COMPLETE AND INCOMPLETE COMBUSTION

PURPOSE:

To observe the differences between complete and incomplete combustion.

PROCEDURE:

Calcium carbide reacts with water to produce acetylene gas. Collect different amounts of acetylene gas, using the downward displacement of water. Add one stone of calcium carbide to a 400 mL beaker of water, invert a test tube full of water over the stone. For the second tube only collect a 1/2 a tube of gas. Let out the water, stopper and shake to mix with air. Repeat, reducing the amount of acetylene collected each time.

1. Collect a tube full of acetylene.
2. Collect a tube 1/2 full of acetylene.
3. Collect a tube 1/3 full of acetylene.
4. Collect a tube 1/12 full of acetylene.

Starting with the tube full of acetylene, hold the tube with the mouth upside down, remove the stopper and test with a blazing splint.

OBSERVATIONS:

Record your observations of each reaction and each tube after the reaction.

	Full	1/2 Full	1/3 Full	1/12 Full
Energy Output				
Soot Produced				

DISCUSSION QUESTIONS:

1. Which test tube contained the most **oxygen**? The least **oxygen** ?
2. In which tube did complete combustion occur? Explain how you know.
3. In which tube(s) did incomplete combustion occur? What products formed during incomplete combustion?
4. Where was the flame located in the first tube? Explain why.
5. If a car engine is not properly tuned incomplete combustion occurs. What product will accumulate around the spark plugs and what affect will this have on the running of the car.
6. What evidence indicates incomplete combustion?