

## SKILLS INTRODUCTION

# Creating Data Tables

Suppose that your class decides to sponsor a Scrabble® competition to raise money. You'll ask people to pay \$1.00 each to play. The money will go to a charity that your class has chosen. To keep track of the results, all players will have official score cards that show the number of games they play, their wins and losses, their game scores, and their average score. The easiest way to show all that information would be in a data table.

A **data table** is an organized arrangement of information in labeled rows and columns. Data tables are helpful in many kinds of situations. In science, they are particularly useful when you record observations during an investigation. Making data tables may also help you interpret information that someone else has collected.

Planning a data table is an important part of designing an experiment. A data table provides an orderly way for you to record observations. It can help you keep complete records by reminding you of everything you need to observe. Also, data tables can provide spaces for the results of calculations you plan to do as you interpret the data.

When you create a data table, start by identifying the manipulated and responding variables. For example, suppose you are comparing two types of fertilizer to see whether one of them makes plants grow taller. Your manipulated variable is the type of fertilizer. Your responding variable is the height of the plants. You decide you will measure the height of the plants once a day for a period of three weeks. You also decide to include a control, a plant that receives no fertilizer. You might make a table like the one below.

| Effects of Fertilizer on Plant Growth |                               |              |              |
|---------------------------------------|-------------------------------|--------------|--------------|
| Time (days)                           | Height of Plant (cm)          |              |              |
|                                       | Control Plant (no fertilizer) | Fertilizer A | Fertilizer B |
| Day 1                                 |                               |              |              |
| Day 2                                 |                               |              |              |
| Day 3                                 |                               |              |              |
|                                       |                               |              |              |



## Creating Data Tables (*continued*)

Check your plan to be sure that your data table has a column for each kind of information you will observe and a row for each occasion when you'll make an observation. Be sure to label the columns and rows accurately and identify the units of measurement you are using. And be sure to give the data table a title.

Review the draft of your table to be sure it has places for all the data you plan to collect. For example, in an experiment on the effects of plant fertilizer, you might want to insert columns to record the daily temperature or additional changes in the plants, such as the number of leaves that develop. When your review is complete, create the final data table in your notebook.



### Tips for Creating Data Tables

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- ◆ Consider the manipulated and responding variables to determine what observations you will be making.
  - ◆ If you plan to make observations according to a regular pattern, such as once a day, once an hour, or once every five minutes, plan to show those times in the data table.
  - ◆ Make a draft of your table. Show all the columns and rows you'll need and what labels they will have. Be sure to write a title for your table.
  - ◆ Insert units into the column labels where they are needed.
  - ◆ Compare the draft of the data table to the plan for your experiment to be sure you have a place to record all observations you expect to make.
  - ◆ Revise the draft of your data table and draw the final table in your notebook.
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✓ *Checkpoint* How can a well-organized data table help you keep complete records during an experiment?



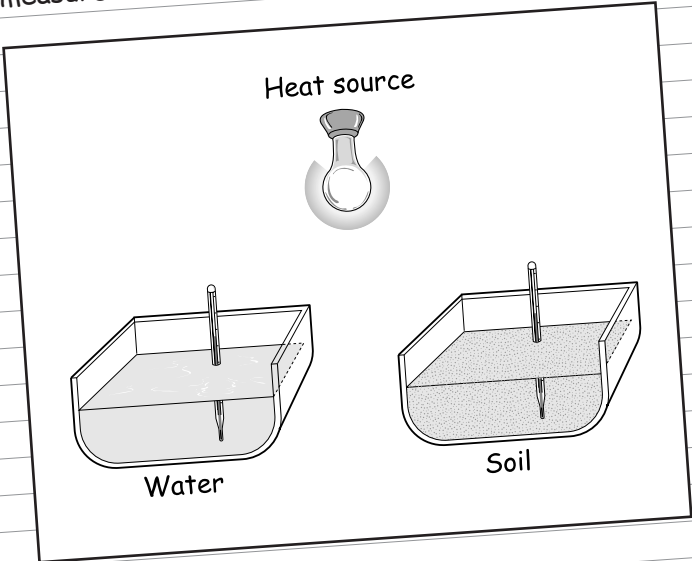
## SKILLS PRACTICE

# Creating Data Tables

Read over the notebook page shown below. Then answer the questions that follow in the spaces provided or on a separate sheet of paper.

Maria did not make a data table before she began her science investigation, but she wrote these notes.

To find out whether water or land gets hotter or cooler in the sun, I will set up a pan of water and a pan of soil. I will put a light bulb halfway between the two pans, and each pan will have a thermometer in it. I will leave the light on for ten minutes and measure the temperature in each pan once every minute.



Here are the results I got. The soil temperatures measured in °C were 20.0, 21.0, 22.0, 23.0, 24.0, 26.0, 27.0, 28.5, 30.0, 31.0, 32.0. Then I turned the light off, and the temperatures were 32.0, 31.0, 30.5, 29.5, 28.0, 27.0, 26.0, 25.0, 23.5, 22.0.

The water temperatures were 20.0, 20.5, 21.0, 21.5, 22.0, 22.0, 22.5, 22.5, 23.0, 23.0. After I turned off the light, the temperatures were 23.0, 22.5, 22.5, 22.0, 22.0, 22.0, 22.0, 21.5, 21.0, 21.0, 20.5.



## Creating Data Tables *(continued)*

1. Think about Maria's plan. What does the light bulb represent? What do the pans of soil and water represent?

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2. What is the manipulated variable in Maria's experiment? What is the responding variable?

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3. Would Maria need to consider any other variable(s) as she created a data table for this lab? Explain.

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4. Draft a plan for a data table for Maria's experiment. Review your plan and then create the data table. Fill in the table with the data Maria obtained.

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5. Think About It Examine the data table you made. Is it a complete record of Maria's investigation? Explain.

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