Explain Events, Procedures, and Ideas

Grade 4 Reading Worksheet - Building Confidence

Name _____ Date _____

Read the text. Circle the answer to each Why question.

READ THIS FIRST

Why Popcorn Pops

A popcorn kernel looks like a tiny, hard seed. Put it in a hot pan, though, and it suddenly bursts into a fluffy white puff. Why does this happen?

The answer is hidden inside the kernel. Each kernel has three main parts. The outside is a hard shell called the hull. Inside the hull is soft starch, and mixed into the starch is a tiny drop of water.

When the kernel is heated, the water inside gets hotter and hotter. Soon it turns into steam. Steam takes up much more space than water does. However, the hard hull does not let the steam escape. So the pressure inside the kernel keeps building.

At the same time, the heat softens the starch. It turns into a soft, gooey paste.

At about 350 degrees Fahrenheit, the hull cannot hold the pressure any longer. It splits open with a pop. The steam rushes out, and the soft starch puffs up into a foam. As it cools, the foam turns hard and crunchy. In less than a second, the kernel has turned inside out.

Not every kernel pops. Some kernels have a crack in the hull. The steam leaks out slowly through the crack, so the pressure never builds. Other kernels have lost too much water from sitting on a shelf for too long. Many people call these leftover kernels duds.

So a good pop needs two things working together: water inside and a strong hull around it.

1. Why does pressure build inside a heated kernel?
   The hull keeps the steam from escaping.
   The starch turns into hard foam.
   The water leaks out through a crack.

2. Why does a kernel with a cracked hull not pop?
   The steam leaks out, so pressure never builds.
   Its hull is too strong for the steam to break.
   It has too much water inside.

3. Why might popcorn that sat on a shelf for years fail to pop?
   Its hull has become too strong.
   Its starch has already turned to foam.
   It has lost too much of its water.

4. Why does the foam turn hard and crunchy?
   It cools down after it puffs up.
   The hull closes around it again.
   More steam keeps building inside it.

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Answer Key - Grade 4 Reading Worksheet - Building Confidence

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