Answer on Question 48394, Physics, Mechanics | Kinematics | Dynamics

Question:

How can you measure the acceleration of an automobile using instruments located only within the automobile?

Answer:

In order to measure the acceleration of an automobile we can use the next method. We use a watch and a car speedometer. When an automobile begins to pick up speed, we write down the speed, for example, every five seconds. Suppose we have obtain the following results:

- time 0 sec, speed 0 kmph,
- time 5 sec, speed 15 kmph,
- time 10 sec, speed 30 kmph,
- time 15 sec, speed 45 kmph.

The acceleration in this case would be 15 kmph per five seconds. Therefore, converting speed to a SI units we obtain: $a = \frac{15 \cdot \frac{1000m}{3600s}}{5s} = 0.83 \frac{m}{s^2}$.