

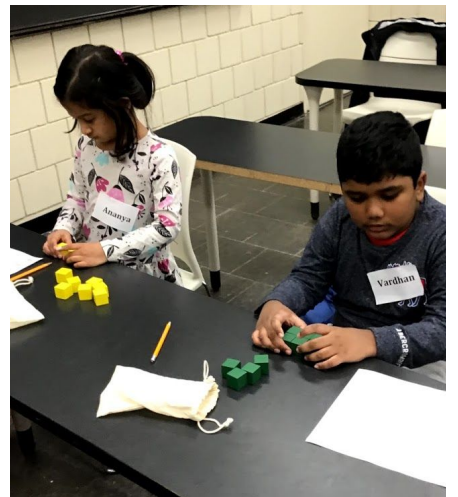
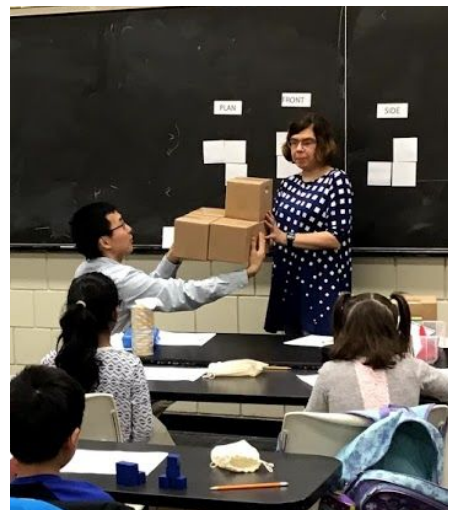
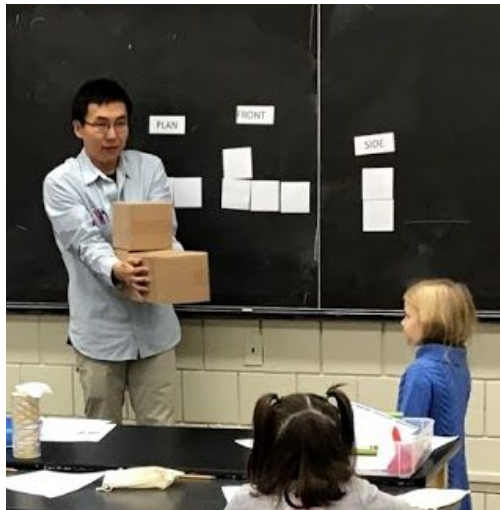
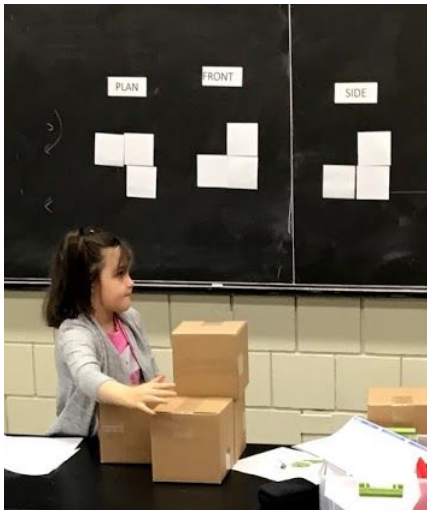
**Building a 3D objects from 2D views.**

During our last Club we looked at objects from different sides and drew what it looked like. Today we will do the opposite: we will build the object from its projections and also try to draw our 3D objects.



If we have 3 projections of an object (plan, front and side) and each of them looks like a square, what could the object be? Right, it is a cube!

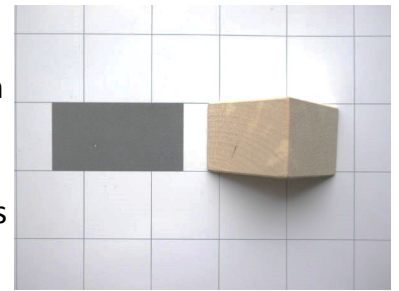
So, from 3 projections we will build the object using large and small cubes.





Let us now think about simple shapes and their projections, and how confusing they can be. If we know that the front projection looks like 2 squares joined side-by-side, what could the 3D object be? OK, it could be 2 cubes joined side-by-side. But is that the only option? How about 2 cubes, but standing separately, apart from each other? Is that even possible for them to look like 2 attached squares in projection? Looks like it is possible, if we just rotated them together so that their edges line up on each other making them appear joined side-by-side.

Not only cubes: let us now graduate to 3D shapes that aren't made of just cubes. We have various shapes: our simple cube, various parallelepipeds and several triangular prisms. Let us now see if 2 very different objects can have the same exact projections when viewed from some angle. Can a cube and a triangular prism look exactly the same when viewed from one of their sides? Looking from the top (plan view) at a triangular prism that is sitting like a roof of a house, we see a simple rectangle! How about a parallelepiped and a cylinder? Of course that can happen! A side view of an upright cylinder is a rectangle, just like a side view of a parallelepiped.



Let us now play a game: we will have a small white room with 3 of the wall showing 3 projections of some unknown collection of objects in black. Our task is to figure out which set of objects, made out of our regular shapes produced the projections. Make sure all 3 projections match up with the object you put in the room!



See you next week!