



The Scientific Method

Scientific Method

- * A series of steps scientists take to learn about something.

What do Scientists Do?

- * They ask questions about and make systematic observations about natural phenomena.
- * They record observations and conduct experiments where possible.
- * They use data they collect to develop theories.
- * They test their theories repeatedly and discard or refine them.

Ask a Question

Make a Prediction/Hypothesis

Design the Experiment

Perform the Experiment

Observe and Record Data

Analyze the Results

Make a Conclusion

Communicate the Results

Record this in
your notes

Scientific Questions

- * The process of scientific inquiry begins with a good question.

Scientific Questions

- * Use your whiteboards to answer the following questions:
- * Which is a better question?
 - * A) Why is there air?
 - * B) What is air made of?

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ANSWER: B, a good scientific question is one that has an answer.

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ANSWER: B, a good scientific question can be tested.

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 - * A) Does the amount of sun or water added affect the colour of a leaf?
 - * B) Do leaves turn brown?

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ANSWER: A, a good scientific question is clearly worded.

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ANSWER: B, a good scientific question is one you don't already know the answer to.

Which of the following are good questions?

- * A) Why do dogs bark?
- * B) What temperatures cause bacteria to grow the fastest?
- * C) What chemicals will prevent cut apples from turning brown?
- * D) Why are oceans salty?
- * E) Is the bounciness of a basketball related to the temperature of the ball?



Key Process of Scientific Inquiry

- * Experiment: when the purpose of an inquiry is to determine whether one variable causes an effect on another variable.
- * Example: How is the flow of electricity affected by the diameter of a wire?



Key Process of Scientific Inquiry

- * Variable : any factor that can affect the results of an experiment
- * Independent variable one that is deliberately changed or selected by the investigator
- * Dependent variable: one that changes in response to the independent variable, but is not directly controlled by the investigator

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Key Process of Scientific Inquiry

- * Hypothesis: A possible solution to a problem usually in the form of a prediction that can be tested.
- * Sometimes written as "if... then..."



Key Process of Scientific Inquiry

- * Conclusion: Summary that explains whether or not the data supports the hypothesis.