

# Structures

## Practical activity

Mark :

Name :

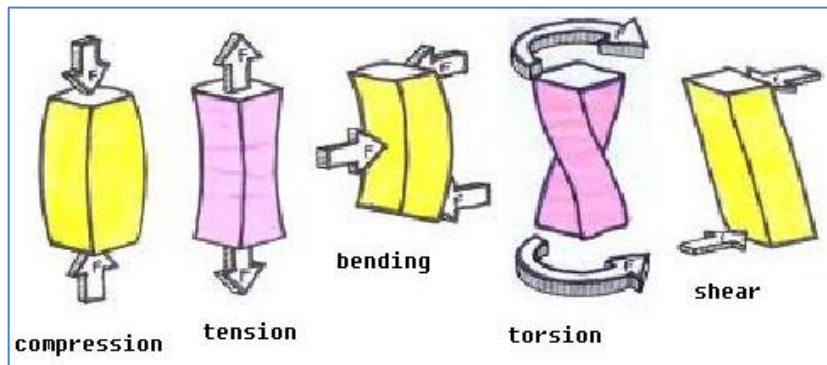
First name :

Class :

### 1- Introduction

When you design a structure, you want it to be able to support both its static and dynamic loads. If it is not strong enough, it may fail. If the structure is too strong, it may waste resources

You can have different types of forces acting on a structure.



### 2- Practical activity

#### Your challenge

Humans have built shelters and houses with the shape of domes for around 2 000 years. You'll build a dome and make experimentations to test its strength and analyze the impact of a few variables.

#### Identify the problem and brainstorm

How can you build a dome with toothpicks and spherical sweets?  
Make sketches and discuss with you team

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### Construction of a geodesic dome

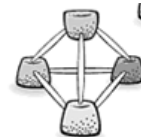
Follow the instructions and build your dome.

### Experiment

- a) What happens if you make a base with 6 sides instead of 5 sides?

- b) What happens if you build squares rather than triangles on top of the base?

- c) Make a small structure out of squares (a cube) and a small structure out of triangles (a pyramid):



Press down on one corner of each shape. Does one bend, twist or collapse more easily than the other?

- d) What forces are exerted on the dome when you put, for example, a book on top of it? Make a sketch to explain the force distribution.