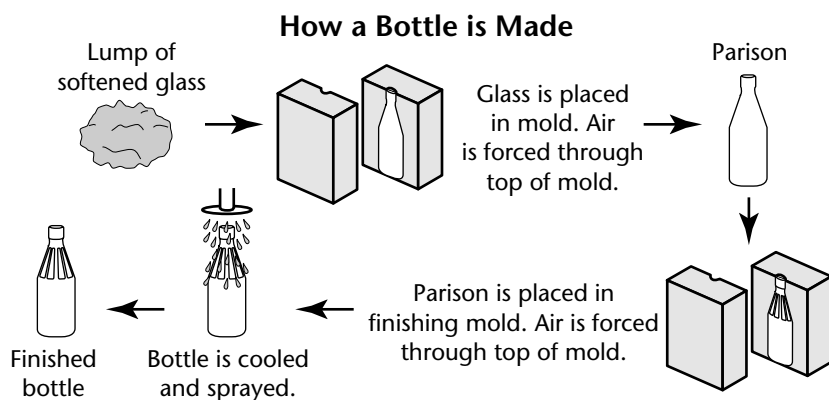


**Solids, Liquids, and Gases** ▪ *Enrich***Bottle-Making**

You learned in Section 1 that glass is an amorphous solid. This property allows it to be molded into shapes such as bottles. Bottles are usually made with an *individual section (IS) machine*, which is actually a series of automated machines that carry out each step of the bottle-making process. First, very hot, softened glass exits a furnace. Next, the softened glass is cut into lumps, or sections. Each lump of glass moves through the machine to a mold. Air is blown into the mold with great force. This forms the glass inside the mold into a hollow shape called a *parison* (PAYR uh suhn). Next, the parison is placed in a second mold called the finishing mold. Air is forced into the finishing mold to bring the bottle to its final shape. The entire molding process takes about 11 seconds.

At this point, the bottle is still very hot. After leaving the finishing mold, it travels down a conveyor belt on which it cools and hardens. At the same time, a chemical is usually sprayed on the bottle to give it a hard coating that is resistant to scratches.



Answer the following questions on a separate sheet of paper.

1. Why do you think bottles are made from amorphous solids such as plastic and glass? Why aren't they made from crystalline solids?
2. What must the melting point of the mold be compared to the temperature at which glass gets soft? Why?
3. When the parison is placed in the second mold, it doesn't yet have the exact shape of a finished bottle. Is the parison's viscosity low or high? Explain.
4. Glass is sometimes called a super-cooled liquid. Why do you think this is so?