

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 7

Problem 1.

A car starts at rest at $t = 0$ s. The car accelerates at $a = 6 \text{ m/s}^2$ until it reaches a velocity of $v = 42 \text{ m/s}$. **(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 $v = 27 \text{ m/s}$ 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.

