

WORKSHEET – Mechanical actions



SAGESSE HIGH SCHOOL
MARY MOTHER OF WISDOM
AIN SAADEH – METN – LEBANON

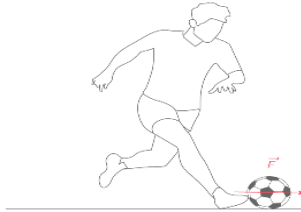
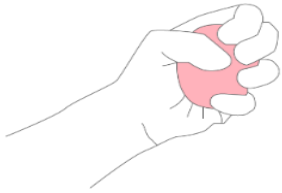
Class: Grade 9

Subject: Physics

Instructor: Elissa Matar

Exercise 1 Effect of a force

Indicate, for each situation, the effect of the force.



Situation 1

Situation 2

Situation 3

Situation	Effect of the force
Situation 1 : A hand exerts a force on a ball.	
Situation2 : A football player exerts force on a motionless ball.	
Situation 3 : A tennis racket exerts a force on a moving ball.	

Exercise 2

Choose the correct answer.

1. The ... is exerted by a rough surface on an object moving along it.
 - a) Normal reaction of the support.
 - b) Friction force.
 - c) Gravitational force.

2. The center of gravity is the point of application of the ...
 - a) Tension of string.
 - b) Normal reaction of the support.
 - c) Electric force.

3. The line of action of the ... is always vertical.
 - a) Tension of string
 - b) Gravitational force
 - c) Normal reaction of the support

4. The ... is perpendicular to the surface.
 - a) Normal reaction of the support
 - b) Friction force
 - c) Gravitational force

5. The ... opposes the motion of the object.
 - a) Tension of string
 - b) Friction force
 - c) Normal reaction of the support

Exercise 3

Complete the table.

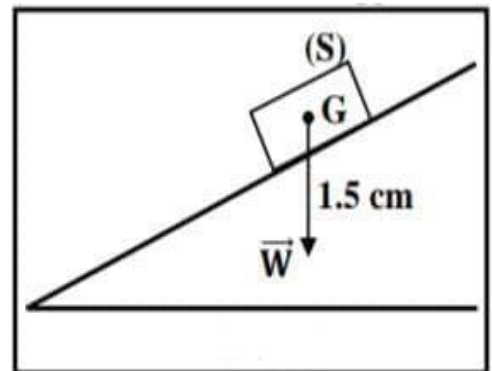
Situations	The body that exerts the force.	The body on which the force is exerted.	Type of the force. (Contact or acting from a distance)
A charged rod attracts an aluminum ball			
A girl pulls down the end of a spring.			
An apple falls on the ground.			

Exercise 4

The adjacent figure represents a solid (S) that slides down on a **smooth** inclined plane. (S) is submitted to its weight with magnitude $W = 3 \text{ N}$, and the normal reaction of the support.

Take $g = 10 \text{ N/Kg}$.

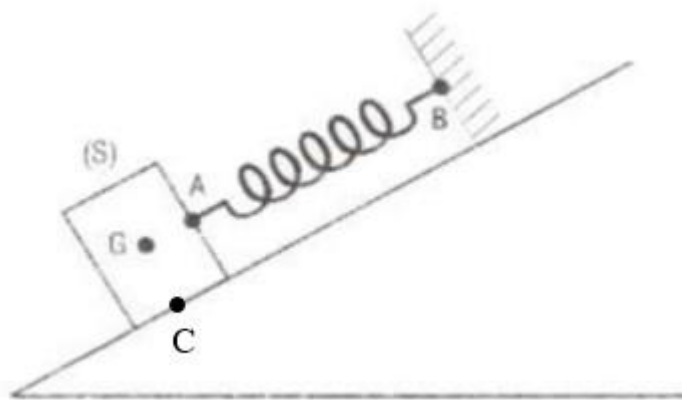
Indicate for each of the following statements if it is true or false and correct the false statements.



1. The weight is represented with the scale $1 \text{ cm} \leftrightarrow 1 \text{ N}$.
2. The mass of the solid (S) is 30 Kg.
3. The normal reaction of the support is vertical upward in this case.
4. The normal reaction is a force acting from a distance.

Exercise 5

In the figure below, the solid (S), of center of gravity G and of mass $m = 0.8 \text{ Kg}$ is connected to the free extremity A of a spring and placed on a smooth surface.

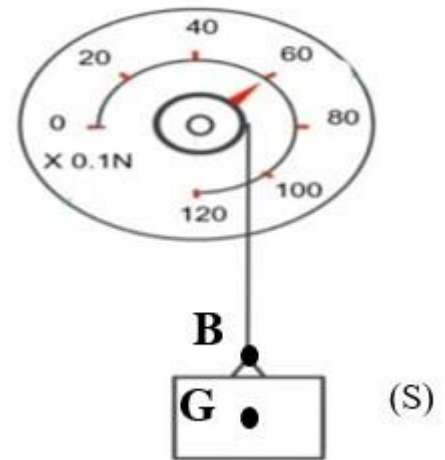


1. Name the forces acting on (S). Tell, for each of these forces, whether it is a contact force or a force acting from a distance.
2. Specify, for each of the forces, the point of application, the line of action and the direction.
3. Represent these forces without using a scale.
4. Determine the magnitude of the force exerted by Earth on the solid.
5. Suppose that the surface is rough and the solid (S) slides down on this surface.
 - a) Name the new force acting on the solid (S).
 - b) Specify the point of application, the line of action and the direction of this force.
 - c) Represent this force without using a scale.

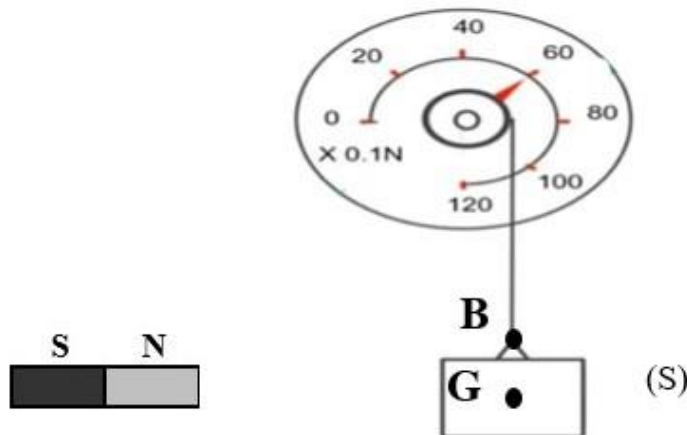
Exercise 6

We suspend an iron body (S) from a spring balance by means of a string. (S) is then subjected to two forces.

1. Give the name and the type of each of the two forces.
2. Give the magnitude of the force exerted by Earth on (S) and deduce the mass of (S).
3. Knowing that the two forces have the same magnitude, state the characteristics of each of the two forces.
4. Represents the two forces using the same scale:
 $1\text{cm} \leftrightarrow 3\text{ N}$.



We approach a magnet from the solid (S). The magnet attracts the solid with a force \vec{F} .



1. Give the name and the type of this force \vec{F} .
2. Specify the line of action and the direction of \vec{F} .
3. Represent the force \vec{F} without using a scale.