

## HW 1b

### Vended Cola Problem:

When purchasing a canned cola product from a vending machine, one should leave the can unopened for a short period of time before opening the can. Failing to do so can lead to a very messy “spewing” of the contents.

In order to “scientifically” approach this problem, the following “thought experiment” is conducted:

Three identical refrigerated cans of cola (labeled A, B, and C) are obtained. They are subjected to the following treatments.

- Cans A and C are simultaneously vigorously shaken for 30 seconds. Can B is not shaken and is allowed to sit on a desktop.
- Can A is opened immediately following shaking and (as expected) spews.
- Can B is opened at the same time as Can A and (as expected) does not spew.
- Can C is allowed to sit on a desktop for 2 minutes and is then opened and does not spew.

Referring to the original vended product,

(a) estimate the “maximum energy added” to the can as a result of the vending process

(b) estimate the corresponding change in temperature of the can’s contents

(c) estimate the energy added to the can as a result of shaking for 30 seconds