

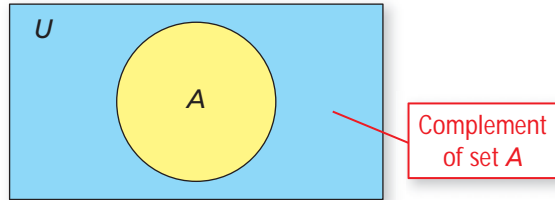
### Study Tip

The complement of a set depends on the context of the situation. For instance, the complement of “all 6th-grade students” could be “all middle school students who are not in 6th grade” or it could be “all students who are not in 6th grade.”

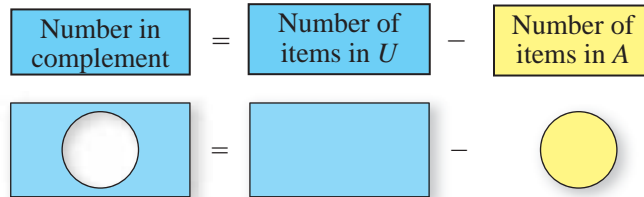
## The Complement of a Set

### Finding the Complement of a Set

The **complement** of set  $A$  consists of everything that is in some universal set  $U$ , but not in set  $A$ . A set diagram for the complement of a set is shown below.



If you know how many items are in set  $A$  and in set  $U$ , then you can calculate the number of items in the complement of set  $A$ .

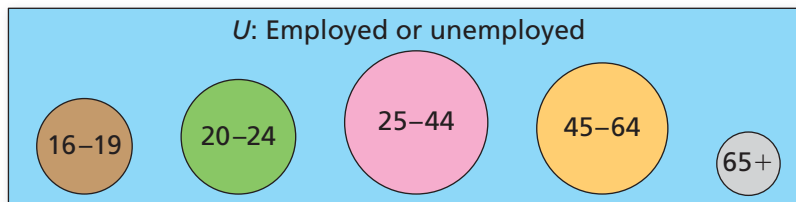


### EXAMPLE 5 Finding the Complement of a Set

The numbers of unemployed people in the United States in a recent year are shown. The total number of employed people and unemployed people was 154,286,000. How many people were employed?

	Age	Number Unemployed
	16–19	1,285,000
	20–24	1,545,000
	25–44	3,553,000
	45–64	2,276,000
	65+	264,000

### SOLUTION



$$\begin{aligned} \text{Unemployed} &= 1,285,000 + 1,545,000 + 3,553,000 + 2,276,000 + 264,000 \\ &= 8,923,000 \end{aligned}$$

$$\begin{aligned} \text{Employed} &= 154,286,000 - 8,923,000 \\ &= 145,363,000 \end{aligned}$$



About 145 million employed

### ✓ Checkpoint

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What was the unemployment rate for the year shown in Example 5?