HW - GAS LAWS I

NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

I. Gas Law Problems

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 1) 2.026 x 105 Pa = ? Torr

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2) 435 kPa = ? mmHg

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3) 1.20 atm = ? Pa

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4) 35oC = ? K

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5) 215 K = ? oC

1. If you begin with a 5.0 dm3 container at constant temperature and a pressure of 1.67 atm, and the pressure is raised to 3.0 atm, what will the new volume be?

1. If you have a piston-jar system under constant pressure which contains 3.00 L of a gas at 273 K, what volume of gas will it contain at 373K?

1. If you have a 233 mL pop can full of a gas at 103.4 kPa of pressure, and the volume increases to 1.03 L without the temperature changing, what is the new gas pressure in atmospheres?

1. If you have a 1.65 dm3 balloon at room temperature, at what temperature will the balloon be only 1.00 dm3 in size? Assume pressure is constant.

1. If you have a 2.00 L ballon at a certain temperature, and you decrease its temperature to one-fourth of its original value, what will the new volume be? Assume pressure is constant.

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II. Density Review.

Densities of Some Common Substances (in g/cm3)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Oxygen gas  | 0.00133  | Water (l)  | 1.000  | Copper  | 8.96  |
| Hydrogen gas  | 0.000084  | Magnesium  | 1.74  | Silver  | 10.5  |
| Ethanol (l)  | 0.789  | Sodium chloride  | 2.16  | Lead  | 11.34  |
| Benzene(l)  | 0.880  | Aluminum  | 2.70  | Mercury  | 13.6  |
|   |   | Iron  | 7.87  | Gold  | 19.32  |

1. What is the density of an object with a mass of 20.54g and a volume of 10.5 cm3?

1. What is the density of the following rectangular solid if its mass is 105.76g?

12.5

 cm

6.3

 cm

5.7

 cm

1. What is the mass of a 34.6 cm3 piece of silver?

1. What is the mass of a 34.6 cm3 piece of gold?

1. What volume will be occupied by 100.0g of water?

1. What volume will be occupied by 100.0g of mercury?