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Be sure to mention the filename:

Chemistry\_Questions\_0111

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1

In the following reaction, which reactant is a Bronsted-Lowry base?
$$\text{HCl}(\text{aq}) + \text{KHS}(\text{aq}) \rightarrow \text{KCl}(\text{aq}) + \text{H}_2\text{S}(\text{aq})$$

2

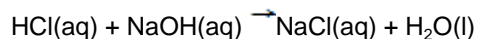
In the following reaction, which reactant is a Bronsted-Lowry acid?
$$\text{H}_2\text{CO}_3(\text{aq}) + \text{Na}_2\text{HPO}_4(\text{aq}) \rightarrow \text{NaHCO}_3(\text{aq}) + \text{NaH}_2\text{PO}_4(\text{aq})$$

3

What volume, in mL of 4.74 M  $\text{H}_2\text{SO}_4$  must be used to prepare 441.5 mL of 2.66M  $\text{H}_2\text{SO}_4$ ?

4

If 10.0 mL of 3.31 M HCl is titrated with 0.200 M NaOH, what volume (in mL) of sodium hydroxide solution is required to neutralize the acid?



5

What is the term for a solution that contains the maximum amount of solute that can dissolve at a given temperature?

6

A balloon contains 0.88 mol  $\text{N}_2$ , 0.26 mol  $\text{O}_2$ , 0.036 mol He and 0.028 mol  $\text{H}_2$  at 822.3 mm Hg. What is the partial pressure of  $\text{O}_2$  in mm Hg?

7

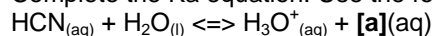
What is the volume of 10.0 g of argon gas at 127.2°C and 775 kPa pressure?

8

What mass of KCl (74.551 g/mol) is dissolved in 282 mL of a 1.56 M KCl solution?

9

Complete the  $K_a$  equation. Use the formatting used in OWL.



10

What is the concentration of hydronium when the pOH is 13.68

11

What is the concentration of hydronium when the pH is 2.826

12

A solution of KCl (74.551 g/mol) is prepared by dissolving 8.57 g of the KCl in 68.01 g of water. What was the mass % of the solution?

13

According to the kinetic molecular theory, the pressure of a gas in a container will decrease if the

14

32.88 g of 54 %  $\text{Na}_2\text{CO}_3$  (105.989 g/mol) solution contains what mass of solvent?

15

An unknown gas effuses 1.36 times faster than krypton. What is the molar mass of the gas?

16

A basketball is inflated to a pressure of 1.4 atm in a 20.0°C garage. What is the pressure of the basketball outside where the temperature is -30.7°C? format: 123.4 atm

17

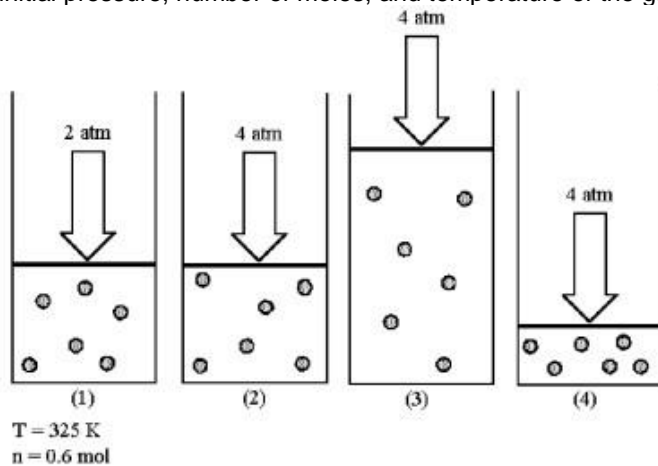
A balloon filled with helium gas at 44.9°C occupies 2.91 L at 1.00 atm. The balloon is immersed in liquid nitrogen at -182.2°C, raising the pressure to 5 atm. What is the volume of the balloon in the liquid nitrogen? format: 1.23 L

18

Which is the **smallest** quantity of pressure?

19

Assume that you have a sample of gas in a cylinder with a moveable piston, as shown in diagram (1). The initial pressure, number of moles, and temperature of the gas are noted on the diagram.



Which diagram (2)-(4) most closely represents the result of doubling the pressure and doubling the temperature while keeping the number of moles of gas constant?

20

A solution is prepared by dissolving 14.78 g of  $\text{Na}_2\text{CO}_3$  (105.989 g/mol) in enough water to make 339 mL of solution. What was the molarity of the solution?