

## Read the texts on FORCES IN ENGINEERING:

### **FORCES IN ENGINEERING-1**

#### Scan the text and find:

- 1- The names of four important forces in engineering. \_\_\_\_\_
- 2- A \_\_\_\_\_ exerts more force the more it is stretched.
- 3- An adverb meaning: toward a lower place, point, or level. \_\_\_\_\_
- 4- The name of the force on an object due to gravity. \_\_\_\_\_
- 5- An object is in equilibrium when \_\_\_\_\_ is zero.
- 6- \_\_\_\_\_ is the unit of force
- 7- An adjective meaning: moving, pointing, or leading to a higher place, point, or level. \_\_\_\_\_
- 8- \_\_\_\_\_, which is measured in kilograms, is not a force, it is the quantity of matter in an object.
- 9- The opposite of help, synonym of obstacle: \_\_\_\_\_
- 10- An inclined surface from a vertical or horizontal line. \_\_\_\_\_

#### What is it?

- 1- It allows an object to float. \_\_\_\_\_
- 2- It stretches a spring down. \_\_\_\_\_
- 3- It is a force exerted when an object is stretched. \_\_\_\_\_
- 4- It is a force on an object because of gravity. \_\_\_\_\_

### **FORCES IN ENGINEERING 2**

Complete the gaps and answer the questions as appropriate:

- 1- Engineers choose materials according to their capacity to \_\_\_\_\_ stresses without failure.
- 2- Name examples of structures which engineers design:  
\_\_\_\_\_

- 3- What does **them** refer to?

Engineers design structures, such as buildings, dams, airplanes, automobiles, tunnels, chairs, bicycle frames and even toys to hold weight and withstand forces that are placed on **them** and that could tear **them** apart.

- 4- Why do engineers calculate the resulting internal stresses or forces of a structure?  
\_\_\_\_\_

- 5- What are the types of loads that can act on a structure?  
\_\_\_\_\_

- 6- Name an example of TENSION- \_\_\_\_\_

- 7- Name an example of COMPRESSION- \_\_\_\_\_

- 8- Name an example of SHEAR-  
\_\_\_\_\_

- 9- What is another name for a TURNING FORCE? \_\_\_\_\_

10- What is the MOMENT ARM? \_\_\_\_\_

11- When can a beam or pole "smile"? Why?  
\_\_\_\_\_

12- When a structural member is twisted it is in \_\_\_\_\_ -

**FORCES IN ENGINEERING-COMPLEMENT**

Find an **antonym** for:

WORD	ANTONYM
1- Pushing -	
2- Tension, traction-	
3- Inward -	
4- Uniaxial compression-	
5- Increase-	
6- Solid-	
7- Temporary-	
8- Appear-	
9- The former-	

(FYI) FOR YOUR INFORMATION:

Traction, or tractive force, is **the force used to generate motion between a body and a tangential surface, through the use of dry friction**, though the use of shear force of the surface is also commonly used.

*Tension Force* is the force that is transmitted through a cable, rope, wire or string when it is pulled tight by forces acting from opposite ends.

In physics, tension is described as the pulling force transmitted axially by the means of a string, a cable, chain, or similar object, or by each end of a rod, truss member, or similar three-dimensional object; tension might also be described as the action-reaction pair of forces acting at each end of said elements. Tension could be the opposite of compression.