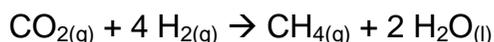


Honors: Review Sheet for Gas Laws Quiz

- 1) What is an ideal gas? How are real gases different from ideal gases?
- 2) Little Johnny is on Mars, where the average atmospheric pressure is 0.60 kPa. What is this pressure in atmospheres?
- 3) Little Johnny is going to Mars. When he fills up his bicycle tires back here on Earth, the pressure inside the tires is approximately 175 kPa and the tires have a volume of 2.3 L. When he goes to Mars (where the atmospheric pressure is 0.60 kPa), what will the new volume of his bicycle tires be?
- 4) When Little Johnny tries to ride his bike on Mars, he finds that he has a problem. If he empties the tires and then refills them to the correct volume of 2.3 liters and pressure of 1.50 kPa, how many grams of oxygen will he need? The surface temperature on Mars is -55°C .
- 5) Little Johnny hasn't planned ahead for his trip to Mars, but has made the assumption that he can breathe the atmosphere if he compresses it until the partial pressure of oxygen is high enough to let him live. Unfortunately for him, the concentration of oxygen in the Martian atmosphere is only 0.13%. Keeping this in mind, to what pressure will Johnny need to compress the Martian air to give him a partial O_2 pressure of 25 kPa?
- 6) While on Mars, Little Johnny has gotten thirsty. Unfortunately, in order to make water, he has to use the Sabatier process:



If Johnny wants to drink a quantity of water weighing 355 grams, how many liters of carbon dioxide gas will he require? For this problem, assume that the carbon dioxide has been compressed to a pressure of 5.0 atm and is at a temperature of 85°C .