

# Thermodynamics

## Drinking Bird

### Materials:

- ✓ Drinking Bird x2
- ✓ Black Paint
- ✓ Glass Beaker (small)
- ✓ Water

### Background Research:

- a. Define the following terms: Thermodynamics
- b. Humidity
- c. Evaporation
- d. Evaporative Cooling
- e. Condensation
- f. Fluid
- g. Pressure Difference
- h. Center of Mass
- i. Pivot Point
- j. Thermal Expansion
- k. Thermal Contraction



2. Explain how temperature effects the pressure of a gas?
3. Discuss how Heat and Temperature are expressions of random motion and vibrations of atoms.

### Scientific Investigation

- ➔ Caution!! Contains phthalates, these are extremely flammable, keep away from heat and sources of ignition (sparks, electricity, etc...)
- ➔ Set up Drinking Bird in front of a glass of water. Adjust the level of the bird and/or the glass so that the bird will dip his beak into the water when it tips.
- ➔ Hold the head in the water long enough so that it is thoroughly saturated with water...AKA...dare I say it ... wet!
- ➔ Release hold of the head.
  
- ➔ Remove the glass of water, once the bird's head becomes dry try cooling its head by an alternative method, if you need more supplies discuss with Coach Hyde.
  
- ➔ On the second Drinking Bird, carefully paint the bulb containing the liquid black, use washable paint. Allow it to sit in a location reachable by sunlight, observe results.

### Reflection/Conclusion:

4. Explain why the bird tips. Use ALL of the terms defined in the background research portion of this activity.
5. Discuss other alternative methods of cooling the head, did this get the desired result of seeing the bird tipping, as if to take a sip of water that is not there anymore.
6. What were the results of painting the bulb black?
7. Create a loom video. You will recreate your investigations. You are to explain the causes of the bird tipping using physics. Max video length is 5 minutes. Copy and paste video link into thermodynamics google form found in google classroom.