Combined and Ideal Gas Law Problems

Name _____ **Period** _____ **Date**_____

1. State what each of the five symbols in the ideal gas equation stands for.
2. What is the temperature of a gas if 6.50 moles at 55.6 kPa is collected in a 85.0 L container?
3. What is the pressure on a 210.0 L container if 3.20 moles is collected and the temperature is 293 K?
4. How many moles of a gas are in a 8.5 L container at a pressure of 113 kPa and 311 K?
5. What size container is required to collect 5.50 moles of a gas at a temperature of 277 K and a pressure of 95.1 kPa?
6. If 2.67 grams of oxygen gas is collected at STP, calculate the volume.
7. 75.6 dm^3 of sulfur dioxide gas is collected at STP. What is its mass?
8. How many moles of a gas will occupy a 562 cm^3 flask at -15.0^{0}C and 88.7 kPa pressure?
9. What volume will be occupied by 0.766 mol of gas at 106 kPa and 15.5^{0}C?
10. A 759 cm^3 vessel contains 0.0945 mol of a gas at 98.6 kPa. What is the temperature of the gas?
11. 159 mL of a gas is collected at -10^{0}C and a pressure of 109 kPa. What is the final temperature if the gas is compressed to 15.9 mL and a pressure of 230 kPa?
12. What size container is needed if 350 mL a gas is cooled from 100^{0}C to -15^{0}C at a constant pressure?
13. How much pressure is exerted when 18.9 cm^3 of a gas at 210 kPa and 50^{0}C is moved to a 65.8 cm^3 and a temperature of 70^{0}C?
14. What was the initial volume of a gas if it started at 30^{0}C and 87.5 kPa and ends at 415 mL, 45^{0}C and 65.8 kPa?
15. Which gas effuses faster: carbon dioxide or ammonia?
16. 15.4 mL of a gas is collected in a eudiometer at 17.5^{0}C and at an atmospheric pressure of 875 mm Hg. The level inside the tube is 17.35 mm higher than the outside of the tube. What would the volume of the gas expand to if it is brought to STP?
17. 678 dm^3 of a gas is collected in a eudiometer at 25.75^{0}C and at an atmospheric pressure of 983 mm Hg. The level inside the tube is 24.75 mm lower than the outside. What pressure would the vessel have to withstand if the gas expanded to 780 dm^3 and the temperature elevated to 35.0^{0}C?
18. 37.5 mL of a gas is collected over water at a temperature of 27.0^{0}C and a pressure of 104.8kPa. What volume would the gas occupy if it was brought to STP? (The partial pressure of water at 27.0^{0}C is 3.6kPa)
19. 215 mL of argon gas is collected over water at a temperature of 22.0^{0}C and a pressure of 102.5kPa. What is the mass of the argon in the collection tube? (The partial pressure of water at 22.0^{0}C is 2.6kPa)