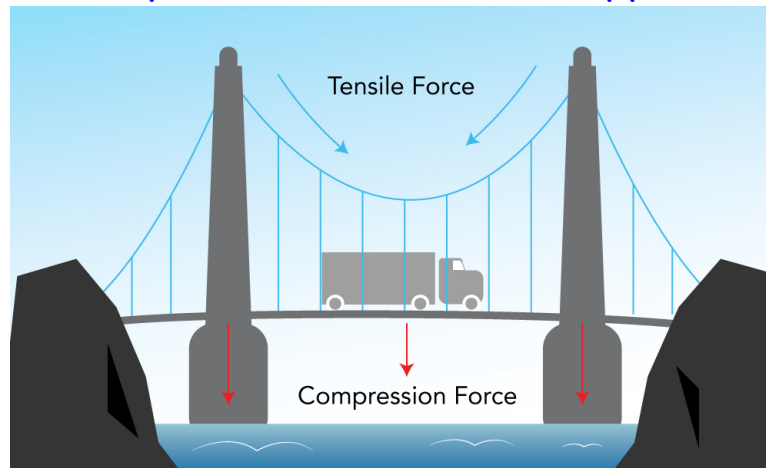


## Elastic Forces



1. Elastic forces are the result of **electromagnetic forces**. Objects will stretch and compress when a force is applied.



2. Hooke's Law allows us to quantify elastic forces.

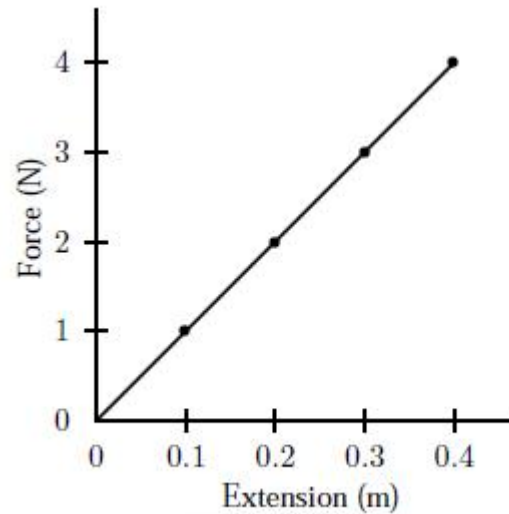
$$F = k\Delta L$$

F is the applied force (N)

K is the spring constant (N/m)

$\Delta L$  is the distance stretched (+) or compressed (-) in (m)

3. Hooke's Law reveals a linear relationship between the applied force and the distance stretched or compressed.



The slope of the graph represents the spring constant ( $k$ ) in N/m

Example:

How much force would it take to stretch a steel bar 1.0 mm? The spring constant for steel is  $2.1 \times 10^7$  N/m.

$$F = k\Delta L$$
$$F = 2.1 \times 10^7 \times .001\text{m} = 2.1 \times 10^4\text{N}$$