



## Solid and fluid mechanics set, straight ramp, electromagnetic launcher, analog and digital multimeter

EQ005JJM

### Function

Intended for the study of: Kinematics. Measuring range on a horizontal projectile launch, coil. Determination of the final velocity of a projectile in a horizontal, coil launch. Dynamics. The fixed pulley and its mechanical advantage. The movable pulley and its mechanical advantage. Exponential hoisting and its mechanical advantage. The parallel block and its mechanical advantage. The characteristic stretching curve of a helical spring and a rubber belt, elastic hysteresis. Hookes law in a helical spring, Restoring force of a spring. Association of helical springs in series, resulting elastic constant. Association of helical springs in parallel, resulting elastic constant. Static. General conditions for static equilibrium of a supported rigid spherical body. Energy Conservation. Work and mechanical energy in a load and helical spring system, energy exchanges. The amount of horizontal movement of a sphere in a horizontal release, reel. Hydrostatic. The hydrostatic buoyant force, a quantity with direction, direction and module. Greatness. Scalar and vector quantities. Measuring forces with the dynamometer. The mass of a body, a scalar quantity, does not change. Weight is a force, a vector quantity, which has module, direction and meaning. The weight of a body can change, it depends on where the body is. The relationship between the apparent decrease in the weight of a body immersed in a liquid and the buoyancy. Determining the value, direction and direction of the hydrostatic buoyant force, acting on the submerged cylinder. Archimedes principle, buoyancy and its relationship with the volume and density of the displaced liquid. The principle of the impenetrability of matter. Calculating and

determining the characteristics of the buoyant hydrostatic force. The relationship between buoyancy and the weight of the volume of liquid displaced. The relationship between specific gravity and absolute density. The relationship between buoyancy and volume, the density of the displaced liquid and the acceleration due to gravity. The relationship between buoyancy and the volume and specific weight of the liquid displaced. Wave. The simple pendulum. The MHS uses an oscillating mass and helical spring system. The dynamic determination of the elastic constant in a mass and spring oscillator, etc.

## **Knowledge areas**

Physics

## **Key Experiments**

The mechanical advantage of the compound pulley

The calibration of a rubber belt, the calibration of a coil spring, the elastic hysteresis

Hooke's law, the elastic constant and the restoring force in a coil spring

The elastic constant in a combination of coil springs in series

The elastic constant in a combination of coil springs in parallel

The experimental proof of buoyancy in a liquid

Archimedes' principle

The MHS in an oscillating mass and coil spring system

The dynamic determination of elastic constant in a mass and spring oscillator

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