

Spray can of compressed air and digital thermometer

1. Gather together with 3 (or more) other participants and work through this demonstration together. This will conserve the compressed air.
2. Turn the digital thermometer on.
3. Hold the end of the spray can nozzle about one-half inch away from the tip of the temperature probe, pointing the nozzle down the long axis of the temperature probe.
4. Squeeze the trigger on the air nozzle for about 20 seconds.
5. What happens to the temperature?
6. Explain what you observe.



Effect of Expansion on Air Temperature (Spray can of compressed air and digital thermometer)

Summary – This activity investigates the effect of expansion on air temperature. When air flows from higher to lower pressure, it expands by doing work on the surrounding air. The air molecules lose energy in the process and experience cooling.

Materials Needed

- Can of compressed air used to dust electronics
- Digital thermometer with remote probe

Scientific Questions

Does expansion affect air temperature?

Possible Hypothesis

- Expansion has no effect on air temperature
- Expansion causes warming
- Expansion causes cooling

Set up

- If the duster can comes with a plastic extension tube for the nozzle, install that before the experiment.

Notes

- The can itself will become very cold the longer it is used. You may be surprised how cold the expelled air will become!