# MIXED GAS LAWS WORKSHEET (modified by Mr. Jasmann)

Created by Tara L. Moore at www.learning.mgccc.cc.ms.us/pk/sciencedocs/gaslawwksheet.htm

**Directions**: Answer each question below. Then **write the name of the gas law used t**o solve each question in the left margin next to each question.

1. A gas occupies 3.5L at 2.5 mm Hg pressure. What is the volume at 10 mm Hg at the same temperature?

1. A constant volume of oxygen is heated from 100°C to 185°C. The initial pressure is 4.1 atm. What is the final pressure?

1. A sample of 25L of NH3 gas at 10°C is heated at constant pressure until it fills a volume of 50L. What is the new temperature in °C?

1. A certain quantity of argon gas is under 16 torr pressure at 253K in a 12L vessel. How many moles of argon are present?

1. An unknown gas weighs 34g and occupies 6.7L at 2 atm and 245K. What is its molecular weight?

1. An ideal gas occupies 400ml at 270 mm Hg and 65°C. If the pressure is changed to 1.4 atm and the temperature is increased to 100°C, what is the new volume?

1. What is the volume of 23g of neon gas at 1°C and a pressure of 2 atm?

1. If 11 moles of HCl gas occupies 15L at 300°C, what is the pressure in torr?

1. The pressure is 6.5 atm, 2.3 mole of Br2 gas occupies 9.3 L . What is the temperature in °C?

1. A 600mL balloon is filled with helium at 700mm Hg barometric pressure. The balloon is released and climbs to an altitude where the barometric pressure is 400mm Hg. What will the volume of the balloon be if, during the ascent, the temperature drops from 24 to 5°C?

1. An unknown gas has a volume of 200L at 5 atm and -140°C. What is its volume at STP?

1. In an autoclave, a constant amount of steam is generated at a constant volume. Under 1.00 atm pressure the steam temperature is 100°C. What pressure setting should be used to obtain a 165°C steam temperature for the sterilization of surgical instruments?

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**Directions**: Answer each question below. Then **write the name of the gas law used t**o solve each question in the left margin next to each question.

1. A gas occupies 3.5L at 2.5 mm Hg pressure. What is the volume at 10 mm Hg at the same temperature?

**.875 L**

1. A constant volume of oxygen is heated from 100°C to 185°C. The initial pressure is 4.1 atm. What is the final pressure?

**5.03 atm**

1. A sample of 25L of NH3 gas at 10°C is heated at constant pressure until it fills a volume of 50L. What is the new temperature in °C?

**293 C**

1. A certain quantity of argon gas is under 16 torr pressure at 253K in a 12L vessel. How many moles of argon are present?

**.012 mol**

1. An unknown gas weighs 34g and occupies 6.7L at 2 atm and 245K. What is its molecular weight?

**51.1 g/mol**

1. An ideal gas occupies 400ml at 270 mm Hg and 65°C. If the pressure is changed to 1.4 atm and the temperature is increased to 100°C, what is the new volume?

**110.4 mL or .110 L**

1. What is the volume of 23g of neon gas at 1°C and a pressure of 2 atm?

**12.8 L**

1. If 11 moles of HCl gas occupies 15L at 300°C, what is the pressure in torr?

**26,220 torr**

1. The pressure is 6.5 atm, 2.3 mole of Br2 gas occupies 9.3 L . What is the temperature in °C?

47 C

1. A 600mL balloon is filled with helium at 700mm Hg barometric pressure. The balloon is released and climbs to an altitude where the barometric pressure is 400mm Hg. What will the volume of the balloon be if, during the ascent, the temperature drops from 24 to 5°C?

**983 mL or .983 L**

1. An unknown gas has a volume of 200L at 5 atm and -140°C. What is its volume at STP?

**2052.6 or 2053 L**

1. In an autoclave, a constant amount of steam is generated at a constant volume. Under 1.00 atm pressure the steam temperature is 100°C. What pressure setting should be used to obtain a 165°C steam temperature for the sterilization of surgical instruments?

**21.22 kPa**

Ideal Gas Law Problems: R=8.31 kP aL/ mol K

7) If I have 21 moles of gas held at a pressure of 78 atm and a temperature of 900 K, what is the volume of the gas?

8) If I have 1.9 moles of gas held at a pressure of 5 atm and in a container with a volume of 50 liters, what is the temperature of the gas?

9) If I have 2.4 moles of gas held at a temperature of 97 0C and in a container with a volume of 45 liters, what is the pressure of the gas?

10) If I have an unknown quantity of gas held at a temperature of 1195 K in a container with a volume of 25 liters and a pressure of 560 atm, how many moles of gas do I have?

11) If I have 0.275 moles of gas at a temperature of 75 K and a pressure of 1.75 atmospheres, what is the volume of the gas?

12) If I have 72 liters of gas held at a pressure of 3.4 atm and a temperature of 225 K, how many moles of gas do I have?

Ideal gas law answers

7) If I have 21 moles of gas held at a pressure of 78 atm and a temperature of 900 K, what is the volume of the gas?

**19.8 L**

8) If I have 1.9 moles of gas held at a pressure of 5 atm and in a container with a volume of 50 liters, what is the temperature of the gas?

**1602 K**

9) If I have 2.4 moles of gas held at a temperature of 97 0C and in a container with a volume of 45 liters, what is the pressure of the gas?

**1.62 atm or 164 kPa**

10) If I have an unknown quantity of gas held at a temperature of 1195 K in a container with a volume of 25 liters and a pressure of 560 atm, how many moles of gas do I have?

**142.7 or 143 mol**

11) If I have 0.275 moles of gas at a temperature of 75 K and a pressure of 1.75 atmospheres, what is the volume of the gas?

**.97 L**

12) If I have 72 liters of gas held at a pressure of 3.4 atm and a temperature of 225 K, how many moles of gas do I have?

**13.3 mol**