

Suppose i have an inflated balloon, obviously it is filled with air particles. and i have learn that particles colliding with walls of a container constitutes a pressure. now suppose i warm the balloon. the air particles will gain more kinetic energy and will more frequently with walls of the container thereby constituting greater pressure and ALSO the balloon's volume will increase. BUT this does not apply to Boyle's law which states that pressure is indirectly proportional to volume. please explain

**Answer:**

Boyle's law states that the absolute pressure and volume of a given mass of confined gas are inversely proportional, if the temperature remains unchanged within a closed system.

See:

[http://en.wikipedia.org/wiki/Boyle's\\_law](http://en.wikipedia.org/wiki/Boyle's_law)

Thus, if you warm the balloon you can't use Boyle's law. In this case you should use combined gas law, which states that for a closed system (constant moles of gas), the PV product divided by the absolute temperature is constant or

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$

See:

[http://en.wikipedia.org/wiki/Combined\\_gas\\_law](http://en.wikipedia.org/wiki/Combined_gas_law)

<http://library.thinkquest.org/12596/combined.html>