

## Experimental Design II: The Four Questions Strategy

Experimental design using the Four Question Strategy (Cothron, Giese, and Rezba, *Students and Research*, 2000). (Web: <http://www.kendallhunt.com>, search for “Cothron.”)

Choose a topic you are interested in doing experiments on: \_\_\_\_\_,  
and then write the topic in the blanks to questions 1-4. **We will do Drops of Liquid on a Coin.**

1. What materials are readily available for conducting experiments on \_\_\_\_\_.  
**List materials available to conduct experiments on the topic.**

2. How does/do \_\_\_\_\_ act?  
**Use verbs to describe how liquid dropped onto a coin behaves.**

3. How can I CHANGE the set of \_\_\_\_\_ materials to affect the action?  
**Choose several items from question 1 that you could change. Put each item at the head of a column. Below, list several ways you could change each item.**

4. How can I MEASURE or describe the response of \_\_\_\_\_ to the change?  
**Choose one of the “acts” responses from question 2. Write it down and underline it. Underneath, write down one or more ways you could measure the action. You may repeat this for several of the “acts.”**

Circle one of the “acts” in question 2, one of the “changes” in question 3, and one of the “measurements” in question 4. Congratulations! You have completed the outline of your experimental design!

### Experimental Design

**Title:** The effect of IV (from 3 on page 1) on DV (from 4 on page 1).

**Hypothesis:** Any one of these three...

If I change to make the independent variable then change predicted .

If the independent variable affects the dependent variable then change predicted .

If the IV is increased/decreased then the DV will increase/decrease/stay the same.

**Independent Variable:** The item you circled in question 3 on page 1.

**Dependent Variable:** The “measure” item you circled in question 4 on page 1.

**Constants:** Everything you wrote down in question 3 on page 1, *except* for the one item you circled and chose as your independent variable.

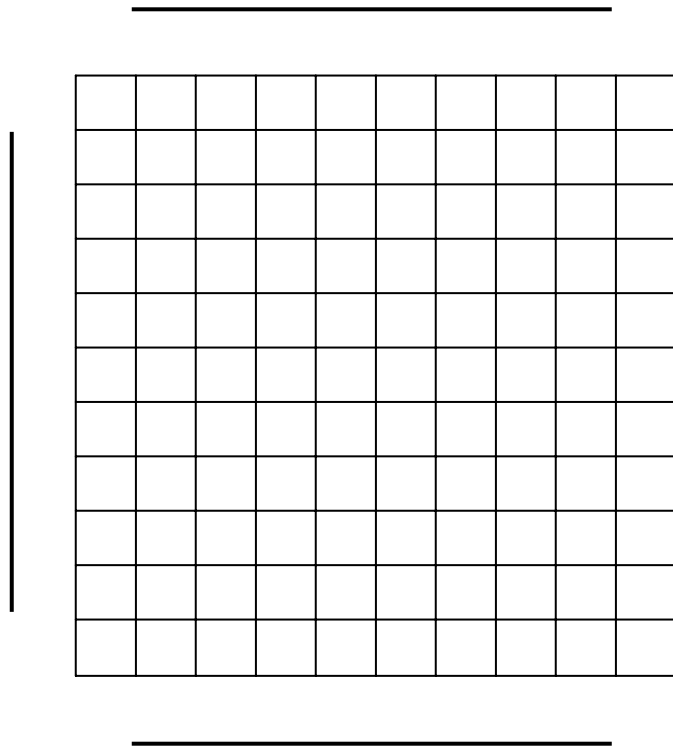
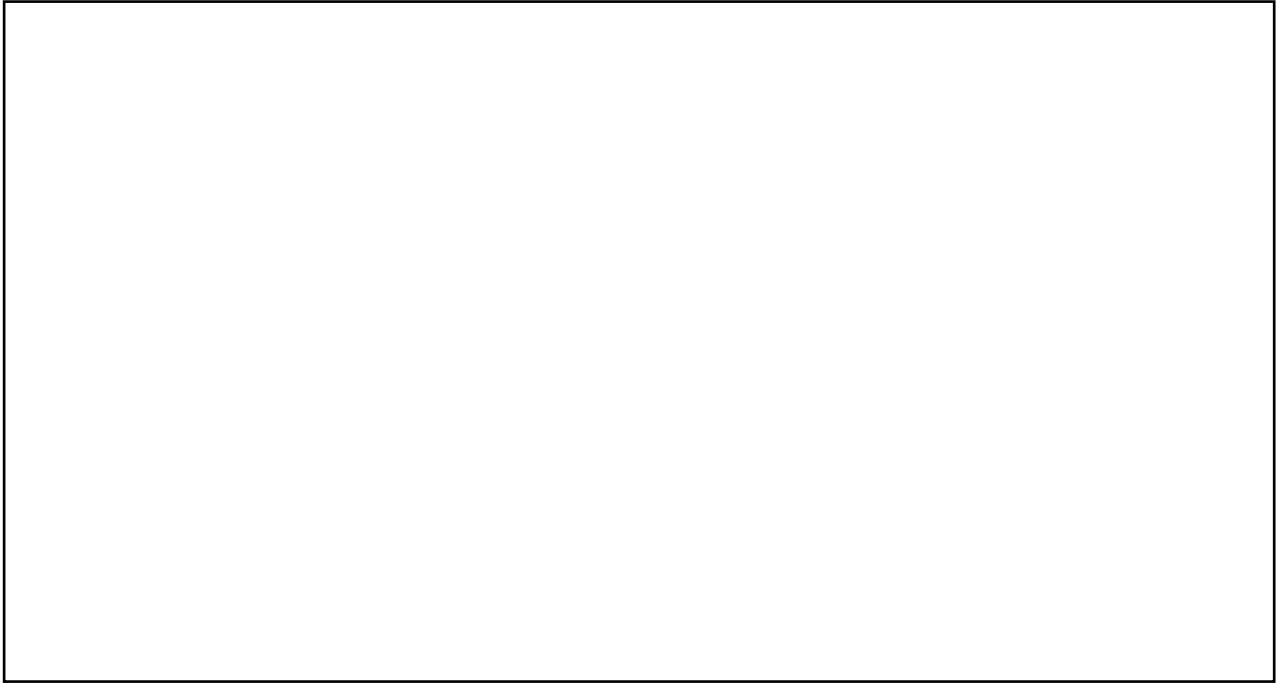
**Procedures for Conducting an Experiment on:**

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**Fill in the blank with your title from page 2. Refer to your independent and dependent variables. List the steps you will take to change your independent variable, and how you will measure your dependent variable.**

**A lengthy, complex experimental procedure is not necessarily a good one!**

**A simple, to-the-point experiment that provides a clear result may be better than a complex experiment that provides confusing results!**



## Conclusion Questions

1. What was the purpose of this experiment?
2. What were the major findings?
3. Was the research hypothesis supported by the data? Give evidence.
4. What possible explanations can you offer for the findings?
5. What recommendations do you have for further study and for improving the experiment?