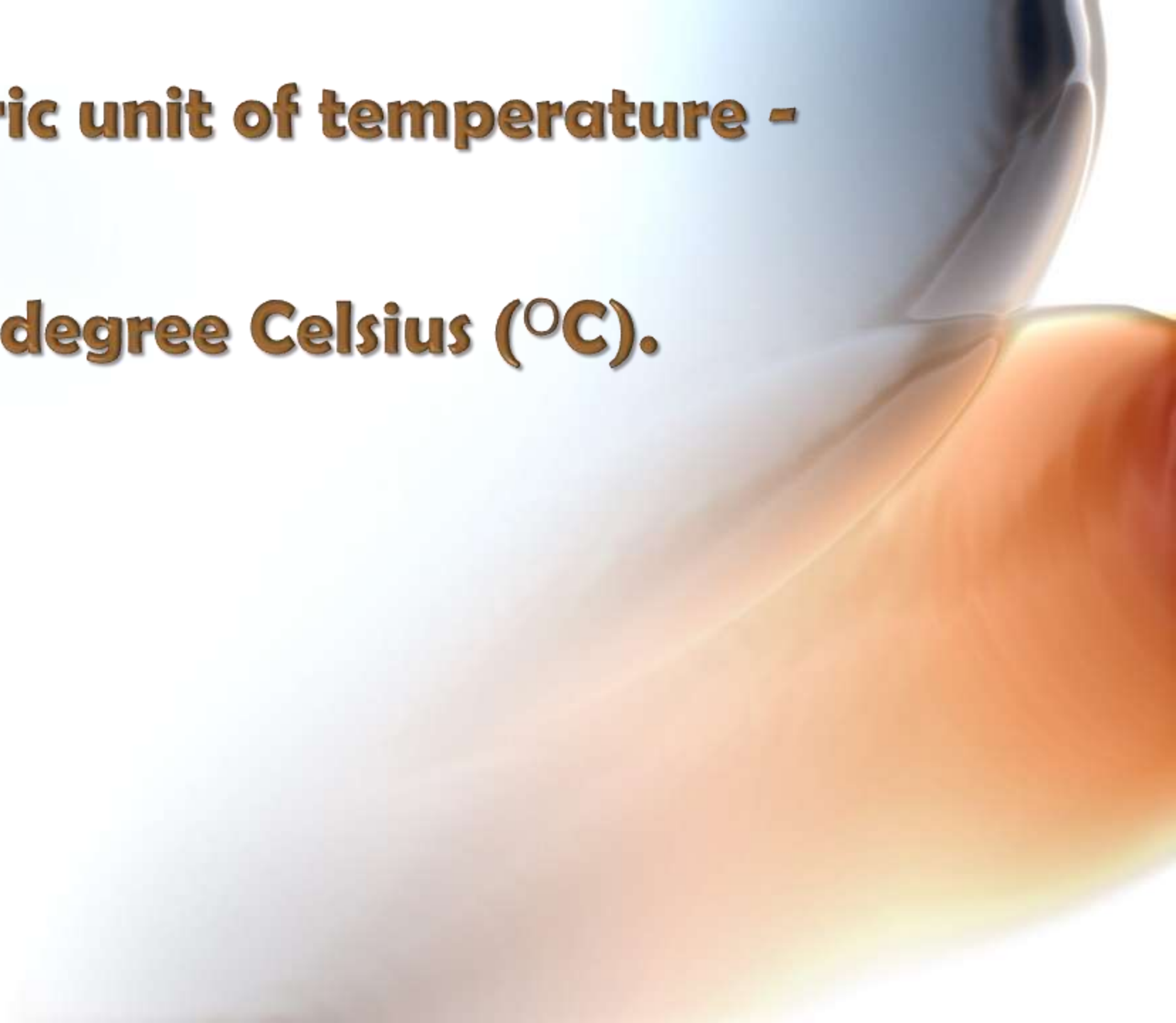
# Tools to measure length -

**meter stick, ruler and tape measure**



**Metric unit of temperature -**

**The degree Celsius ( $^{\circ}\text{C}$ ).**



# Tool to measure temperature - the thermometer



**Metric unit of mass -**

**The gram (g) and the kilogram (kg).**

# **Tool to measure mass - the triple beam balance**





**Metric unit of volume -**

**The liter (L) and the milliliter (mL).**

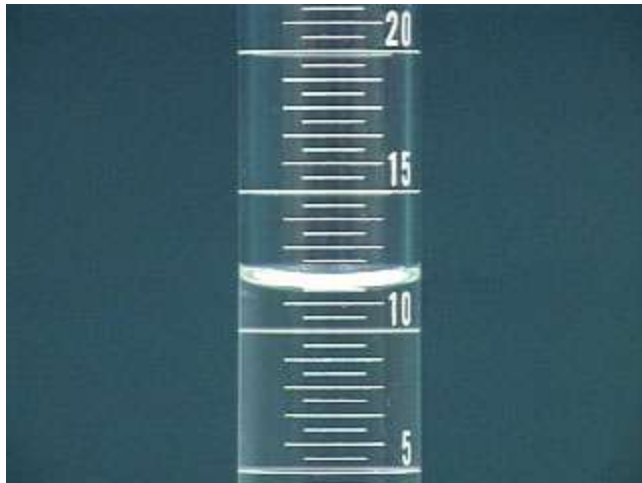
# Tool to measure volume -


## the graduated cylinder

**\*\*\*Never the beaker!!!!\*\*\***



# The meniscus





# **The Scientific Method**

# The scientific method -

## The orderly way to solving a problem that scientists use.



SCIENCE

It's all just shiny toys, white clothing, and sweet goggles

# Steps of the scientific method



# **1. State the problem -**

**What do you want to study?**

**Ex. Is smoking  
harmful?**



## **2. Research -**

**Gather information about the problem.**



### **3. Form a hypothesis -**

**Make a guess about what you think will happen.**

**Ex. Smoking is probably harmful.**



## 4. Experiment -

**Testing your hypothesis.**



## **5. Record and analyze data -**

**Write down what you've found out.**



## 6. State a conclusion -

Sum up what you discovered and give a reason why.

**Ex. Smoking is harmful because chemicals in cigarettes can cause cancer.**



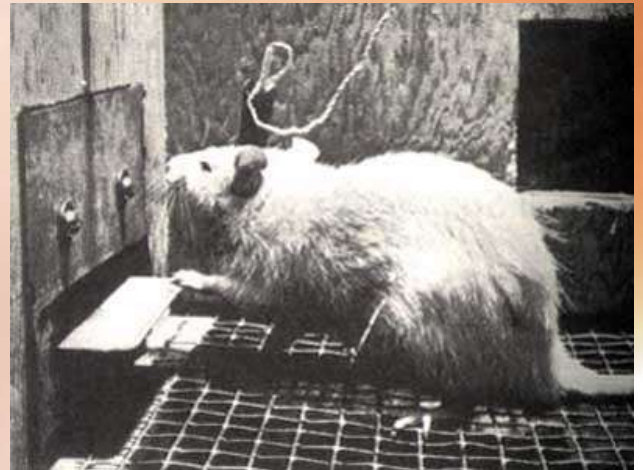


**There are three parts  
of the Experiment  
step.**

## **A. Independent variable -**

**What you are testing or changing in an experiment. There can only be one of these.**

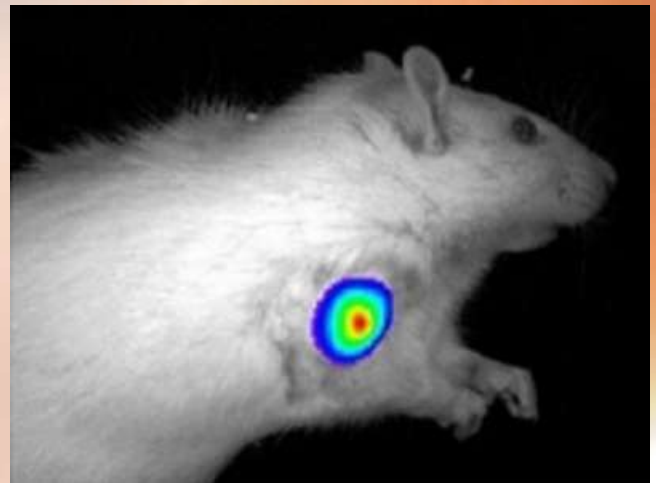
**Ex. The rats you've taught to smoke.**



## **B. Dependent variable -**

**What you are measuring or counting in an experiment.**

**Ex. Counting tumors in rats.**



## **C. Controls -**

**Things in the experiment that remain the same.**

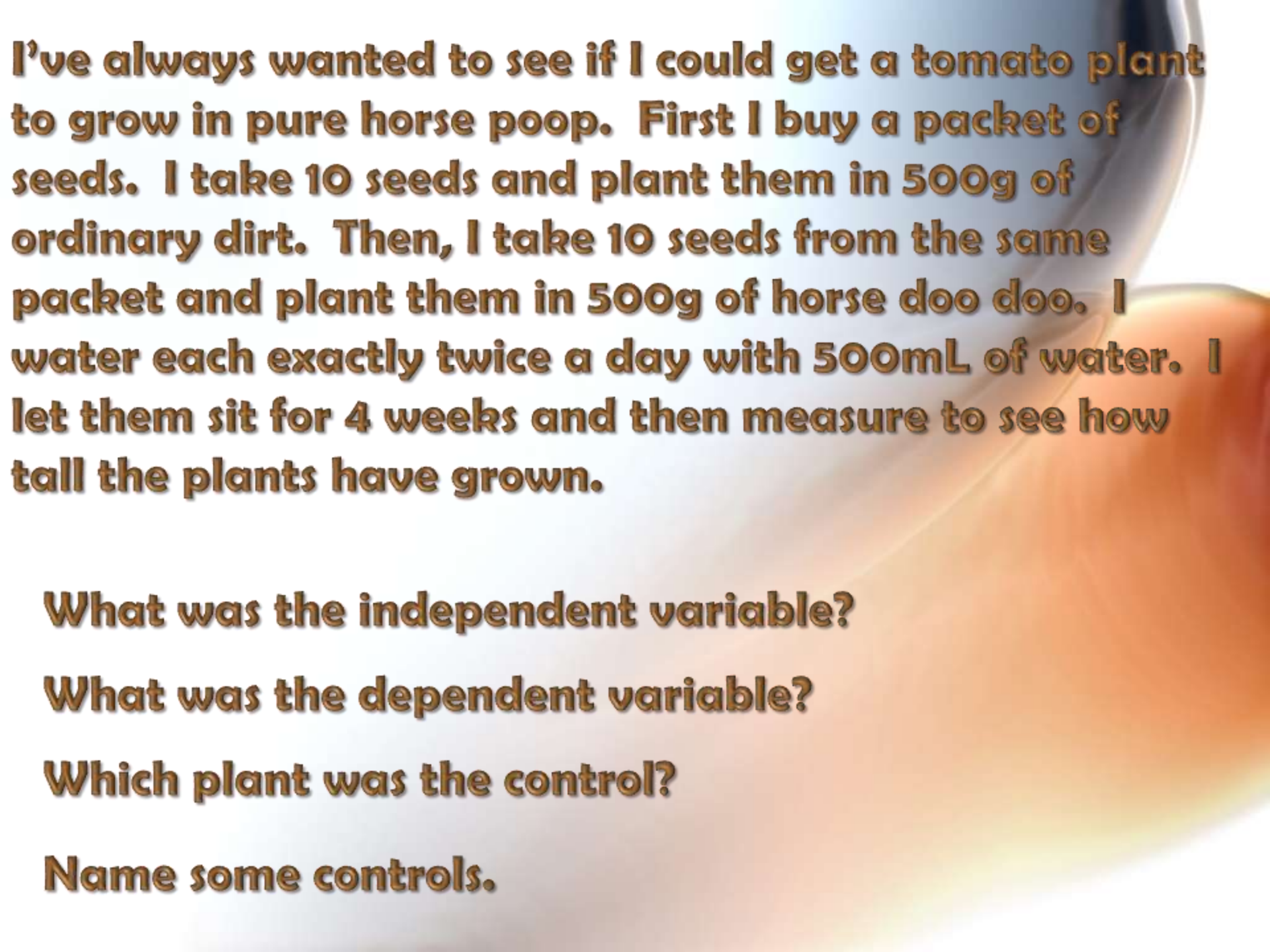
**Ex. Same type of rat, same food, same cages, same water, etc.**

For example. Suppose I wanted to see if spitballs or snotballs would fly the farthest out of a straw. First, I make 10 spitballs, all weighing exactly 2 grams each. Then, I make 10 snotballs, each weighing 2 grams as well. Next, I take a 15cm long straw and shoot the 10 spitballs out, all at the same force. I measure how far they fly. Then, using the same straw, I shoot out the 10 snotballs using the same amount of force as before. I measure the distance they fly as well.

What was the independent variable?

What was the dependent variable?

Name some controls.



I've always wanted to see if I could get a tomato plant to grow in pure horse poop. First I buy a packet of seeds. I take 10 seeds and plant them in 500g of ordinary dirt. Then, I take 10 seeds from the same packet and plant them in 500g of horse doo doo. I water each exactly twice a day with 500mL of water. I let them sit for 4 weeks and then measure to see how tall the plants have grown.

What was the independent variable?

What was the dependent variable?

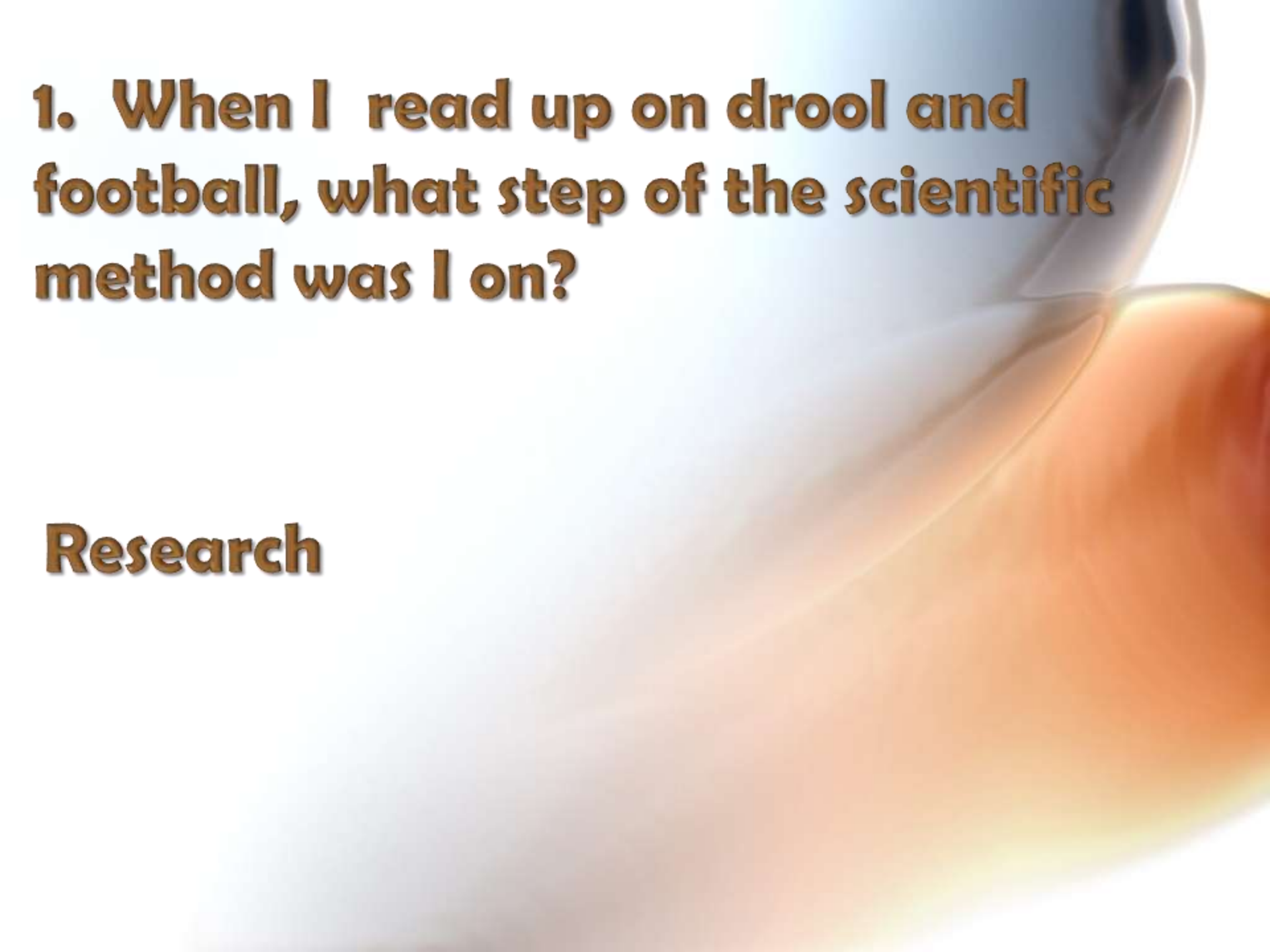
Which plant was the control?

Name some controls.

# **Scientific Method Practice.**

The background of the slide is a close-up, artistic photograph of a glass flask, likely an Erlenmeyer flask, containing a yellow-orange liquid. A bright light source from the upper right creates a strong lens flare and illuminates the scene, with the light reflecting off the surface of the liquid and the glass. The overall tone is warm and scientific.

I've always wanted to know if drinking my drool instead of water would help our Greenbriar football team offense play better. After reading up on drool and football, I decide that it probably would. First, I let the team run 25 offensive plays during the first half of a game against Shiloh. I count how many points they score. They play well, but score only 7 points. Then, I secretly replace the water they are drinking with my drool. The coaches have them run the exact same plays in the second half. The players play great, scoring 108 points. I write my findings down for the coaches. I decide that my drool must contain some strange nutrients that help the body run and play sports better. I decide to put a bucket next to my bed at night to collect all the drool I can, and sell it as a new drink called Beutheraide. Hopefully, I can get rich off of Beutheraide so I can quit my job teaching the stinky, ugly kids at Greenbriar.

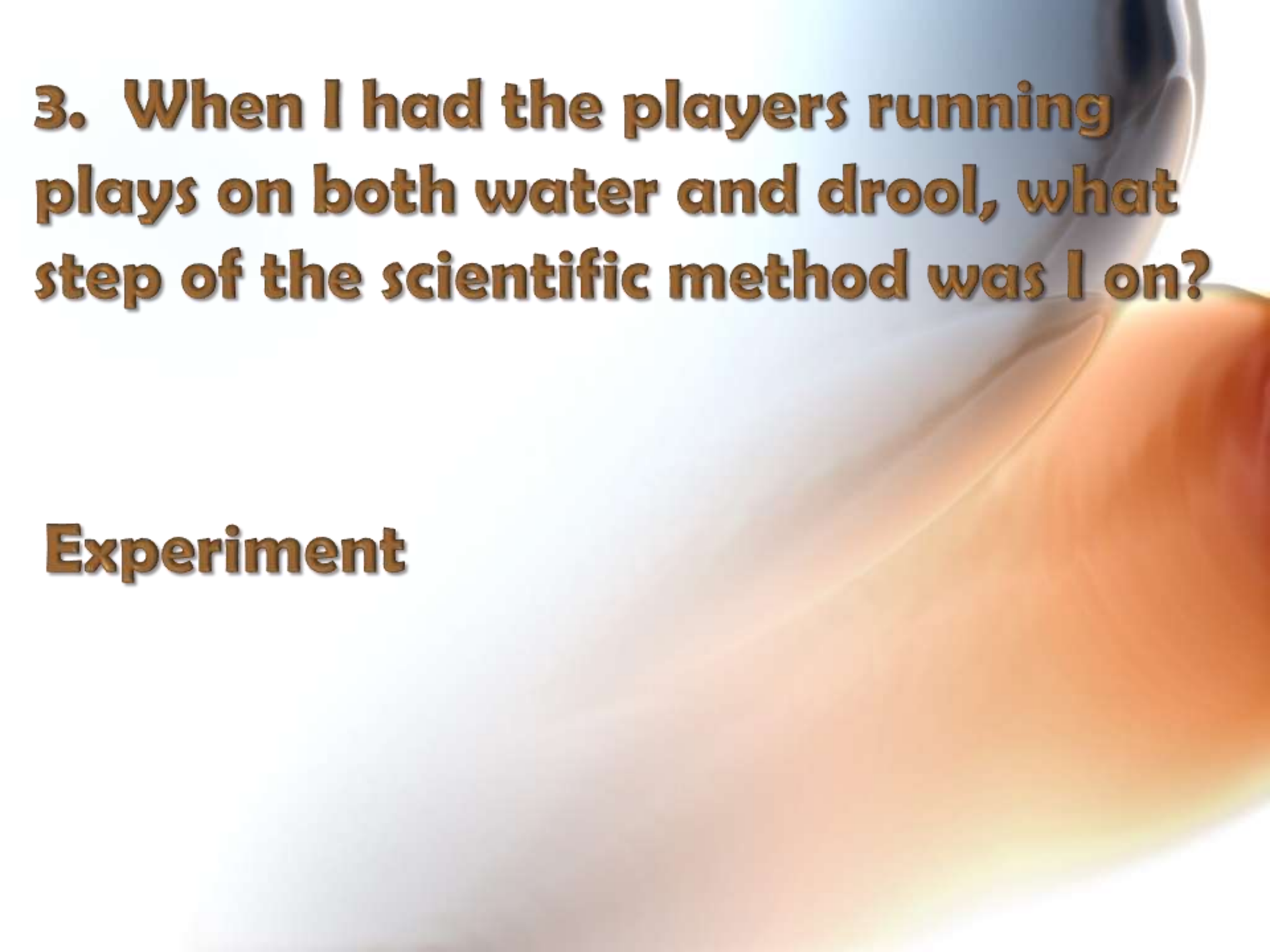


**1. When I read up on drool and football, what step of the scientific method was I on?**

**Research**

**2. When I wrote down my finding for the coaches, what step of the scientific method was I on?**

**Record and analyze data**

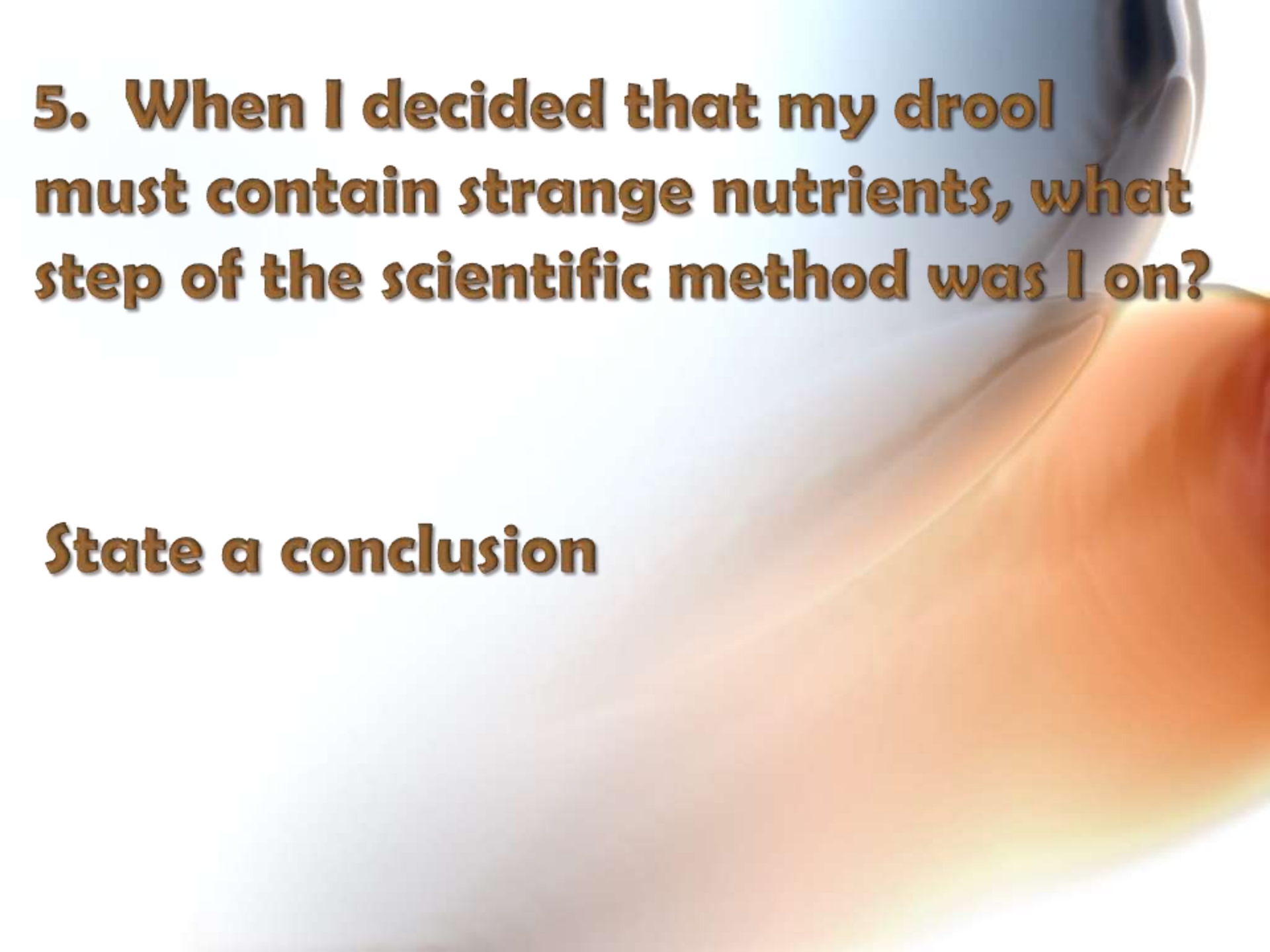


**3. When I had the players running plays on both water and drool, what step of the scientific method was I on?**

**Experiment**

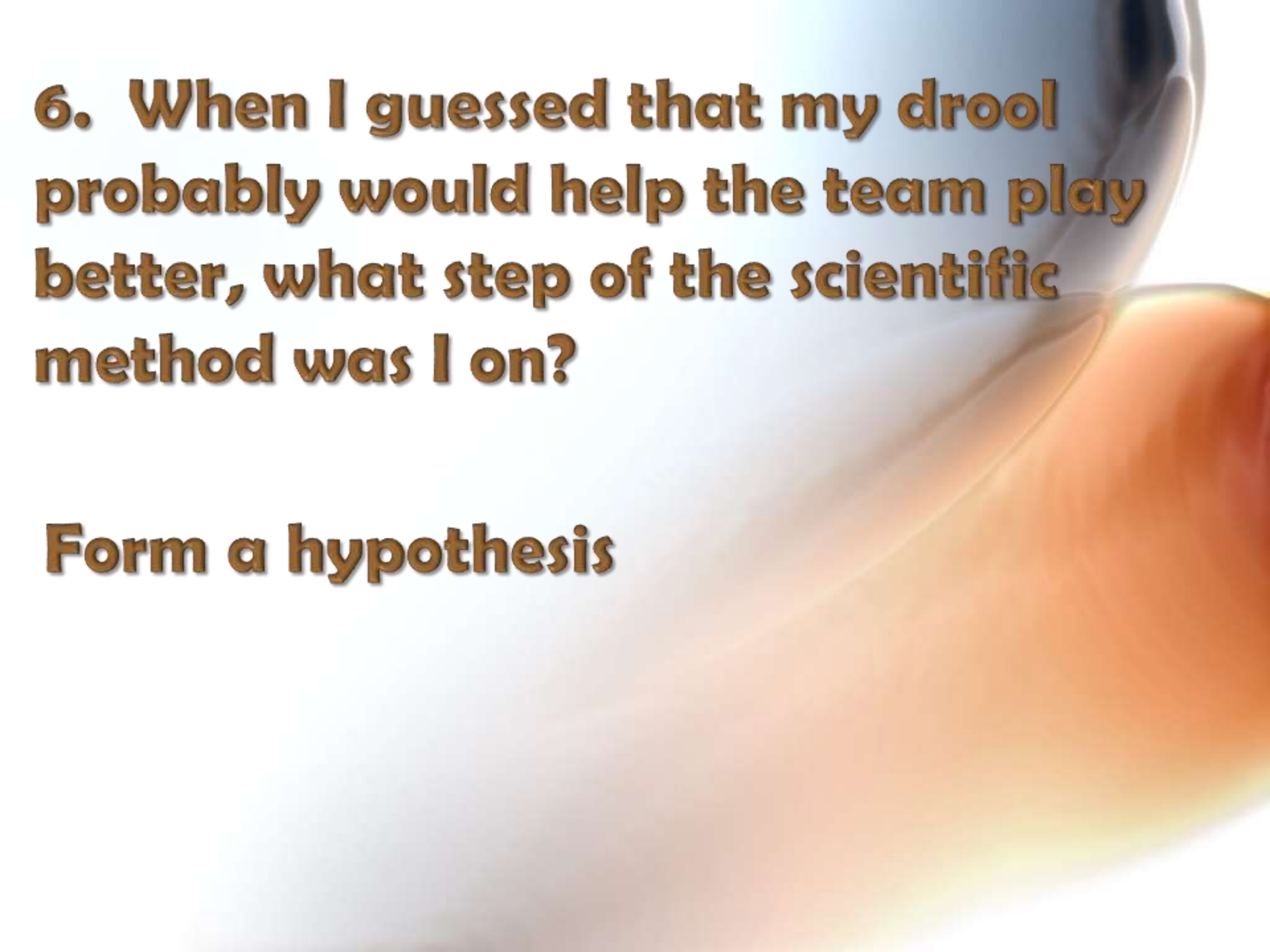
**4. When I decided that I wanted to know if drinking my drool would help the team play better, what step of the scientific method was I on?**

**State the problem**



**5. When I decided that my drool must contain strange nutrients, what step of the scientific method was I on?**

**State a conclusion**



**6. When I guessed that my drool probably would help the team play better, what step of the scientific method was I on?**

**Form a hypothesis**



**7. What was the independent variable?**

**The team playing while drinking  
drool.**

**8. What was the dependent variable?**

**How many points they scored.**

**9. Name some controls.**

**Same team, 25 plays, same  
opponent, same sport.**