MATH 371 - Truck Packing

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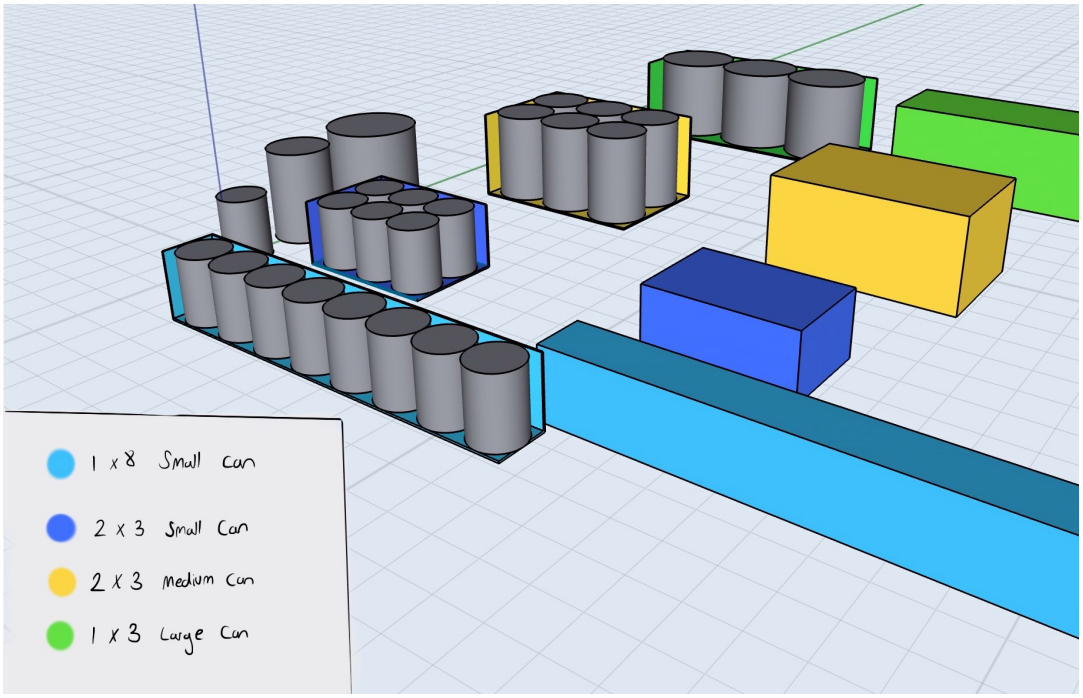
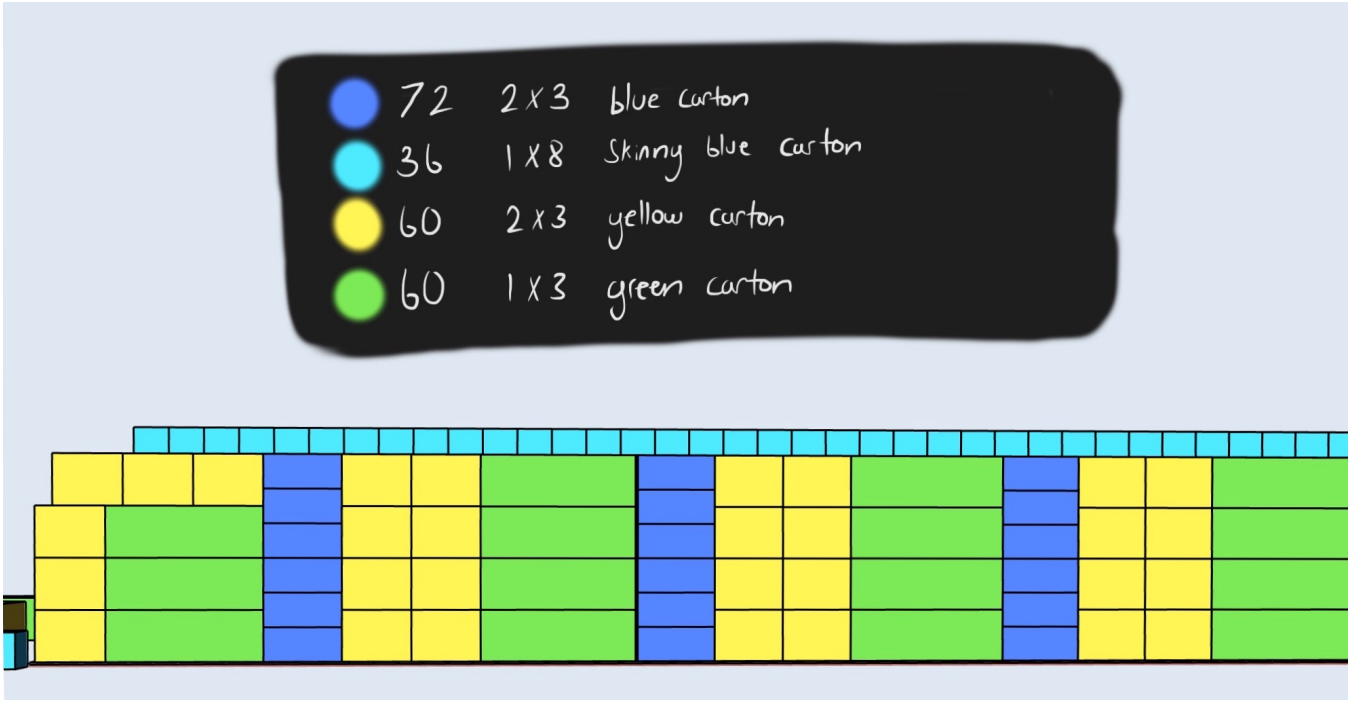
Address Letter

Hello, our team has determined the following solution. Given our constraints for the number of cans we developed four different cartons that will suit our purpose well. Shown below are the details for the canisters and the ideal model for packing.

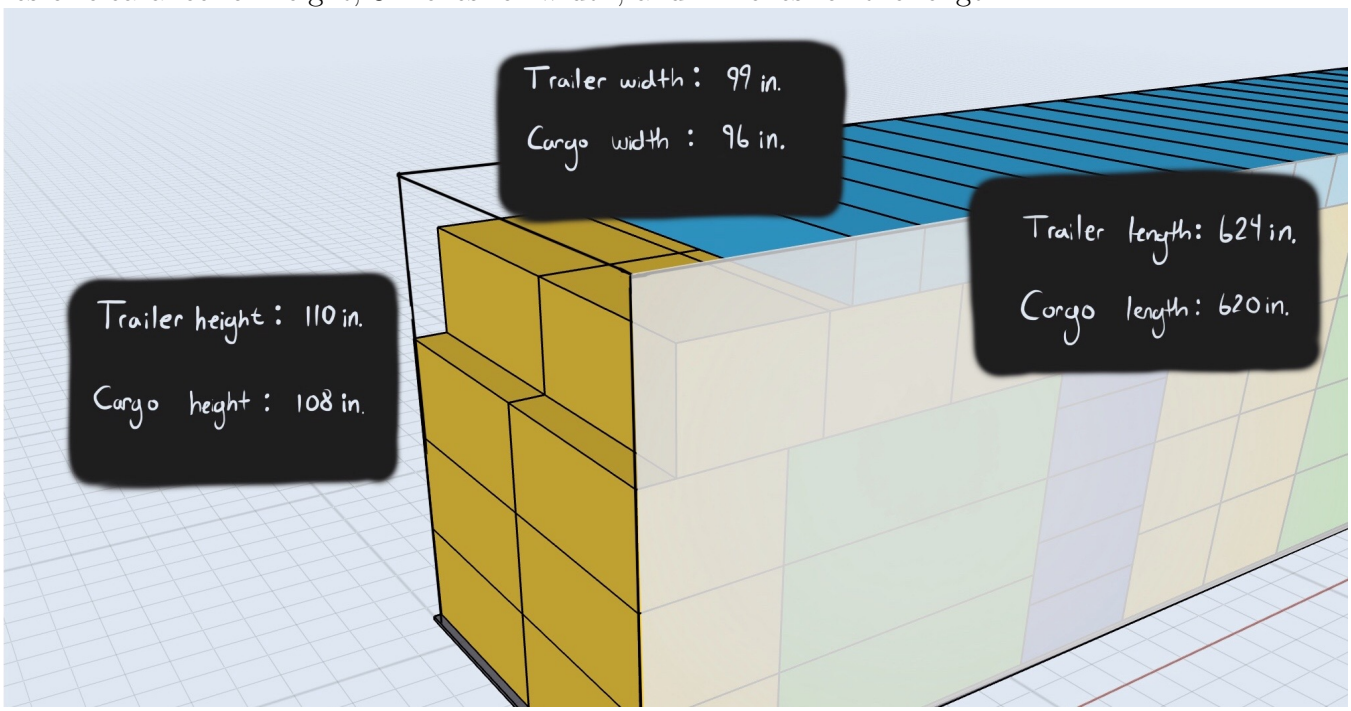
canister name	**dimensions (in.)**	**weight (lbs) ± 5**
1 x 8 blue	12 x 16 x 96	1,207.36
2 x 3 blue	24 x 16 x 36	905.52
2 x 3 yellow	32 x 24 x 48	2,218.86
1 x 3 green	24 x 24 x 72	2,346.45



We found that the illustrated arrangement shown on the next page was the best way to orient the cartons. We created a tillable plan for the majority of the cargo knowing that with our smallest size of carton we could create a carton that will lay on top all the rest that will perfectly give us our needed 4/2/1 aspect ratio.



With the model we have created we can carry 720 blue cans, 360 yellow cans, and 180 green cans. Our total cargo weight will be 382,560.6 lbs. The cargo container will have an additional 2 inches of clearance for height, 3 inches for width, and 4 inches for the length.



Reported Solution

For our solution we decided to try and visualize the possible solutions. We used the iPad pro to draw, and 3D model scenarios to determine what would be the best solution while keeping the carton size bellow 10,000 pounds. With a fairly basic sketch we made 1 to 1 models of the objects in the project and created layouts to test weather these situations would work. Ultimately we decided to build a small tillable "block" of canisters that fits the aspect ratio of the client. from there we figured out how many of these blocks could fit inside of a cargo container.