



**Figure 3**  
Physics, like all other sciences, is based on the scientific method.

### model

a pattern, plan, representation, or description designed to show the structure or workings of an object, system, or concept

## THE SCIENTIFIC METHOD

When scientists look at the world, they see a network of rules and relationships that determine what will happen in a given situation. Everything you will study in this course was learned because someone looked out at the world and asked questions about how things work.

There is no single procedure that scientists follow in their work. However, there are certain steps common to all good scientific investigations. These steps, called the *scientific method*, are summarized in **Figure 3**. This simple chart is easy to understand; but, in reality, most scientific work is not so easily separated. Sometimes, exploratory experiments are performed as a part of the first step in order to generate observations that can lead to a focused question. A revised hypothesis may require more experiments.

### Physics uses models that describe phenomena

Although the physical world is very complex, physicists often use **models** to explain the most fundamental features of various phenomena. Physics has developed powerful models that have been very successful in describing nature. Many of the models currently used in physics are mathematical models. Simple models are usually developed first. It is often easier to study and model parts of a system or phenomenon one at a time. These simple models can then be synthesized into more-comprehensive models.

When developing a model, physicists must decide which parts of the phenomenon are relevant and which parts can be disregarded. For example, let's say you wish to study the motion of the ball shown in **Figure 4**. Many observations



**Figure 4**  
This basketball game involves great complexity.