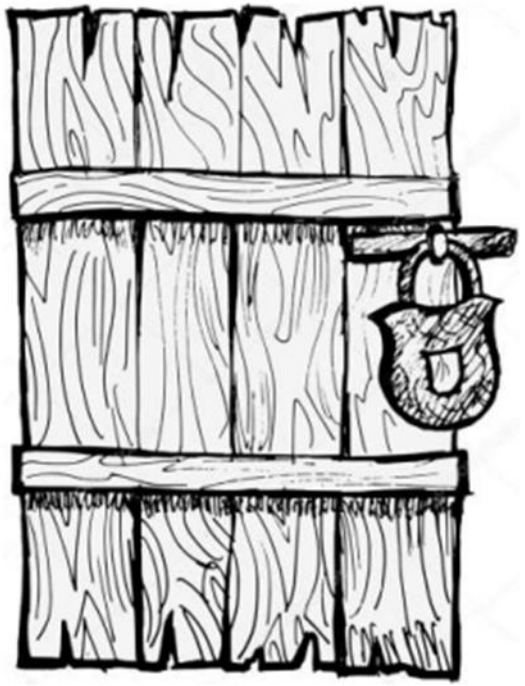
ESCAPE ROOM EDU

SCIENTIFIC METHOD



Use this google.doc to submit your codes to complete this escape room. So do not close the google.doc or you will have to start over.

https://docs.google.com/forms/d/e/1FAIpQLSewipQMM1lee9rAwEuohjXqgCKNnw8ep2eXmJBKfYDfB9yhpw/formResponse

Hint: Write your answers on a piece of paper before you fill out the document.

Instructions:

You are going to have to do some research on this one. Your essential question is:

What is the “Scientific Method and How do You Use It.” Remember there is a specific set of rules and an order to those rules that must be used.

You can find most of the information you will need in the following two articles. Remember this is a challenge so you will have to apply what you learned in these two articles to answer the questions:

https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/a/the-science-of-biology

https://www.sciencebuddies.org/sciencehttps://docs.google.com/forms/d/1wfshNbXgVCHo1ZvZ9rJX65cUAhg5MXdGtxg7uBd8-BQ/edit-fair-projects/science-fair/variables

Complete this challenge and you will receive a prize Thursday when you drop off the Chrome Book and pick up your personal belongings.

You will use this google doc to enter all your codes. Once you have completed it, make sure you submit it so I can get your prize to you.

https://docs.google.com/forms/d/e/1FAIpQLSewipQMM1lee9rAwEuohjXqgCKNnw8ep2eXmJBKfYDfB9yhpw/formResponse

Mission Objective

After a good nights sleep, you wake up to find yourself trapped inside your room. Random objects have also been left behind for you to find. You must use your knowledge of the scientific method to figure out how to use these objects in order to escape. Answer the questions at each level and be sure to record each answer. Once all four questions have been answered, use the decoder to progress to the next level. You must hurry and escape your room before you end up trapped forever!

Remember use the following google.doc. https://docs.google.com/forms/d/e/1FAIpQLSewipQMM1lee9rAwEuohjXqgCKNnw8ep2eXmJBKfYDfB9yhpw/formResponse
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Hint: write all your answers on a piece of paper so if accidently close the google.doc.

Level 1 Q1

What is the first step in completing the scientific method?

A: Experimentation
B: Forming a hypothesis
C: Analyzing data
D: Making observations

Level 1 Q2

Which of the following is not true about a hypothesis?

A: It is an explanation for an observation
B: It must restate the question
C: It is testable
D. It can be written as an if/then statement

Level 1 Q3

What is an independent variable?

A: A variable that is intentionally manipulated
B: A variable that is being observed
C: A variable that is not changed
D. A variable that is dependent on the dependent variable

Level 1 Q4

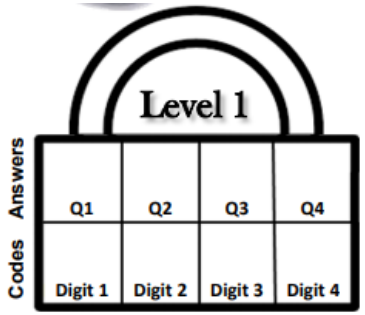
Variables which are held constant and unchanged throughout an investigation are called

A. Dependent variables
B. Independent variables
C. Controlled variables or constants
D. Controlled experiments

Level 1 Instructions:
Using the following web documents to help you with your answers.
https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/a/the-science-of-biology

https://www.sciencebuddies.org/science-fair-projects/science-fair/variables

You will use the letter of the answer in order from Q1 thru Q4. These letters will help you find the code to unlock level 1 located on the google doc
https://docs.google.com/forms/d/e/1FAIpQLSewipQMM1lee9rAwEuohjXqgCKNnw8ep2eXmJBKfYDfB9yhpw/formResponse



You can use this lock as a way to keep track of your code (just draw it on a piece of paper)

Level 2 — Q1

Which of the following best describes a scientific theory?

A. An educated guess
B. A set of hypotheses accepted as an undeniable fact
C. A set of well supported hypotheses
D. A hunch that often leads to a new hypothesis

Level 2 — Q2

Which of the following would make the best hypothesis for an investigation?

A. Do many teenagers encounter stress every day?
B. How many Bald Eagles live in Alaska?
C. Will fish living in freshwater be happier than those living in saltwater?
D. If salt is added to water, then the temperature at which it boils will increase.

Level 2 — Q3

A scientist is listening to the unique calls dolphins make when communicating with each other. What is the scientist doing?

A. Making observations
B. Interpreting data
C. Making a hypothesis
D. Drawing conclusions

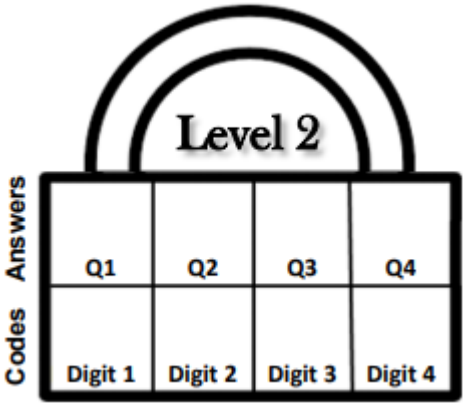
Level 2 — Q4

What factor is measured in an experiment?

A. Independent variable
B. Dependent variable
C. Conclusion
D. Controlled variable

Using the web documents listed on the previous page will help you with these answers.

Remember the letter to the answer will be used to help you find the number code on the google document. You will be using the same google doc so keep it open on another window.



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Level 3 Q1

A student designed an experiment to test the effects of light and water on plant growth. How could this experiment be improved?

A. Add temperature as a variable
B. Add pH (acidity level) as a variable
C. Remove water or light as a variable, so only one variable is tested at a time
D. All of the above

Level 3 Q2

A student hypothesizes that the temperature at which a salamander egg is incubated will determine whether it is male or female. What is the independent variable?

A. The gender of the salamander
B. The temperature
C. The incubator
D. The male alligators

Level 3 Q3

When determining if the data accepted or rejected your hypothesis, you are

A. Drawing conclusions
B. Asking questions
C. Summarizing the results
D. Forming a hypothesis

Level 3 Q4

Which of the following is the best way to make a conclusion?

A. The experiment must be manipulated until the results show what you want
B. Estimate results to where they should be
C. Choosing the results you like best
D. Comparing data from the experiment to the prediction of the hypothesis

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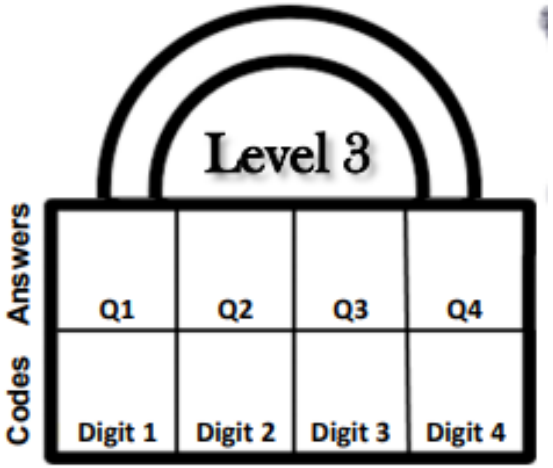

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Level 4 Q1

A theory is an important part of science because it can be used to

A. Create better questions
B. Create better experiments
C. Test a hypothesis
D. Make predictions

Level 4 Q2

A student designed an experiment to test the affect of salt on the number of plants that live in water. What is the dependent variable in this experiment?

A. The water
B. Water temperature
C. The number of plants living in the water
D. The amount of salt in the water

Level 4 Q3

What is an appropriate way to analyze the results of an experiment

A. Creating a graph
B. Creating a data table
C. Making observations
D. Asking questions

Level 4 Q4

What is a control group used for?

A. Making an observation
B. Making a comparison
C. Designing an experiment
D. Making a hypothesis

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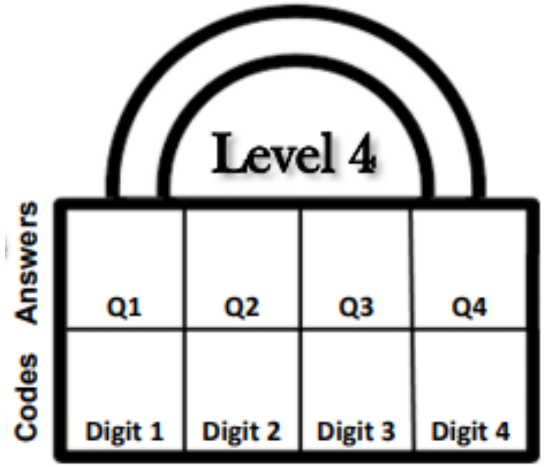

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Level 5 Q1

What is the difference between a theory and a law?

A. A law is a uniform constant of nature, whereas a theory can still be questioned and falsified
B. A theory is a defined fact, whereas a law is only a hypothesis
C. Both are true
D. Neither are true

Level 5 Q2

Which is most correct when testing a hypothesis?

A. If the hypothesis is rejected, the experiment was a failure
B. The hypothesis can be proven true
C. The hypothesis can be rejected or accepted
D. All of the above

Level 5 Q3

What happens when there is bias in an experiment?

A. The results are more accurate
B. Personal opinion gets in the way
C. The hypothesis is proved wrong
D. The experiment is not repeatable

Level 5 Q4

Graphs, charts, and calculations are what form of data?

A. Variable data
B. Correlation data
C. Qualitative data
D. Quantitative data

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