2.3. Road Safety

1. Fill the gaps with the following words: ACCELERATION - BODY – DECREASES – MAGNITUDE - RECTILINEAR - TRAJECTORY - UNIFORMLY – VELOCITY -

   A ……….. moves with constant acceleration motion or ……….. accelerated ……….. motion (u.a.r.m) when its ………..is a straight line and its ……….. is constant and different from 0. This implies that the ……….. increases or ……….. its ……….. uniformly.

2. To answer the following questions, you will need the equations of uniformly accelerated rectilinear motion (u.a.r.m)

$$a = \frac{v - v_o}{t - t_o}$$
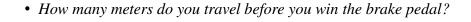$$v = v_o + a \cdot (t - t_o)$$
$$x = x_o + v_o \cdot (t - t_o) + \frac{1}{2} \cdot a \cdot (t - t_o)^2$$

   and uniformly rectilinear motion (u.r.m).

$$v = \frac{x - x_o}{t - t_o}$$
$$x = x_o + v \cdot (t - t_o)$$

   a) You're driving on a highway in Catalonia at the maximum allowed speed. There is a lot of traffic. Suddenly, 75 m in front of you, an accident occurs.

   - *What is the maximum speed allowed in Catalonia?*

   - *According to previous practice, what is your reaction time?*

   - *How many meters do you travel before you win the brake pedal?*

   b) Assuming your car is slowing down with a constant acceleration of 7,8 m/s^2,

   - *how many meters will the car travel before stopping? Will it be enough to avoid collision?*

   - *What should be the minimum distance between cars on a motorway to avoid a collision?*

c) There are many circumstances which worsen the conditions for breaking. For example: poor state of tyres, poor state of the road (water or ice), car load distribution, lack of attention, cansanction, sleepiness, alcohol abuse, etc.

 • *What should be the minimum distance between cars on a motorway to avoid a collision?*

3. Choose a foreign country of European Union and, using web site of Euopean Union Road Safety https://ec.europa.eu/transport/road_safety/going_abroad/france/index_en.htm, analyse their data (al least: speed limit, alcohol limit, influence of drugs, safety helmet and mobil telephone).

4. Introduce your data on the padlet: https://padlet.cohm/nursanz/kcg5zj2eiqx5suns

5. Invent a contextualized movement problem in the foreign country analyzed and taking into account the reaction time. This problem must be shared in the padlet (with solution).