PHENOMENON:

Soda can crushes in cold water

QUESTION: Why might the soda can crush when moved from hot to cold?

Activity Process	Observation/ Evidence/ Patterns	Why?	Connection

Hot Water, Cold Water & Food Dye
[Temperature & KE]
	Hot H_2O - dye spreaded out fast
	
	Cold H_2O- dye spreaded out slow
		• Molecules = always moving = has KE
		• Increasing temp = increasing KE
		  ○ Molecules move faster
		• Decreasing temp = decreasing KE
		  ○ Molecules move slower
			Heating H_2O in can increased the KE of the H_2O.
			
			Cooling the can & H_2O decreased the KE of the H_2O.

Crater Lab *[KE & Force]*	Fast ball = biggest crater, Most spatter Slow ball = smallest crater Least splatter	• Moving objects apply a force to other objects. • Increasing KE = increasing force of collision • Decreasing KE = decreasing force of collision	Hot H_2O has more KE. The KE from the hot H_2O was a large force pushing out from inside the can. Cold H_2O has less KE. The KE from the cold H_2O was a smaller force pushing out from inside the can.
Washers & Water *[Heat Transfer]*	Room temp washers & Hot H_2O - Washer Temp ↑, H_2O Temp ↓ Hot washers & Room temp H_2O - Washer Temp ↓, H_2O Temp ↑	• Heat is an energy that can be transferred from one object to another. • Transfer of heat energy changes KE of both objects	When the hot can was placed in ice, heat (& KE) was transferred from the hot can to the ice, cooling down the H_2O in the can.
Tug of War *[Unbalanced Forces]*	Rope moved towards more people Rope stayed about the same	• Balanced forces = no change • Unbalanced force change system until forces are balanced • Force of collision of molecules is called pressure	The can crushed because the force on the outside of the can was greater than the force on the inside of the can.