You are driving 57 km/h towards an intersection when the light turns yellow. At that moment, you are 34. m away from the stop bar. Given the typical human reaction time of 0.3 seconds, brakes that provide ab acceleration of 5.37m/s^2, and only 2.9 seconds before the light turns red answer the following question: To avoid having your car enter the intersection after the light turns red should you attempt to stop or should you continue through the intersection without braking? Which of these strategies will work for you?

Solution:

Let:

$v = 57\ km/h$

$a = 5.37\ m/s^2$

$S = 34\ m$

$t = 2.9\ s$

$tr = 0.3\ s$

At first to translate velocity from km/h to m/s:

$v = 57\frac{km}{h} = 57 * \frac{1000}{3600} = 15.83\ m/s$

Let's find distance which the car will pass for 2.9 s:

$L = v * t = 15.83 * 2.9 = 45.9\ m$

If you provide braking the brake way will be:

$L = v * tr + \frac{v^2}{2a} = 15.83 * 0.3 + \frac{15.83^2}{2*5.37} = 28.08\ m$

You can through the intersection without braking, because you have time to pass stop bar before the light turns red, however you can not to pass intersection before the light turns red. It will be better to provide braking, the distance allows the stop.