

SCIENCE PROCESS SKILLS**● Testing a Hypothesis**

Once you have formed a hypothesis, the next step in the scientific method is to test it. To test a hypothesis, you need to create an experiment.

What is the best way to think of an experiment that will test your hypothesis? You can begin by asking yourself, What can I do that will give me one result if my hypothesis is true and a different result if my hypothesis is false? Once you have found a subject for an experiment, you can design the experiment to find out whether or not your predictions were correct.

For example, suppose the printer on your computer stops working. You form a hypothesis that there is something wrong with the wire connecting the printer to the computer. If your hypothesis were true, what would the results be? One result would be that if you replaced the wire with a working wire, the printer would work again. Using this idea, you could perform an experiment by borrowing a friend's printer wire and hooking it up in place of your own.

Read the description below. Then, as you read each numbered section, follow the instructions on the right to test the hypotheses.

Every day for the past week you have come home from school to find that your favorite plant has been knocked off the windowsill and onto the floor. You have done some investigating and have decided on three possible hypotheses.

One hypothesis is that your cat has been knocking the plant off the windowsill. This idea occurred to you when you noticed some paw prints in the dirt the last time the plant fell.

Another hypothesis is that the wind has been blowing the plant from the windowsill. A tree outside your window was cut down recently, and maybe the wind, no longer blocked by the tree, is now strong enough to knock the plant from the windowsill.

The last hypothesis you have formulated is that your cousin, who has been visiting for the past week, has been playing her music so loud that the vibrations have caused your plant to vibrate off the windowsill.

1. Presenting Hypotheses

In the description of the problem above, several hypotheses have been proposed. On the lines below, write down all of the proposed hypotheses.

Hypothesis 1:

Make a list of all the hypothesis given in the description above.

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Hypothesis 2:

Hypothesis 3:

2. Making Predictions

For each hypothesis, ask yourself what would be true if the hypothesis were true. For example, if the hypothesis about the wind were true, then it would also be true that the plant would not fall off the sill if the wind were blocked.

For each hypothesis listed in step 1, make a list of things that would have to be true if the hypothesis were true.

Predictions for 1:

Predictions for 2:

Predictions for 3:

3. Designing Experiments

Design at least one possible experiment for each hypothesis. Be sure that each experiment tests only one hypothesis. For example, if you performed the experiment of moving the plant into your closet for a day, then no matter what the results were, you wouldn't know which of your three hypotheses was correct.

Using the predictions you made in step 2, design an experiment to test each of the three hypotheses.

Experiment to test hypothesis 1:

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Experiment to test hypothesis 2:

Experiment to test hypothesis 3:

4. Drawing Conclusions

If you performed each experiment described in step 3, you should be able to evaluate whether each hypothesis was true or false. If none of the hypotheses turned out to be correct, you would need to formulate more hypotheses and repeat this process.