



## SCIENCE

**TITLE:** How Much Water Does Popcorn Contain?

**SUBJECT:** Science

**GRADE LEVEL:** 5-6

**MATERIAL(S):** Popcorn, hot air popper or microwavable popcorn container, balance (scale used to measure mass), bowl

**OBJECTIVE(S):** To determine how much water popcorn contains by weighing pre- and post-popping

### **OVERVIEW:**

1. Explain the concept of how popcorn pops (popcorn contains a small amount of water, which, when heated, expands and creates steam; the pressure breaks the hull, the kernel turns inside out and the steam escapes).
2. Put a specific number of kernels (ex. 20) into a container and weigh (or, measure the mass of the popcorn, in grams). You must weigh the empty bowl before doing this, record this number, and subtract it from the overall weight to obtain the actual mass of the popcorn.
3. Record the number of kernels and mass.
4. Using an air popper or microwavable popcorn container (not microwave popcorn), pop the popcorn. Do not use the stovetop method as you would have to add oil, thus tainting the experiment.
5. When the popcorn is done popping, place it and any remaining unpopped popcorn and hulls into the same container.
6. Weigh again and record weight. Remember to subtract the weight of the bowl.
7. Repeat experiment several times to obtain average.

### **Calculations of Mass:**

Number of kernels before cooking: \_\_\_\_\_ N1

Weight of kernels before cooking: \_\_\_\_\_ W1

Number of kernels after cooking: \_\_\_\_\_ N2

Weight of kernels after cooking: \_\_\_\_\_ W2

Mass of kernels before cooking: \_\_\_\_\_  $M1=W1/N1$  (*W1 divided by N1*)

Mass of kernels after cooking: \_\_\_\_\_  $M2=W2/N2$

Mass of water in one kernel: \_\_\_\_\_  $M3=M1-M2$

### **Calculations of Percentage:**

Weight of kernels before cooking: \_\_\_\_\_ W1

Weight of kernels after cooking: \_\_\_\_\_ W2

Grams of water: \_\_\_\_\_  $G1=W1-W2$

Percent of water in unpopped popcorn: \_\_\_\_\_  $P1=G1/W1 \times 100$