

Extra Gas Laws Practice Problems

Boyles', Charles' and Combined Gas Laws

- 1) A sample of oxygen gas occupies a volume of 250. mL at a pressure of 740. torr. What volume will the gas occupy at a pressure of 800. torr if temperature is held constant?
- 2) A sample of nitrogen occupies a volume of 250 mL at 25°C. What volume will it occupy at 95°C?
- 3) A sample of gas has a volume of 256 mL at 720 torr and 25°C. What pressure will the gas exert at 50.°C and 245 mL?
- 4) A sample of carbon dioxide gas occupies a volume of 3.50 L at 125 kPa. Assuming a constant temperature, what pressure is exerted on the gas if it has a volume of 2.00 L?
- 5) A sample of helium occupies a volume of 3.8 L at -45°C. What volume will it occupy at 45°C?
- 6) Submarines need to be extremely strong to withstand the extremely high pressure of water pushing down on them. An experimental research submarine with a volume of 15,000 L has an internal pressure of 1.2 atm. If the pressure of the ocean breaks the submarine forming a bubble with a pressure of 250 atm pushing on it, what will be the volume of the bubble?
- 7) A sample of oxygen gas has a volume of 36.7 L at 145 kPa and 65.°C. What volume will the sample have at STP?
- 8) A soda bottle is flexible enough that the volume of the bottle can change when without opening it. If you have an empty soda bottle with a volume of 2.0 L at room temperature (25°C), what volume will the bottle occupy when in the freezer at a temperature of -4.0°C?

Answers:

- 1) 231 mL
- 2) 310 mL
- 3) 820 torr
- 4) 219 kPa
- 5) 5.3 L
- 6) 72 L
- 7) 42 L
- 8) 1.8L