You are driving down a straight road at 54km/hr. When you are 30m from a side street a car abruptly pulls out in front of you 1s to react tp the car and if your maximum acceleration is 5 m/s2 can you stop in time to avoid an accident?

Solution:

Let:

$v = 54\ km/h = 15\ m/s$

$S = 30\ m$

$a = 5\ m/s^2$

$t_0 = 1s$

From: $S = \frac{1}{2}at^2, v = at$

The brake distance will be:

$$\boldsymbol{S = \frac{v^2}{2a} + vt_0}$$

$$\boldsymbol{S = \frac{15^2}{2*5} + 15 * 1 = 37,5\ m}$$

As the break distance is more than 30 m, you can not avoid an accident.