Read the passage and answer questions 9–15.

Sap's Running
by Stephen R. Swinburne

The Coleman brothers—Nelson, Ralph, and Harold—step out their front door in Vermont. They feel the wind. They feel the sun on their faces. "Sap could be running this morning," says Nelson.

As they pass 75-year-old sugar-maple trees, sap drips from holes in the trees into metal buckets. They know for sure that today will be a good day for sugaring.

Sap from sugar maples looks like water, but tastes sweet. That's because it has sugar in it. It also contains minerals from the soil. A 50-foot-high sugar maple has nearly two hundred thousand leaves. All these leaves drink in summer sunshine and make sugar. During winter, sugar is stored in the tree. Running sap in the spring contains the sugar that was made in the tree the summer before.

Every spring, the Colemans tap holes into sugar-maple trees, then hang a bucket under each hole to catch the sap. To make syrup, the sap is heated in big open pans so that most of the water will boil away. The Colemans say it takes about thirty-five gallons of sap to make one gallon of maple syrup.

More than a hundred years ago, scientist Charles Darwin wrote that sap flow was a "most mysterious subject." Since then, many people have studied how sap flows. Much of the research has been done at the University of Vermont, where sap is still being studied.

Nelson Coleman and his brothers have made maple syrup all their lives. It is a family tradition. They don't worry too much about why the sap is running in their trees this morning. They're just glad it is.

The Iroquois Legend of Woksis and Maple Syrup

According to legend, an Iroquois chief named Woksis yanked his tomahawk out of a maple tree one spring day. A bowl sat by the trunk

of that tree. As the day warmed, sap dripped from the gash into the bowl. When Woksis's wife saw the sap in the bowl, she thought it was water. She used it to cook their meal. The sap boiled away, leaving maple syrup. When Woksis tasted the sweetened meat, he loved it. So, boiling sap to make maple syrup began.

What Makes Sap Run?

For years, people have thought that sap rises up from the roots of the sugar-maple tree. It doesn't. "During the time when sap flows from tap holes, the bulk flow of sap is downward," says Dr. Tim Perkins. He is a scientist at the University of Vermont.

How does sap flow? During cold nights, maple trees freeze solid. That's when water rises into the trunk and branches. The water forms frost inside tiny hollow spaces within the tree. In the morning, this frost melts and becomes sap, which flows down the tree.

Scientists say that anyone who cuts down a sugar-maple tree in freezing weather can see this is true. When the weather warms up, sap will flow from the cut end of the trunk—not from the stump.

Item	Grade	Claim	Target	DOK	Standard(s)
#10	3	1	11	3	RI.3

Evidence Statement
The student will form a conclusion about an informational text and identify details within the text that support that conclusion.

This question has two parts. First, answer part A. Then, answer part B.

Part A

Click on the sentence that gives the **best** conclusion about sugar-maple trees.

Sugar maple trees grow best in cold weather.
Most sugar maple trees are about 50 feet tall.
The sap in sugar maple trees begins flowing in early spring.
Vermont has the best weather for growing sugar maple trees.

Part B

Click on the sentence from the passage that **best** supports your answer in part A. Choose **one** answer.

A 50-foot-high sugar maple has nearly two hundred thousand leaves.
The Coleman brothers—Nelson, Ralph, and Harold—step out their front door in Vermont.
Scientists say that anyone who cuts down a sugar-maple tree in freezing weather can see this is true.
Every spring, the Colemans tap holes into the sugar-maple trees, then hang a bucket under each hole to catch the sap.

Key: Part A: The sap in sugar maple trees begins flowing in early spring.

Part B: Every spring, the Colemans tap holes into the sugar-maple trees, then hang a bucket under each hole to catch the sap.

Rubric: (1 point) The student selects the correct option in Part A and the correct option in Part B.