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 7

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 breaking process?

SHOW YOUR WORK

Problem 2.

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