**Creaking Soda Bottles** Last Name, First Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_ Per:\_\_\_\_

**Purpose:** To experimentally determine why empty plastic soda bottles can make “creaking” sounds.

**Procedure:**

1. Fill the empty plastic soda bottle approximately ¼ full with hot tap water.
2. Put the cap on the plastic soda bottle and swirl the water throughout the bottle for approximately 30 seconds.
3. Discard the hot tap water in the sink.
4. Immediately re-cap the plastic soda bottle
5. Place the bottle in ice water.
6. Fill the bottle ¼ with ice cold water.
7. Put the cap on the plastic soda bottle and swirl the water throughout the bottle for approximately 30 seconds.
8. Discard the ice cold water in the sink.
9. Run hot tap water over the bottle to warm.

**Data Observations:**

|  |  |
| --- | --- |
| Bottle as it cools to room temp (in between the time the cap was put on and the bottle placed in the ice water). |  |
| Bottle in the ice water |  |
| Bottle with hot tap water poured over it |  |

**Conclusion:** Explain the changes you observed using the gas laws (see back of pressure and gases reference sheet) Example: From this experiment, what can be concluded about the

**Extended Thinking:**

Use what you’ve learned in this activity to describe and explain what would happen to a helium-filled Mylar balloon if left in a hot car and then if left in a cold car.

Why are driver’s advised to measure tire pressure when the tire is cold (not after immediately driving the car).

**Exploding Straws:**

**Purpose:**

**Procedure:**

With your partner, make a straw explode as follows:

1. One partner grips a straw tightly at both ends.
2. The other partner should sharply flick the middle of the straw.
3. Record your observations.
4. With a new straw, one partner should grip the straw tightly at both ends.
5. With hands positioned like pedals on a bicycle, move your hands in a pedaling motion, rolling up the straw from both ends until about 5 cm of unrolled straw are left in the middle.
6. Without letting go, observe the appearance of the unrolled portion in the middle of the straw.
7. Record your observations.
8. The other partner should sharply flick the middle of the straw.
9. Record your observations.

**Observations:**

|  |  |
| --- | --- |
| What is inside the straw? |  |
| What happens when the partner flicks the straw in step 2?  (flick plain straw) |  |
| What does the straw look like after step 6  (unrolled portion of straw) |  |
| What happens when the partner flicks the straw in step 8?  (flick rolled straw) |  |

**Drawings:** (at the particle level)

**Conclusion:** (Which one caused the straw to explode. Why?)

Generate an extension question here: