

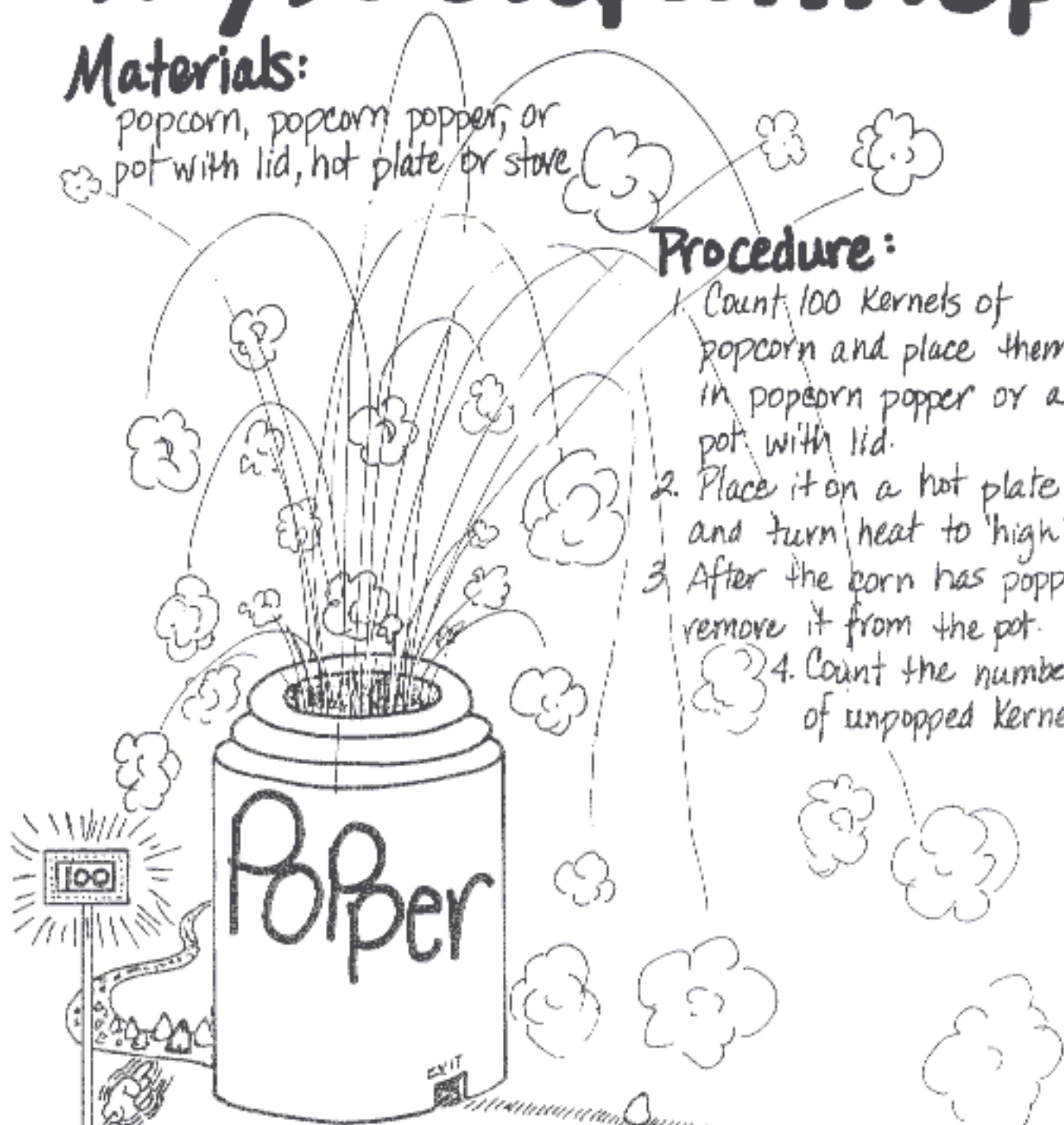
Why Does Popcorn Pop?

Materials:

popcorn, popcorn popper, or
pot with lid, hot plate, or stove

Procedure:

1. Count 100 kernels of popcorn and place them in popcorn popper or a pot with lid.
2. Place it on a hot plate and turn heat to 'high'.
3. After the corn has popped, remove it from the pot.
4. Count the number of unpopped kernels.



Questions and Discussion:

1. How long was the popper on before the first kernel popped?
2. How many kernels did not pop or only partially popped?
3. Examine the unpopped kernels. What might be a reason for them not popping?
4. What do you think makes popcorn pop?

WHY DOES POPCORN POP?

MATERIALS

Popcorn can be purchased for 55¢–75¢ per pound depending on the brand and variety. Use a popcorn popper or a pot with a lid. A small amount of oil or butter can be used to coat the inside of the pot to prevent sticking and burning.

PROCEDURE

1. Place 100 kernels in popper or pot. (Fewer or more kernels can be used depending on the size of the group involved.)
2. Set temperature at about 400°F.
3. Allow time for kernels to pop. (Time will vary according to number of kernels used, size of container and temperature setting.)
4. Remove from heat and allow time to cool. Count the number of unpopped kernels.

POSSIBLE ANSWERS TO QUESTIONS

1. Answers will vary according to procedure #3.
2. Count unpopped kernels to determine answer.
3. Some kernels might not pop because of too little or too much moisture trapped inside. Another reason could be that the end of the kernel did not seal completely and the steam escaped gradually.
4. Popcorn pops because the heat causes the moisture trapped inside the kernel to turn to steam and expand creating a pressure on the inside of the kernel until it 'explodes'.

APPLICATION OF CONCEPT AND EXTENSION ACTIVITIES

1. For a comparison, show the class an aerosol can, such as the one that contains shaving cream, and discuss the 'caution' that is printed on the can. Most products of this type suggest storing the can in a place where the temperature is always below 110°F. The moisture of the product (in this case it is shaving cream) is also under pressure, and will expand and explode (much like the kernel of popcorn) if enough heat is applied.
2. Determine the percentage of kernels that pop. Double or triple the number of kernels used to see if the ratio is the same.
3. Place the 100 kernels end to end, or side by side, to find out how many centimeters or inches long they extend. After popping, repeat the procedure with the popped, unpopped, and partially popped kernels and compare the results. (Results will vary depending on the type and brand of popcorn used.)
4. Use a graduated cylinder to determine the volume of 100 kernels before and after popping. Repeat with 200 kernels to see if the ratio is the same.
5. Using a balance scale, weigh the kernels before and after popping to determine the amount of weight loss from the moisture that escaped during the popping process.

Corn Facts



Cows eat most of the corn grown in California. For every ear of sweet corn produced in the state, about 50 ears of corn are grown for grain or silage to feed farm animals. More than a million dairy cows live in California, and they eat a lot of corn. So do people. California farmers now produce more than twice as much sweet corn as they did just 10 years ago. Most of the state's sweet-corn production comes from the desert valleys in southeastern California and from the great Central Valley.

Source: California Farm Bureau Federation; California Department of Food and Agriculture