which is abbreviated as *N*. Its range is the set of all even natural numbers (because every even number is the double of some number).


6.15

**The first three questions refer to the "doubling" function of Example 3.**

1. **What is $d(5)$? What is $d(20)$? What is $d(351)$?**
2. **If $d(n) = 12$, what is $n$? If $d(n) = 454$, what is $n$?**
3. **Why does the statement $d(n) = 35$ not make sense?**
4. **Define in words another function—call it $f$—on the domain $N$ of all natural numbers. Then write a formula for $f$, if possible. If you cannot write a formula for $f$, explain why it can't be done.**
5. **Use the function $f$ you defined in the previous question to find $f(3)$, $f(25)$, and $f(100)$. If you can't find one or more of these values, what makes you believe that $f$ is a function with domain $N$? Explain.**

Example 3 illustrates a very important kind of function called a *sequence*.

**A Word to Know:** A **sequence** is a function that has the set of all natural numbers as its domain.

Does this definition surprise you? Do you think of a sequence as a list that has a first element, then a second, then a third, and so on? Do you think

4, 7, 10, 13, 16, ...: is a sequence?

If you said Yes, you're right! This is just another way of writing a function that has the natural numbers as its domain. Each of the numbers listed in a sequence is called a **term**. If we call this sequence *s*, then

the first term is the image of 1 (that is, $s(1) = 4$);
the second term is the image of 2 (that is, $s(2) = 7$);
the third term is the image of 3 (that is, $s(3) = 10$);
and so on.