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,**

$g=9.81\ m/s^2$

(directed downward)

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

Homework 6

Problem 1.

A car starts at rest at $t = 0\ s$. The car accelerates at $a = 6\ {}^{m}/_{s^2}$ until it reaches a velocity of $v = 42\ {}^{m}/_{s}$. **(a)** How long did it take for the car to reach this velocity? The car kept this speed for $5s$, until the driver saw a police car in the horizon. The driver slammed the brakes bringing the speed of the car down to $v = 27\ {}^{m}/_{s}$ in just $3s$. **(b)** What was the acceleration of the car during the braking process?

SHOW YOUR WORK

See problem 2 on the next page.

Problem 2.

In the following graph of v vs. t, draw the behavior of the velocity of the car in the previous problem.