

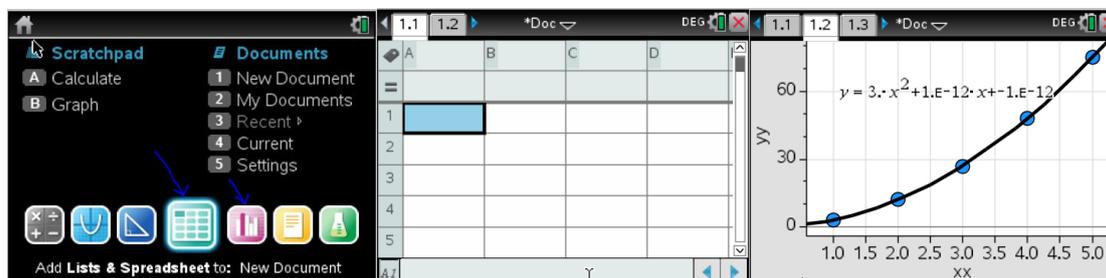
Car Travel Safety – your life is in your hands!

The situation of children traveling in a car without a seat belt or on an adult's lap is still very common today. In fact, there seems to be no clear perception of the enormous risk involved, since even at moderate traffic speeds, extreme force will be required to immobilize this passenger in the event of a collision, preventing it from being projected in the interior of the car or even out of it, leading to injuries that are often fatal.

Using TI-Nspire technology, define a theoretical model that is capable of predicting the intensity of a passenger's holding force for different vehicle speeds before the crash.

Tips:

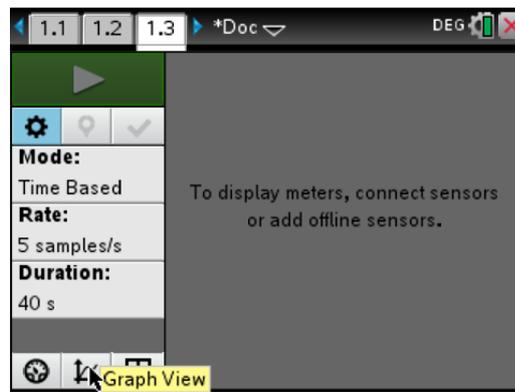
- *In real life it is not always possible to know in advance all the variables of a given situation. Every day engineers from all over the world have to estimate unknown quantities in order to arrive at solutions that, although not exact, are good approximations to situations that may actually occur. This time, it is you who have to work to estimate all the physical magnitudes you do not know at the start (frictional forces, collision velocities, and so on...);*
- *You can use Lists & Spreadsheet and Data & Statistics functionalities of TI-Nspire CX to design and test your model;*



Idealize an experimental procedure capable of, at laboratory scale, verify the validity of the model that you defined. Given the possible differences, indicate some possibilities for the improvement of the model and /or minimization of deviations.

Tips:

- You can use TI-Technology to study car collisions in lab, using sensors connected to Lab-Cradle to measure and analyze car collisions in different situations. You can then extrapolate the situations studied in lab to the ones that occur in real streets every day.



- Be sure to discuss with your colleagues the limitations of this upper scale of your experimental data.