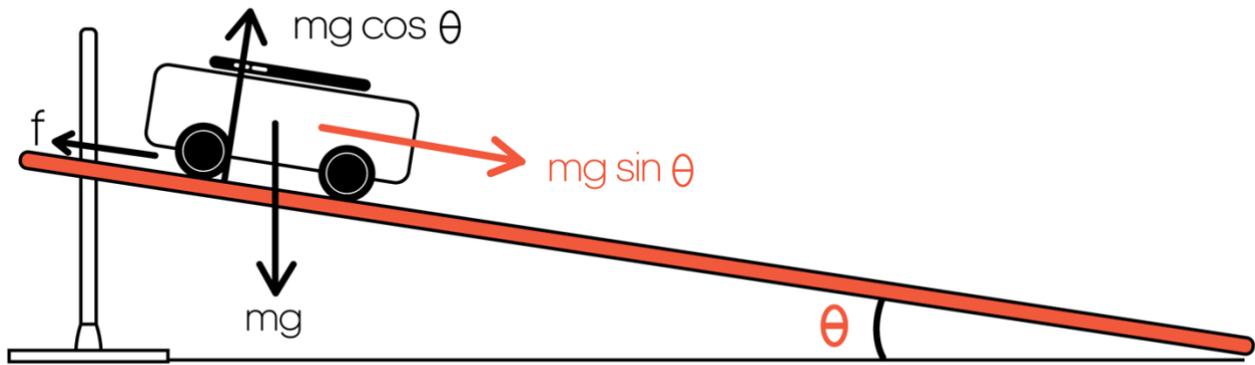


Gravitational Acceleration along Inclined Plane



Theory

	Definition	Unit
Mass m	The "amount" of matter	Kilogram (kg)
Acceleration a	Rate of velocity change of object over time	Meter per second square (ms^{-2})
Velocity v	Rate of displacement change of object over time	Meter per second (ms^{-1})
Displacement d	End-to-end distance of motion of object	Meter (m)

The acceleration due to gravity on Earth is $g = 9.81ms^{-2}$. According to the vector characteristics of acceleration and force, the transversal and lateral components of acceleration and force can be broken down by simple geometry, shown as the diagram above.

Activities

Measure the mass m of phone and cart as well as the inclination of plane θ . Launch "Accelerometer" in "AP-Sensor" app. Fix the phone on the cart, press "Start" and slide the cart from the top of the inclined plane. Reveal the relation between the inclination θ and the acceleration measured by the app. Repeat the experiment with different inclination of plane θ .

Experimental Result

Inclined Plane Experiment

Mass of phone and cart $m =$ _____ kg

Inclination of Plane θ ($^{\circ}$)	Theoretical Acceleration $g \sin \theta$	Experimental Acceleration

Discussion

1. The accelerometer can measure acceleration in 3 axes. Can you find the x-, y- and z-axis of the phone and their positive directions when it is randomly moved?
2. What is the discrepancy between the experimental results of the inclined plane experiment and its theoretical expectation?