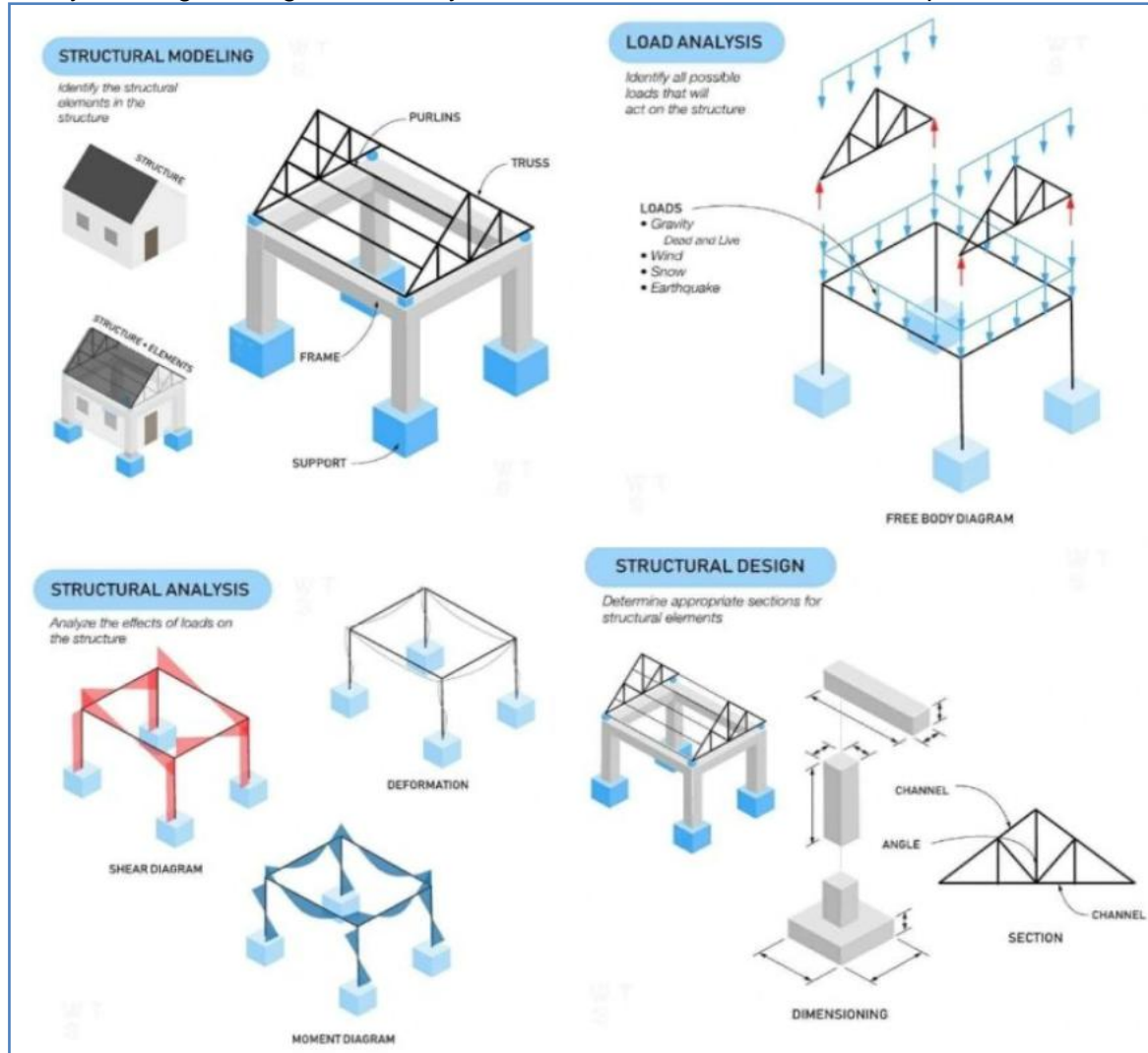


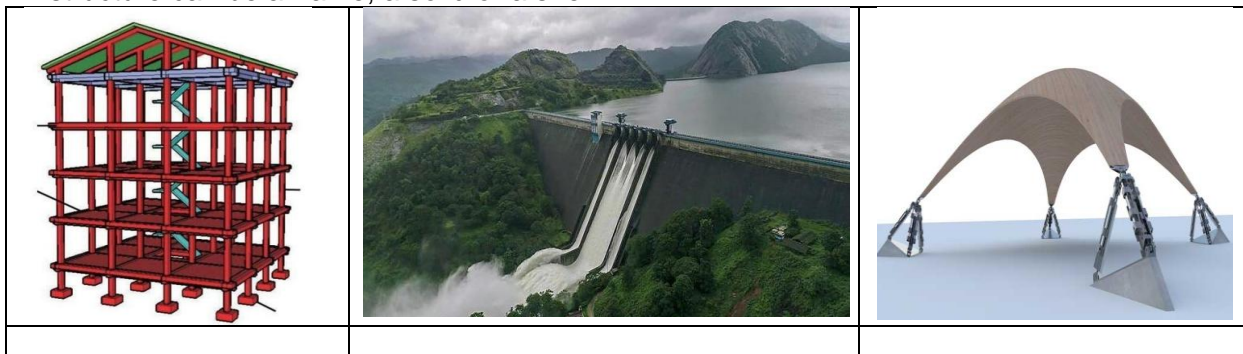
## 1- Designing strong structures

When you design strong structures, you have to take into account a lot of parameters:



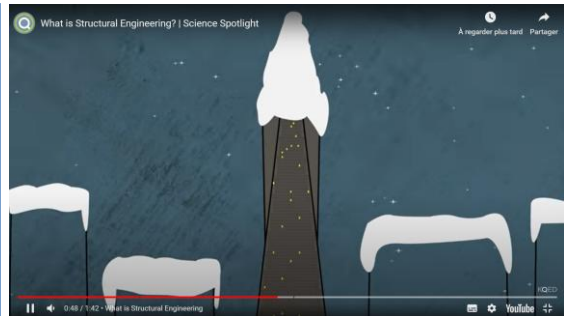
## 2- Types of structures

A structure can be a frame, a solid or a shell



## 3- Types of loads

When you design a structure, you want it to be able to support both static and dynamic loads.



Structural loads can be broadly classified into three groups: dead loads, live loads and dynamic or environmental loads.

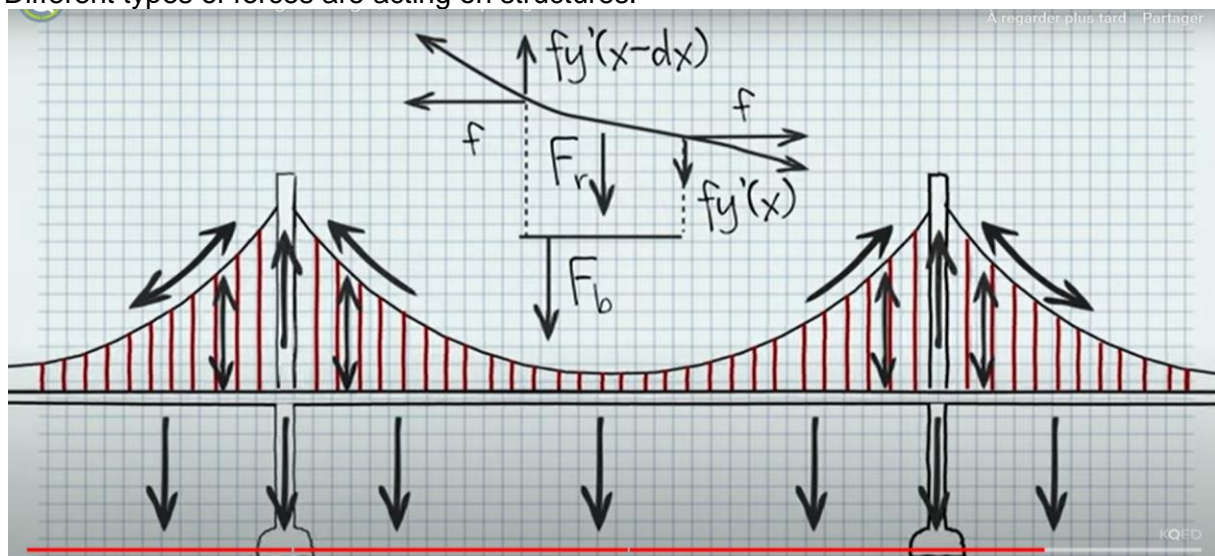
Give examples:

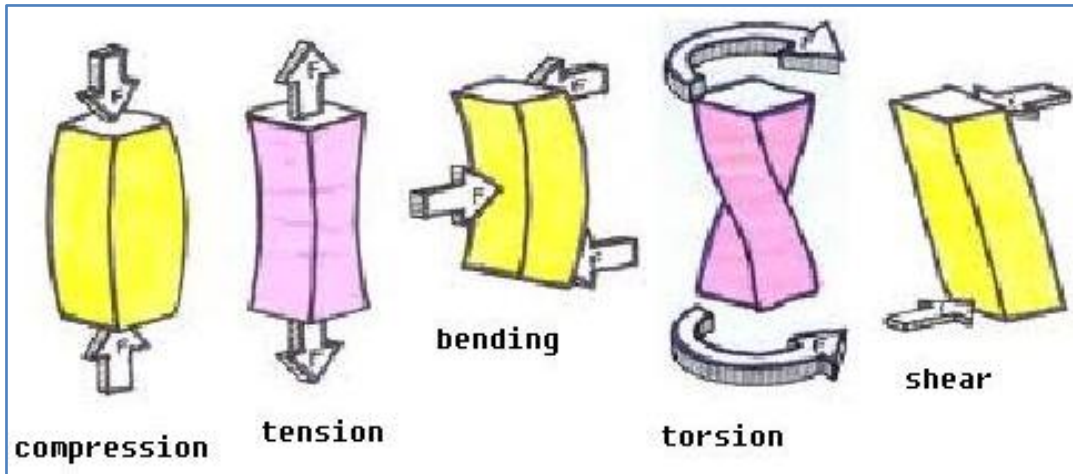
Static load	Live loads	Dynamic loads Environmental loads

If the structure is not strong enough (too weak):	If the structure is too strong

## 4- Internal and external forces

Different types of forces are acting on structures.





Match the names with the definitions:

	a force that acts on a material by twisting its ends in opposite directions
	a pushing force that compacts or squeezes a material together
	a combination of tension forces and compression forces that result in a structure temporarily curving e.g. a bow used to shoot an arrow
	a force that bends or tears a material by pushing parts of the material in opposite directions
	a pulling force that pulls material apart

## 5- Bridges

Draw the forces acting on the bridges; label the picture to name their type.

