## Acceleration

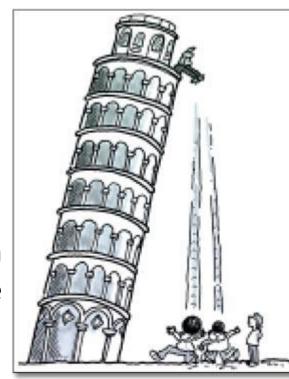
Acceleration:

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

Standard units of acceleration: m/s<sup>2</sup>

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

g=9.81 m/s<sup>2</sup> (directed downward)



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

## Homework

**Problem 1.** A ball is thrown vertically upwards with initial speed  $v_0$ =30m/s. Gravitational acceleration is g =10 m/s², and is directed downward. What will be the velocity of the ball after time t=4s?

## Problem 2.

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 km/hr?