

**Faculty of Exact Sciences**

**Department of Physics**

**First Material Sciences**

## **Unit 3**

## **General Physics**

### **READING PASSAGE**

### **Forces and motion**

In physics, a force is any influence that, when unopposed, will change the motion of an object. A force can cause an object with mass to change its velocity, which includes to begin moving from a state of rest, to accelerate. Force can also be described intuitively as a push or a pull. A force has both magnitude and direction, making it a vector quantity. It is measured in the SI unit of Newton (N). Force is represented by the symbol **F** (formerly **P**).

The original form of Newton's second law states that the net force acting upon an object is equal to the rate at which its momentum changes with time. If the mass of the object is constant, this law implies that the acceleration of an object is directly proportional to the net force acting on the object, is in the direction of the net force, and is inversely proportional to the mass of the object.

Concepts related to force include: thrust, which increases the velocity of an object; drag, which decreases the velocity of an object; and torque, which produces changes in rotational speed of an object. In an extended body, each part usually applies forces on the adjacent parts; the distribution of such forces through the body is the internal mechanical stress. Such internal mechanical stresses cause no acceleration of that body as the forces balance one another. Pressure, the distribution of many small forces applied over an area of a body, is a simple type of stress that if unbalanced can cause the body to accelerate. Stress usually causes deformation of solid materials, or flow in fluids.

## Grammar

### -Comparison:

<b>Comparative and superlative</b>			
	<b>Without additions</b>	<b>Comparison of two</b>	<b>Compare more than two</b>
<b>one-syllable adjectives</b>	<b>As - as</b>	<b>Add: er</b>	<b>Add: est</b>
	As fast as, as big as, as heavy as .	Faster than, bigger than, heavier than.	The fastest, the biggest, the heaviest.
<b>Adjectives with two or more syllables</b>	<b>As - as</b>	<b>Use: more than</b>	<b>Use: the most</b>
	As modern as, as beautiful as, as important as.	More modern than, more beautiful than, more important than.	The most modern, the most beautiful, the most important.

### -Difference:

<b>Comparative</b>	
<b>Superiority</b>	To increase, to grow, to expand, to lengthen, to widen, to enlarge, to extend, to spread, to raise, to lift, to heighten, to improve, to boost, to enhance.
<b>Inferiority</b>	To decrease, to reduce, to lessen, to shorten, to lower, to worsen, to weaken, to deteriorate.
<b>Prefixes</b>	
<b>Over (more than required)</b>	To overload, to overestimate, to overheat, to overeat.
<b>Under (less than required)</b>	To undercook, to under develop , to underpay, to understaff ...
<b>Out (better or greater than)</b>	To outdo, to outnumber, to outweigh...

**-Similarity/ Dissimilarity:** It is (like/ unlike), similar to, the same as, equal to, in comparison.

**-Compatibility:** To match, to fit, to suit, to correspond.

**-Duality:** Both, either ... or, neither .... nor.

**Superlative meaning:** The chief, leading, foremost, the top, peak, tip.

### **-Irregular forms** - words in order:

Good/ better/ the best ≠ bad/ worse/ the worst

Many/ more/ the most ≠ few/ fewer/ the fewest

Much/ more/ the most ≠ little/ less/ the least.

### **Examples:**

-Fruit is better than sweets.

-Food is less important than water.

-Water is the most important thing in life.

-By taking the medication on time, the patient's condition will gradually improve.

-My country Algeria is the best country in Africa.

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