NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE DUE: \_\_\_\_\_\_\_\_\_\_\_\_

TEACHER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**/24**

**Year 11 Term 4 – Gases HOMEWORK SHEET No. 5**

**Success Criteria – 18 – 21 – Dalton’s Law and Graham’s Law**

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| /1 | **1. Convert the following temperatures to 0C**.  a) 12 345 K  b) 65 K | | |
| /3 | | **2. Convert the following values to the units indicated in the brackets.** | |
| **a)** 890 mmHg (to kPa)  **b)**  -16 0C (to K)  **c)**  1.133 atm (to kpa) | **d)** 0.04 cm3 (to L)  **e)** 1.23245 m3 (to L)  **f)**  0.004 L (to mL) |
| /1 | | **3. A container holds a mixture of two different gases. The oxygen in a container exerts 80 mmHg of pressure on the inside of the container. The total pressure inside the container is 120 mmHg. What is the pressure of the other gas in the container?**  **(a) 200 mmHg (b) 80 mmHg (c) 0.67 mmHg (d) 40 mmHg (e) 1.5 mmHg** | |
| /3 | | **4. All of the gas laws studied so far have been able to be described by a line on a graph. Is it possible to describe Dalton’s Law on a graph? Explain your answer.** (clue: the answer is yes, but it’s a bit different to the others) | |
| /1 | | **5. A sealed vessel contains 0.5 moles of oxygen, 0.1 moles of carbon dioxide, and 0.4 moles of nitrogen gas. The total pressure of the gas mixture is 5 atmospheres. What is the partial pressure of the carbon dioxide?**  **(a) 50.65 kPa (b) 2.5 atmospheres (a) 0.1 atmospheres (a) 40.5 kPa** | |
| /3 | | **6. Two flasks are connected with a closed tap. The first flask has a volume of 5 liters and contains nitrogen gas at a pressure of 0.75 atm. The second flask has a volume of 8 L and contains oxygen gas at a pressure of 1.25 atm. When the tap between the flasks is opened and the gases are free to mix, what will the pressure be in the resulting mixture?** | |
| /4 | | **7. In 2 sentences each, describe the contribution of John Dalton and Thomas Graham to the study of gases. List the equation for each law after your description**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | |
| /2 | | **8. Methane (CH4) diffuses at a rate of 1.53 m/s. What will be the diffuion rate of argon (Ar) under the same conditions?** | |
| /2 | | **9. Calculate the molar mass of a gas that diffuses three times faster than oxygen under similar conditions.** | |
| /4 | | **10. A sample of a gaseous poison with a molar mass of 123 amu is released 3.5 metres to your left. Simultaneously, the gaseous antidote with a molar mass of 86 amu is released 2.8 metres to your right. If you breathe in the poison first you will die; but if you breathe in the antidote first you will survive. Will you survive the releasing of both gases simultaneously? Show all working and justification.** | |