

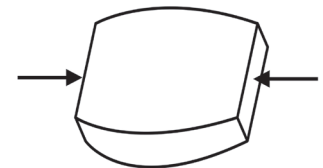
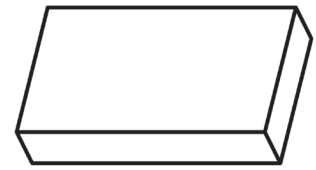
Four Types of Internal Forces

An internal force is a force that acts from within the structure. Let us look at four types of internal forces.

Imagine that we start with a rectangular block of material.

Compression is a pushing force that squeezes a material. This force often makes materials shorter.

Example: Hold a soft sponge flat in the palm of one hand. Push down on the top of the sponge with your other hand. You are creating compression.



compression

Tension is a pulling force that stretches a material. This force often makes materials longer.

Example: Hold one end of an elastic band in each hand. Move your hands farther apart. You are creating tension that stretches the elastic band.



tension

Torsion is a twisting or turning force.

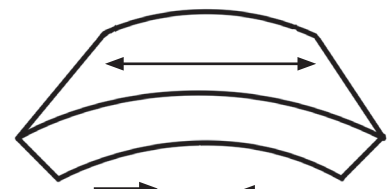
Example: To wring out a wet washcloth, you use the twisting force of torsion. You hold the washcloth in two hands and twist it in opposite directions to force out the water.



torsion

Bending is a force that makes a straight material curved. One side of the material squeezes together (compression). The other side stretches apart (tension).

Example: A soft or damp sponge is easy to bend. Hold it in both hands and bend it in the same way as shown in the diagram. Tension acts on the top side and compression acts on the bottom side.



bending