**GAS AND HEAT REVIEW: Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. A steel canteen of constant volume is at standard pressure. What would the new pressure be, in kPa, if it were heated from 20 to 100 degrees Celsius?
2. What is the pressure on a 10 liter canister containing 450 grams of Nitrogen gas at standard temperature?
3. How many moles of gas are in a tire with a volume of 5 liters inflated to 150 kPa at 70 degrees Celsius?
4. The pressure in a car tire filled with air is 245 kPa. The partial pressure of oxygen, carbon dioxide, and other gases is 51.3kPa, 0.10 kPa, and 2.3 kPa respectively. What is the partial pressure of nitrogen in the tire?
5. What mass of ice can be melted using 10,000 Joules of heat energy?
6. What mass of hydrogen gas is contained in a 750 liter balloon at standard temperature and pressure?
7. The volume of a gas at 26 degrees Celsius and 75 kPa is 10.5L. What final temperature would be required to reduce the volume to 9.5L if the pressure were increased to 116 kPa?
8. How much heat is necessary to heat 50g of steam by 50 degrees Kelvin?
9. The pressure in a sealed plastic container is 108 kPa at 41 degrees Celsius. What is the pressure when its temperature reaches 22 degrees Celsius? Assume the volume has not changed.
10. A balloon at standard temperature and pressure is inflated to a volume of 1 liter. Assuming constant temperature, what would be the new pressure inside the ballon if 2 **more** liters of air were blown into the balloon?
11. A tire of fixed volume at standard pressure is heated from 20 to 80 degrees Celsius. If the container can withstand pressures up to 3.5 atm, would the canister rupture?
12. How much energy is needed to heat a 10g bar of nickel from 10 to 40 degrees Celsius?