




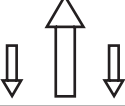

# Constraints and material deformations

Complete this concept review handout and keep it as a record of what you have learned.

## Definition

- A constraint describes the effect of external forces on a material.

## Main types of constraints materials are subjected to

Type of constraint	Description	Symbol
Compression	<u>When a material is subjected to forces that tend to crush it.</u>	
Tension	<u>When a material is subjected to forces that tend to stretch it.</u>	
Torsion	<u>When a material is subjected to forces that tend to twist it.</u>	
Deflection	<u>When a material is subjected to forces that tend to bend it.</u>	
Shearing	<u>When a material is subjected to forces that tend to cut it.</u>	

## Types of material deformation

Type of deformation	Description
Elastic	<u>The constraint leads to a temporary change in the shape or dimensions of the material.</u>
Plastic	<u>The constraint leads to a permanent change in the shape or dimensions of the material.</u>
Fracture	<u>The constraint is so intense that the material breaks.</u>