Staying alive ! ha, ha, ha, ha haaaa... aaaahh...

Is there enough air in this car ?...

1 Final task is a documentary video.

2 The problem.

ZE car is designed by Renault, French car manufacturer to be used by 4 persons for the maximum.

Assume that all doors are hermitically closed.

Calculate the weight of dioxygen available for the 4 persons in this car.

How long will it take these 4 persons to breath it completely before they all suffocate ?

What should be planned in advance about the future EEVEE vehicle for one person inside ?

3 The data.

1 litre of air weighs 1.3 grams.

1 litre of air contains 0.24 g of dioxygen.

Human lungs have a volume of 5 litres and 78 % of it is used at each ventilation.

One human being breathes 8 ventilations per minute.

4 Material needed.

- a car, in real,
- an assignment sheet with answer sheet,
- measure tapes,
- a calculator,
- a camera,
- a question sheet to plan steps of the scenario of the video.

Odile JENVRIN, Lycée Lemonnier Caen, FR

Is there enough air in this car ?...
WORKSHEET

5 The measurements on the car.

6 The calculations using these measurements.

7 The diagram with measurements.

Odile JENVRIN, Lycée Lemonnier Caen, FR

8 The calculations using the data.

9 The elements for the documentary video.

- a title,
- state the problem : show the car and give the question,
- your strategy to answer : what did you measure, what did you calculate ?
- what is the given data and what do you calculate with it ?
- what is your final answer to the problem ?
- comment on this answer : is it a surprising result ? what should you plan for the EEVEE car ?