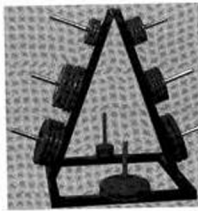


## Research 1

The rack that the weights sit on are leaning inwards on an angle. This design has been put onto this device so the weights don't fall off and damage something or someone. I should consider adding a design that also decreases the chance of weights falling and damaging other objects.

This product has multiple racks that can cater for many different sizes and shapes of weights. It is also designed to hold a lot of weight. I am going to place a lot of racks on my own device as well some how.

This product has a few flaws however. One of them, is the fact that it is huge and very space consuming. It is also not very attractive and doesn't catch the eye. Another factor is that it appears to be made of materials that will cost quite a lot. All of these things are downsides that I am going to try to avoid.



It is in the shape of a triangle. This is a shape that is said to be one of the strongest. I think that I should also make my storage product in the shape of something strong.

It is made from metal. Which is a strong and durable material. I should consider making my storage product out of a similar material that is also strong and durable.



## Research 2!

This weight rack is made from metal which is very strong. This material is ideal for holding and storing a lot of weight for a long time. I am going to design and build my product out of a material that has all of the same properties.

The footing on this device are splayed wide and have footing attachments to ensure that the rack is sturdy and will not fall over. I am going to insert a similar design of footing on my product to ensure that it will be stable.

This weight rack's faults are that it has nothing to stop the actual weights from falling off the horizontal bars. Also the shape of the rack is not a shape that can easily be replicated, it will require a lot of accurate work and could be easily stuffed up. These are faults I will endeavor to avoid.

This weight rack is designed not only to hold weights, but also can cater for the bench press bar, squatting bar, and dumbbells. This is a design that I like and am going to consider applying to my design.

This is a rack that seems to catch my eye and is very easy to look at. I want to build a rack that is also eye sweet and easy to look at.

The negatives about this device are as follows. You must be able to access both sides which means it can't be by a wall which also makes it very space consuming. You also have a few different materials on this rack which look hard to join together. These are negatives that I will try to avoid.

This design has been made to store weights up off the ground so that when you need to access the weights you don't need to bend down and strain your back. This will be a good idea to incorporate into my design because it will help to minimize injury.

## Research 4

This rack is designed to be a space saver because it is small and compact which is what storage is all about. I am going to try and incorporate this design into my rack somehow.

This weight rack is small and low to the ground which means it can be stored under a bed to create even more space. I am going to try and make my project so that it can do similar things.



This device is built to sit very low on the ground which means that people using the weights need to bend down to access the weights. This can lead to the person getting injury or damage to their back.

This design has been made to hold certain weights. It can't hold lots of different types of weights. Also it can't hold very many weights because it is so small. These are a few faults that I will try to avoid.

## Research 3



After doing this research I thought I had it sussed. I did a rough sketch. I found that sketching worked well as it helped me visualise the ideas that were in my head and it made it easier to describe my ideas to my stakeholders.

3

## Student 1 Low Excellence Page 1

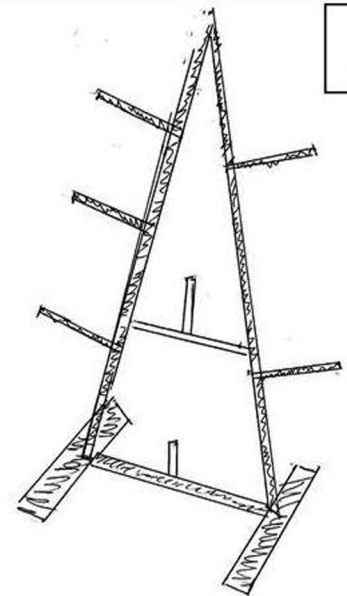
I was happy with my idea. I found a rack for sale on the internet that looked very similar to my design so that made me think it should work. I made a mock-up out of timber and took it home and placed it in the shed. It was then that I realised that I had a bit of a problem. Dad wanted me to put it in the corner. While I had designed it so it wouldn't have any weights on the back, I hadn't realised that (because of the corner) I couldn't easily get to the weights from two sides. I also decided that some of the weights were going to be too low lying and my research had taught me that bending over to pick up weights would not be good for my back. So I had to rethink my design.

4

I know from geometry in Maths and from learning about forces that a triangle is a strong shape. This is because each side is anchored to the other two sides which makes it rigid. Also the forces are supported by the wide base at the bottom. I had a look on the internet and I found out that the triangle is the structural shape of choice for structural engineers because of its strength.

A triangle would be a good shape for me to use in my design as it would give the strength I want. Research 1 picture gave me the best start to my own design. I modified it so it wasn't so big and space consuming. I used the footing idea from Research 2 so that my rack will be stable. I also made sure my bars were angled so the weights won't fall off. I made the bars shorter after my stakeholder telling me this would make them stronger.

I included the compactness of Research 4.



2