of these rectangles are the same as the *probabilities* in Table 5-1. We will see in Chapter 6 and future chapters that such a correspondence between area and probability is very useful.

Example 2 **Marijuana Survey**

In a Pew Research Center poll, subjects were asked if the use of marijuana should be made legal, and the results from that poll have been used to create Table 5-2. Does Table 5-2 describe a probability distribution?

Table 5-2 Should Marijuana Use Be Legal?

Response	$P(x)$
Yes	0.41
No	0.52
Don't know	0.07

Solution

Consider the three requirements listed earlier.

1. The responses (yes, no, don't know) are not numerical, so we do not have a numerical random variable. The first requirement is violated, so Table 5-2 does not describe a probability distribution.
2. The sum of the probabilities is 1.
3. Each probability is between 0 and 1 inclusive.

Because one of the three requirements is not met, Table 5-2 does not describe a probability distribution.

Example 3 **When to Discuss Salary**

Senior executives were asked when job applicants should discuss salary, and Table 5-3 is based on their responses (based on data from an Accountemps survey). Does Table 5-3 describe a probability distribution?

Table 5-3 When to Discuss Salary

Number of Interviews x	$P(x)$
1	0.30
2	0.26
3	0.10

Solution

To be a probability distribution, we must have a numerical random variable x such that $P(x)$ must satisfy the preceding three requirements.

1. The variable x is a numerical random variable and its values are associated with probabilities, as in Table 5-3.
2. $\Sigma P(x) = P(1) + P(2) + P(3)$
   $= 0.30 + 0.26 + 0.10$
   $= 0.66$ [showing that $\Sigma P(x) \neq 1$]
3. Each value of $P(x)$ is between 0 and 1 inclusive.

Because the second requirement is not satisfied, we conclude that Table 5-3 does *not* describe a probability distribution.

Example 4

Does $P(x) = \frac{x}{3}$ (where x can be 0, 1, or 2) determine a probability distribution?

Solution

To be a probability distribution, we must have a numerical random variable x such that $P(x)$ must satisfy the preceding three requirements. From the given formula we find that $P(0) = 0/3$ and $P(1) = 1/3$ and $P(2) = 2/3$.