

Class:
Unit:

Date:
Teacher:

Lesson Plan Template

Stage 1: Desired Results	
Established Goals (General) Students can list avogadro's law, the partial gas law, charles law, boyle's law, and the ideal gas law Students can solve example/practice problems related to the above concepts.	
Big Ideas	Essential Questions:
Content	Curricular Competencies
Core Competencies:	
Stage 2: Assessment Evidence	
Fill in the blank handout Worksheet with select questions relating to class content	
Preparation	
Materials Needed: Empty coke can Hot plate Large beaker with cold water	
Action Plan: Go through each of gas laws, with certain demos to illustrate the laws.	

Charles's law: coke can demo

Stage 3: Learning Plan

Attendance (3 min)

Would you rather cliff dive or ride a hot air balloon?

Intro

Review of previous lesson on: Physical behaviors of gasses, kinetic theory of gasses.

Avogadro's law, dalton's law, boyle's law.

Check student understanding by having different students stand up and explain each law as if they are the teacher. (15min)

Body

Inquiry: what factors did we already talk about that affects gas? (volume, pressure). What else can affect gas? (Temperature)

From a kinetic theory point of view, how will temperature affect the volume of gas? T P S (5min)

Charles' law activity: heat up coke can with about 10 ml of water inside until water is boiling. While heating up, ask students what will happen if the hot air inside is rapidly cooled. Predict in pairs.

Pour out hot water and immediately submerge OPEN SIDE DOWN into cold water bath.

Observe what happened to coke can.

Show class the crumpled coke can and Explain what happened. As Temperature decreases, volume decreases.

Show slides on Charles' law and go over equation. (15min)

Go over example question on board (5 min)

Individual practice with three sample questions (10min)

Inquiry: now that we talked about P, V, T in terms of a gas, what is the final missing factor what will affect gas behavior? The AMOUNT. (n = number of moles)

Introduce the Ideal gas law as $P_1V_1/n_1T_1 = R$ (gas constant) (10min)

Go over example question (5 min)

Individual Practice

Work through practice problems for charles law and ideal gas law. (15 min)

Conc

Homework as worksheet on gas law problems.

Technical Notes:

1. Be mindful of hotplate.

Reflection:

Adapted by ML from Backwards by Design