Sum It Up

The outline below is a summary of the lesson. Complete the outline.

I. Scientific Methods

A. All start with a question

B. Investigations differ

1. experiments

2. 1 _____

3. 2 _____

C. All have results from which to

3 _____

II. Repeated Observations

A. Some things are just too big, too far away, or too uncontrollable for experiments

B. Examples

1. volcanoes

2. 4 _____

III. Using Models

A. Needed to understand systems that have many hidden parts

B. Types of models

1. diagrams and flow charts

2. 5 _____

_____

3. 6 _____

IV. Controlled Experiments

A. Ask questions

B. Hypothesize

C. 7 _____

D. Carry out the procedure

E. 8 _____

F. Draw conclusions

V. Organizing and Displaying Data

A. Data displays help communicate

B. Kinds of data displays

1. circle graphs

2. 9 _____

3. 10 _____

4. 11 _____

Brain Check

Name _____

Vocabulary Review

1 **Use the clues to fill in the missing letters of the words.**

1._____t i ___ ___h o __	all the ways scientists do investigations
2._o _____	These should be as similar as possible to the real thing.
3.___t r __	the part of an experiment used to compare all the other groups
4._s_ _____n_	what scientists do that is the basis for their investigations
5._____b __	any condition in an experiment that can be changed
6._i __ __a __	a type of graph suited to show change over time
7._y _____e ___	a statement that can be tested and that explains what you think will happen in an experiment
8.__o ___u __	the steps you follow in your experiment
9.p _____t	to use patterns in observations to say what may happen next
10._____me __	an investigation that is controlled

Apply Concepts

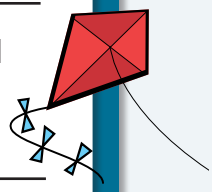
2 For each question, state which kind of investigation works best: repeated observations, using models, or controlled experiments. Then explain how you would do the investigation.

What kinds of birds visit a feeder at different times of the year?

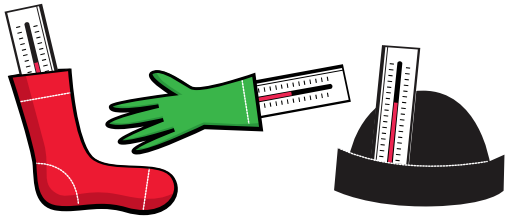
Does hot water or cold water boil faster?

What are the parts of an elevator and how does it work?

How does the length of a kite's tail affect the way it flies?



3 Ryan hypothesizes that darker colors heat up faster. He places a thermometer inside a red wool sock, a green cotton glove, and a black nylon hat. What's wrong with his procedure?



Take It Home!

Help your family enjoy a healthy snack. Design an experiment to find out if coating apple slices in lemon juice can stop them from turning brown. What is your control group in this experiment? What are your variables? Why is it important to identify a control? Perform your experiment and record your results.