

Gas Laws Problem Set 3

1. In a little hut on top of Mt. Fuji in Japan, Domini (Ms. Lyman's sister) boils water for her breakfast. Meanwhile, atop Mt. San Jacinto in Southern California, Ms. Lyman boils water for her coffee. If Domini's water boils at 88°C and Ms. Lyman's water boils at 94°C , which of the two is at higher altitude? Show your work. *Hint: what is the relationship between altitude and pressure?*

If Domini measures a pressure of 0.63 atm, then what pressure is Ms. Lyman at? Does this make sense with your previous answer?

2. On the distant planet Schwartz, pressure decreases linearly with altitude. A Schwartzian goat herder prepares tea atop the 3000m peak of Mount Matt. The goat herder notes that water boils at 296K. Meanwhile, at sea level, a Schwartzian chemist notices the boiling point of her water to be 306K. An unfortunate earthling physicist suddenly emerges from a space-time wormhole on the surface of Planet Schwartz. Gasping at the cyanide-laced atmosphere, the physicist observes a nearby Schwartzian Boy Scout is boiling water at 301K. What altitude is the physicist at? Show your work. *Hint: draw a graph of what you know.*

This problem requires a different approach than our previous work. Thinking about graphing the information you have is very helpful for this, because then you can calculate rise over run, which you will need to solve this problem.

