## Problem 1 (20 Points) - Mixture Problem

GIVEN THE FOLLOWING INFORMATION:

- A truck radiator presently contains 32 quarts of coolant having a 20/80 mixture of antifreeze/water.
- The truck radiator holds 50 quarts when completely full and the manufacturer requires the coolant mix to be 50/50 antifreeze/water.
- Any NEW coolant to be added comes from a container premixed at 50/50 antifreeze/water.

REQUIREMENTS:

1. Create a well annotated chart which describes and is used to **calculate the amount of NEW coolant to be added to the truck radiator in order to meet manufacturer specifications (50/50 mix and a completely full the radiator).**
2. Additionally, calculate the amount of radiator coolant that might have to be drained from the truck radiator before adding any NEW coolant.
3. **SHOW ALL WORK (charts and solved equations) and explicitly identify ALL answers.**


## Problem 2 (20 Points) - The induction and deduction processes.

### Provide:

1. A well annotated chart/diagram/sketch which describes the induction/deduction processes.
2. In a detailed narrative, clearly describe how the two processes are interrelated and used by all living things to learn and live.
3. Provide a specific example of the success or failure of the induction/deduction process in your short life to date.


## Problem 3 (20 Points) - Logic

An imported French automobile:

Can be started **if** the following conditions are met:

> The lights must be turned off.
> AND
> The clutch must be depressed (on) or brake on.
> OR
> The driver seatbelt engaged (on) and airbag system turned on.

1. Write the conditional statement for starting the car.
2. Create a circuit diagram describing the above conditions .
3. Write the truth table for this conditional statement.