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

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

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**Year 11 Term 4 – Gases HOMEWORK SHEET No. 3**

**Success Criteria 14 – 17 and revision**

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|  | **1. In three concise sentences describe the contribution of Amedeo Avogadro to the scientific study of gas behaviour.** |
| /2 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| /1 | **2. Write two mathematical formulas which describes the idea gas law.**   |
| /1 | **3. What is the value of, and what are the units for, the universal gas constant, R** |
| /1 |  **4. Convert the following temperatures to K**.a) 293 0Cb) -23 0C |
| /3 | **5. Convert the following values to the units indicated in the brackets.** |
| **a)** 1023 mmHg (to kPa)**b)**  450 0C (to K)**c)** 0.05 atm (to kpa) | **d)** 0.36 cm3 (to L)**e)** 32 m3 (to L)**f)**  0.013 mL (to L) |
| /2 | **6. What volume will it occupy if the pressure is changed from 100 kPa to 90 kPa at a constant temperature of 310 K.Gas in a balloon occupies 3.3  L** |
| /2 | **7. A 7.50 litre sealed jar at 18 °C contains 0.125 moles of oxygen and 0.125 moles of nitrogen gas. What is the pressure in the container?** |
| /2 | **8. A 500 mL metal cylinder holding 0.5 grams of helium gas is known to rupture at a pressure of 10 atmospheres. At what temperature, in °C, will the container fail?** |
| /3 | **9. A 60.0 L tank of chlorine gas at 27 °C and 125 atm springs a leak. When the leak was discovered, the pressure was reduced to 50 atm although the temperature had not changed. How many moles of chlorine gas escaped?** |
| /3 | **10.** [**If you burned 100 grams of octane (petrol) (C8H18), how many litres of carbon dioxide would be produced at a temperature of 350.0°C and a pressure of 1.00 atm?**](https://socratic.org/questions/2-c8h18-l-25-o2-g-16-co2-g-18-h2o-g-if-you-burned-one-gallon-of-gas-c8h18-approx) (hint: equation is not balanced)**C8H18(l) + O2(g) → CO2(g) + H2O(g)** |
| /4 | **11. (a) On the following graph sketch the line you would expect an ideal gas to conform to.**Temperature (K)$$\frac{PV}{n}$$**(b) Explain your reasoning** |