Lesson 12-5

Example 1 Determine Validity of Conclusions
Determine whether the conclusion is valid. Justify your answer.
To determine what ice cream their customers like, every fifth person to walk into the ice cream store is surveyed. Out of 140 customers, 70 stated that they prefer chocolate chip. The manager concludes that about half of all customers prefer chocolate chip.

The conclusion is valid. Since the population is the customers of the ice cream store, the sample is a systematic random sample. It is an unbiased sample.

Example 2 Determine Validity of Conclusions
Determine whether the conclusion is valid. Justify your answer.
To determine whether people prefer CDs or tapes, a CD company includes a survey on all of its CDs. Of those who responded to the survey, 92% said that they prefer CDs, so the company president concludes that most people prefer CDs to tapes.

The conclusion is not valid. People who have bought CDs probably prefer CDs. This is a biased sample. The sample is a convenience sample because the people are easily accessed.

Example 3 Using Sampling to Predict
ICE CREAM   Ye Olde Ice Cream Shoppe sells four different flavors; vanilla, chocolate, strawberry, and honey. They survey 25 customers at random. The flavors they prefer are indicated at the right. If 500 people buy ice cream over one weekend, how many of them will purchase vanilla ice cream?

Flavor	Number
vanilla	7
chocolate	11
strawberry	5
honey	2

First, determine whether the sample method is valid. The sample is a simple random sample since customers were randomly selected. Thus, the sample is valid.

$\dfrac{7}{25}$ or 28% of the customers prefer vanilla ice cream. So, find 28% of 500.

$0.28 \times 500 = 140$

About 140 people will buy vanilla ice cream.