

Acceleration

- Acceleration:

$$a = \frac{\text{change in velocity}}{\text{change in time}} = \frac{\Delta v}{\Delta t}$$

Standard units of acceleration : m/s^2

- If there were no air resistance, all objects in Earth gravity would fall with the same acceleration,

$$g = 9.81 \text{ m/s}^2$$

(directed downward)

Galileo Galilei's experiment in Pisa
(possibly, a legend)



Homework

Problem 1.

The largest passenger airplane, Airbus A380, has acceleration $a=2 \text{ m/s}^2$ during its take-off. How much time it needs to reach the take off speed, $v= 280 \text{ km/hr}$?

Problem 2.

A ball is thrown vertically upwards with initial speed $v_0=30\text{m/s}$. Gravitational acceleration can be approximated as $g = 10 \text{ m/s}^2$, and is directed downward. What will be the velocity of the ball after time $t=2\text{s}$?