



2012 NJ TSA DESIGN PROBLEMS

Computer-Aided Design (CAD), 2D, Architecture

Design Problem:

For many people with modest incomes, trailers are the only option for home ownership. But trailers deteriorate quickly and depreciate over time. Compared to a rectangular plan, a square provides the most living space while minimizing perimeter construction costs.

Design Brief

Design a square home with 1200 or less interior square feet. The home should include three bedrooms, one bathroom, a kitchen and a living room. An additional outdoor deck or patio of 200 square feet or less may be added.

Specifications/Drawing Requirements:

- A floor plan with dimensions
- Front, side and rear elevations
- Any additional views or renderings that will enhance your presentation
- The square home design should be original and creative
- Maximum paper size is 24" x 36" or smaller sheets mounted on a 24" x 36" sheet with no overlapping papers.

Computer-Aided Design (CAD) 3D, Engineering

Design Problem:

When it comes to washing their hair in the shower, most people waste shampoo and conditioner while dispensing it. As shampoo and conditioner bottles become used up, their products are harder to dispense.

Design Brief

Design a sensor activated machine that will dispense shampoo and conditioner. It should be easy to install and remove from the shower, and easy to refill. The dispenser can be designed for bottles of a specific brand of shampoo and conditioner, or designed to hold any brand that the consumer would like to use.

Specifications/Drawing Requirements:

- The dispenser should be powered by 2 AA batteries and indicate when the shampoo and conditioner are running low

- Drawings should identify how the device looks internally and externally
- Include any additional views or renderings that will enhance the presentation
- The design should be original and creative
- Maximum paper size is 24" x 36" or smaller sheets mounted on a 24" x 36" sheet with no overlapping papers.

System Control Technology

This problem is based on the example described on page 248 of the 2011 & 2012 High School Technology Activities, National TSA Conference Competitive Events Guide.

Problem:

Many city residents have no idea how much water they use on a daily basis. Construct a prototype warning system that will use a yellow light to let a consumer know when 300 gallons of water have been used in a single day and a red light to warn that the daily limit of 400 gallons has been reached.