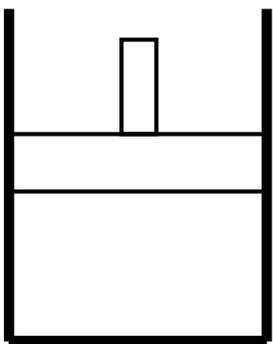
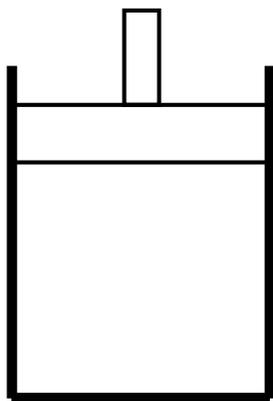


10.2

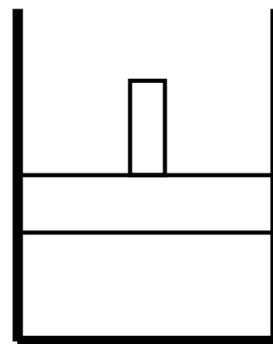
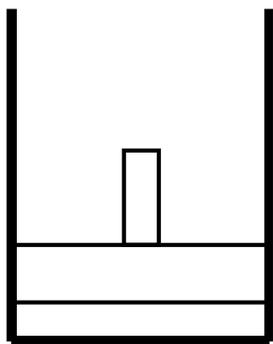
a)



b)



c)



10.3 (b) Because pressure is directly related to number of particles, if the temperature and pressure don't change then the pressure will decrease by a factor of 2 when there are half as many gas particles.

10.4 a) As this reaction proceeds, the volume of the container decreases because 3 moles of reactant gas become 2 moles of product gas. This represents a decrease in volume of 33% making (d) the correct answer.

10.25

a) Lifting the piston would decrease the pressure

b) While heating the gas will increase its pressure, the pressure will not double because the temperature is not doubling (once we convert the temperature to Kelvin...tricky right)

c) Cutting the volume in half will double the pressure.

$$10.26a) \quad \frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2} \quad 752\text{torr} \cdot 5.12\text{L} = 1428\text{torr} \cdot X$$
$$X = 2.70 \text{ L}$$

$$b) \quad \frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2} \quad \frac{5.12 \text{ L}}{294\text{K}} = \frac{X}{448\text{K}} \quad X = 7.8\text{L}$$

10.29

a) STP represents standard temperature and pressure. STP are 273K (0°C) and 1 atm pressure.

b)

$$PV = nRT$$

$$(1\text{atm})(x) = (1\text{ mole})(0.08206)(273\text{K})$$

$$x = 22.4\text{L}$$

c)

$$PV = nRT$$

$$(1\text{atm})(x) = (1\text{ mole})(0.08206)(298\text{K})$$

$$x = 24.5\text{L}$$

10.33

<u>P</u>	<u>V</u>	<u>n</u>	<u>T</u>
2.00 atm	1.00 L	0.500 mol	48.7 K
0.300 atm	0.250 L	3.05×10^{-3} mol	27°C
650 torr	11.2 L	0.333 mol	350 K
10.3 atm	585 mL	0.250 mol	295 K

10.35

$$\frac{175,000 \text{ ft}^3}{1 \text{ ft}^3} \cdot \frac{1728 \text{ in}^3}{1 \text{ in}^3} \cdot \frac{16.4 \text{ cm}^3}{1000 \text{ cm}^3} \cdot \frac{1 \text{ L}}{1000 \text{ cm}^3} = 4.96 \times 10^6 \text{ L}$$

$$PV = nRT$$

$$1.0 \text{ atm} \cdot 4.96 \times 10^6 \text{ L} = n \cdot 0.08206 \cdot 296 \text{ K}$$

$$n = 204,000 \text{ moles}$$

$$\frac{204,000 \text{ moles He}}{1 \text{ mol He}} \cdot \frac{4.0 \text{ g He}}{1000 \text{ g}} = 816 \text{ kg He}$$

10.39a)

$$\frac{0.29 \text{ kg O}_2}{1} \left| \frac{1000 \text{ g}}{1 \text{ kg}} \right| \frac{1 \text{ mol O}_2}{32.0 \text{ g}} = 9.1 \text{ mols O}_2$$

$$PV = nRT$$

$$(x)(2.31) = (9.1 \text{ mole})(0.08206)(282\text{K})$$

$$x = 91 \text{ atm}$$

10.39b)

$$PV = nRT$$

$$(0.95\text{atm})(x) = (9.1 \text{ mole})(0.08206)(299\text{K})$$

$$x = 235 \text{ L}$$