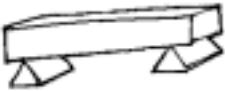




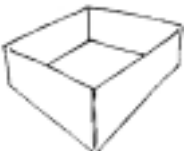



Structural Elements Chooser Chart

This chart describes the different structural elements (types of part) you can use in your designs. It explains how each one works. You can use it to decide which elements to use in your design.

Name	Description	How it works
beam 	A part that is supported at each end	The beam resists the load by bending. If the beam is too weak this bending will cause the beam to break in the middle. The beam transfers the weight of the load to the supports at either end. If they cannot resist this load then the structure will collapse.
cantilever 	A beam that is held firmly at only one end.	The beam resists the load by bending. If the beam is too weak this bending will cause the beam to break at the support. The beam transfers the weight of the load to the support pushing both up and down. If the support cannot resist this load then the structure will collapse.
tie 	A member in a framework that is in tension. It is being pulled at either end and holds together other members that are trying to move apart.	The tie resists the load by pulling inwards against it. If the tie is too weak the outward pull will be greater than it can resist and the tie will break. If the tie is not stiff enough it will stretch causing the structure to distort.
strut 	A member in a framework that is in compression. It is being pushed in at both ends and keeps apart other members that are trying to move together.	The strut resists the load by pushing outwards against it. If the strut is too weak the inward push will be greater than it can resist and the strut will buckle or break.
shaft 	A member that transmits turning force (or torque). It is subject to torsion.	The shaft resists the load by twisting against it. If it is not strong in torsion it will break.
hollow box 	A 3D cuboid form made from separate sheets joined together. The sides must be able to resist both tension and compression.	The sides of a box are strong in tension but weak in compression. The construction of the box prevents the sides from buckling under the load.
shell 	A 3D form made from a single sheet. It must be able to resist both tension and compression.	The load is spread across the whole of the shell. It will be concentrated at sharp-cornered holes and sudden changes of surface so any design should avoid these.