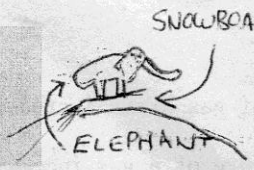
how temperature of a gas affects its pressure

CλeMis+ry: http://genest.weebly.com

Stop in for help every day at lunch and Tues, Weds., &Thurs after school!

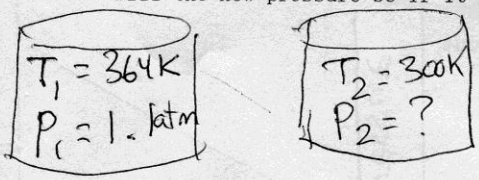
After-hours question? Email me at home: eagenest@madison.k12.wi.us



Name_____

Period_____

1. If a tuna fish can is initially at 364 kelvins and initial pressure is 1.1 atm, what will the new pressure be if it is cooled to 300. kelvins?



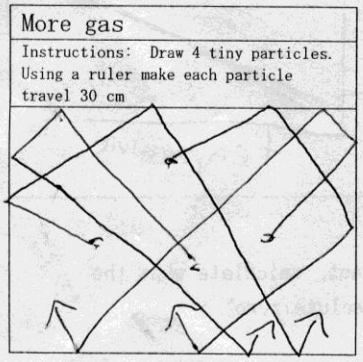
$\frac{P_1}{T_1} = \frac{P_2}{T_2}$ $\quad \frac{P_1 T_2}{T_1} = P_2$

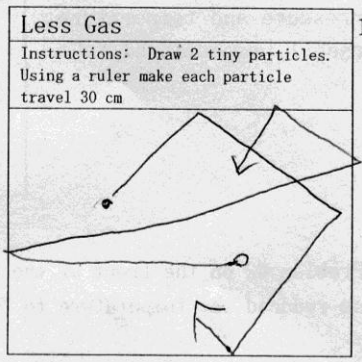
$\frac{(1.1 atm)(300K)}{(364K)} = P_2$

2. If you have a can that is at 2.0 atm and 293 kelvins, what temperature would make the pressure in the can be 1.0 atm?

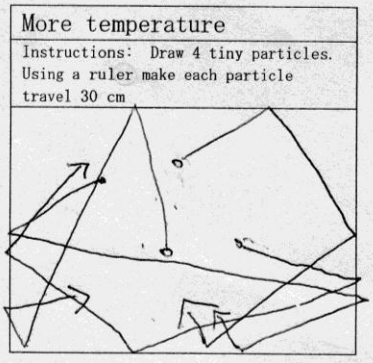
circle the unknown

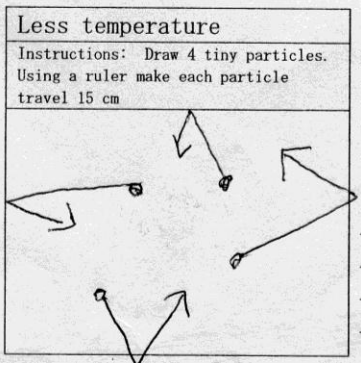
$\frac{P_1}{T_1} = \frac{P_2}{T_2}$ ⇨ rearrange $T_2 = \frac{P_2 T_1}{P_1}$ $\quad T_2 = \frac{(1.0 atm)(293 K)}{(2.0 at)}$ $\quad T_2 =$ [illegible]





1. Total wall hits for
More gas: 12
Less Gas: 6
Compare the pressure in the two boxes using words like double, half, etc.:
Pressure in the Left Box was double.





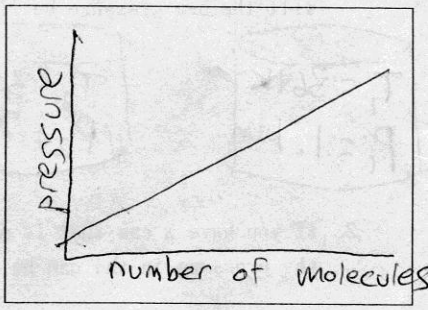
2. Total wall hits for
High temperature: 12
Lower temperature: 4
Compare the pressure in the two boxes using words like double, half, etc.:
The cold box has 1/3 the press

3. When number of gas atoms increases, pressure will: increase

4. When temperature of a gas increases, pressure will: increases

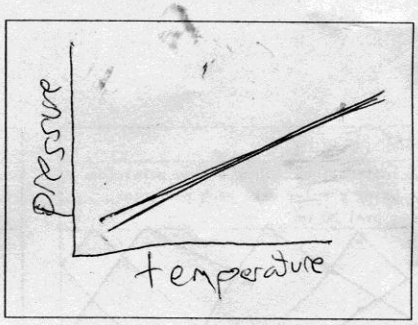
5. ~~When volume of a gas increases, pressure will:~~

6. Label the X axis number of molecules and the Y axis pressure. Make a **crude** graph, without units.



7. Based on the ~~graph~~, pressure and molecule number are (directly / inversely) proportional.

8. Label the X axis temperature and the Y axis pressure. Make a crude graph, without units.



9. Based on the graph, pressure and temperature are (directly / inversely) proportional.

10. Looking at the can in Problem #2 on the front of the sheet, calculate what the pressure would be if you reduced the temperature to "absolute zero".

Absolute zero is -273°C or 0 kelvins

$\frac{P_1}{T_1} = \frac{P_2}{T_2}$ ← unknown

$\frac{P_1 T_2}{T_1} = P_2$

$\frac{(2.0\text{ atm})(0\text{ K})}{(293\text{ K})} = P_2$

Zero pressure! $= P_2$