



Engineering Virtual Learning

HS Machine Drafting

Lesson #17

April 28, 2020



## **Objective/Learning Target:**

Students will create a cardboard “Free Throw” game and produce a complete set of working sketches.

Day 2 Re-Engineering  
(this activity is day 2 of a 4 day project)

# Bell-work:

Yesterday you drew plans and started to build a “Free Throw Game”  
These videos talk about reverse engineering or figuring out how something works and making it better.

What is Reverse Engineering?

<https://www.youtube.com/watch?v=Y0h6eGrwVKQ>

<https://www.youtube.com/watch?v=8VOcnNekTjw&list=PLSQI0a2vh4HDNGLPZvl2UTyuOuLOXXn0I>

After drawing your plans and starting your build yesterday, are there any modifications you are going to make due to materials or efficiency?  
(record you thoughts in your engineers notebook)

# Learning Practice: “Free Throw Game Build”

Day 1- Steps 1 - 3, Day 2- Step 4

**Step 1: Gather materials from around your home to build a free throw game like one in the video.**

Some items you might use: Cardboard (cereal box or shipping box), popsicle sticks, wooden skewers, hot glue or tape, string, ping-pong ball (or small paper wad), coke bottle cap, rubber bands, scissors or exact-o knife.

**Step 2: Watching the video make a set of plans (rough sketches) of the pieces you will need.**

These plans do not need to be exact but they need to be proportional. As you draw them think about adding some dimensions while you are building your court. You decide which court to build.

**Step 3: Use your plans to start building the court. (Explain to your Parents what you are about to do!!)**

As you are building your court, add dimensions to your plans. You can also change the court if you see something that needs to be redesigned. Note your modifications in your plan documentation. You might not finish the court today as you will spend more time thinking about the project rather than building.

**Step 4: Finish your build and documentation.**

When you finish your “Free Throw Game Build” you need to test it. Make sure you have sketched all parts with added dimensions and documented any changes you made or want to make to the design.

We will use the plans you sketched today to create a set of working drawings this week for your game.

## Learning Resource Links:

What is Reverse Engineering?

<https://www.youtube.com/watch?v=Y0h6eGrwVKQ>

<https://www.youtube.com/watch?v=8VOcnNekTjw&list=PLSQI0a2vh4HDNGLPZvl2UTyuOuLOXXn0I>

Do It Yourself Freethrow game –

[https://www.youtube.com/watch?v=ZfaAJrwcU\\_U](https://www.youtube.com/watch?v=ZfaAJrwcU_U)

[https://www.youtube.com/watch?v=\\_wNtNtOIJQk](https://www.youtube.com/watch?v=_wNtNtOIJQk)