

How are Experiments developed?

1. Make an observation (senses, instruments, data, previous experiments, etc...)
2. Ask an informal, how, what or why question about observation
3. Find evidence that helps you come up with an answer to your informal question
4. Make an inference (informal hypothesis) that may explain an observation and answer your question
5. Design an experiment that will help answer your question
6. Identify variables, one variable you will change (independent), one variable you will measure (dependent) and the variables you need to control
7. Identify the control group to compare your results to.
8. Change your informal question into an experimental question (How does... affect...)
9. Change the inference to a formal hypothesis (if, then, because...)
10. Conduct experiment and determine if the data supports or disproves your hypothesis.

Mr. Fireng tried salted caramel for the first time and he thought it tasted delicious! He wondered if salt can improve the taste of sweets. He remembers reading an article that stated that combining salt sugar and fat can improve the taste of food. So he thought that yes, adding more salt to sweets would improve the taste. He decided to test this by adding various amounts of salt and measuring the quality of the ice cream. He came up with the experimental question; how does the amount of salt affect the quality of ice cream? His hypothesis was, if the amount of salt increases, then the quality of the ice cream will increase because the salt will make it sweeter. He made four batches of ice cream. One batch of ice cream had no salt. The other three had more and more salt. He tasted the ice cream and rated the texture, saltiness, sweetness and over all flavor on a scale from 0-4. He discovered that his hypothesis was supported by the data! As the amount of salt increased, the ice cream tasted better and better!



1. What was the observation?
2. What was the informal question that led to the experiment?
3. What evidence did he use to answer the question?
4. What was his inference (informal hypothesis)
5. How was he going to test the question?
6. What is the independent variable? What is the dependent variable?
7. What is the control group?
8. What was the experimental question?
9. What was Mr. Fireng hypothesis?
10. Did the results support or disprove Mr. Fireng's hypothesis?

Identify the Parts of an Experiment!

Smithers noticed that his best worker's drank a special juice. Smithers wondered if the special juice will increase the productivity of workers. He look at the ingredients and one ingredient was vitamin B, he remember hearing that vitamin B can increase heart rate. He thought that the special juice probably improve productivity. He decided to test this by creating three groups of 50 workers give each group different amount of special juice and measure their productivity by assigning each group the same task (in this case, they're supposed to staple a set of papers). Group A is not given the special juice, Group B is given one glass of special juice and group C is given two glasses of the special juice to drink while they work. His experimental question was, how does the amount of special juice affect worker productivity? His educated guess was if the amount of juice increases then worker productivity will increase because of the increased heat rate. After an hour, Smithers counted how many stacks of papers each group has made. Group A made 1,587 stacks, Group B made 2,113 stacks and group C made 6,003 stacks.

1. What was the observation?
2. What was the informal question that led to the experiment?
3. What evidence did he use to answer the question
4. What was his inference (informal hypothesis)
5. How was he going to test the question?
6. What is the independent variable? What is the dependent variable?
7. What is the control group?
8. What was the experimental question?
9. What was Smithers' hypothesis?
10. Did the results support or disprove Smithers' hypothesis?



Homer notices that his shower is covered in a strange green slime. His friend Barney tells him that he uses coconut juice getting rid of stains in his kitchen. Homer wonders if the coconut juice will be a good cleaner for his shower. Because Barney said coconut juice gets rid of stains in his kitchen, and he knows coconut juice is acidic, Homer thought it would get rid of the green slime in his shower. He decides to check this this out by spraying half of the shower with coconut juice and the other half with just water. His experimental question was, how does the use of coconut juice affect the cleaning of green slime? He hypothesized that if coconut juice is used then it would clean the green slime because it is an acid. After 3 days of "treatment" there is no change in the appearance of the green slime on either side of the shower. Doh!



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2. What was the informal question that led to the experiment?
3. What evidence did he use to answer the question?
4. What was his inference (informal hypothesis)
5. How was he going to test the question?
6. What is the independent variable? What is the dependent variable?
7. What is the control group?
8. What was his experimental question?
9. What was his hypothesis?
10. Did the results support or disprove Homer's hypothesis?