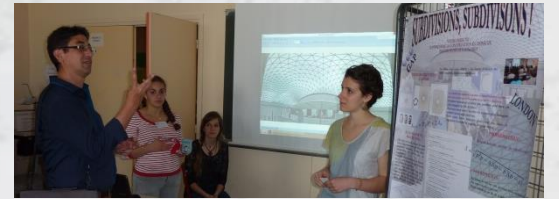
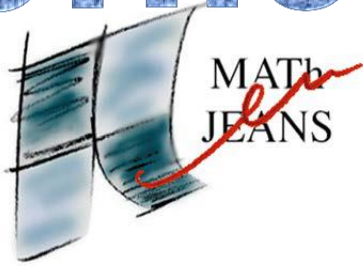


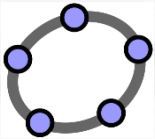
MATH.en.JEANS ?



WHAT IS A MATH.en.JEANS WORKSHOP ?

It is a workshop to discover what mathematical research is and that we can do maths differently without lessons or exercises.

It values creativity, a spirit of initiative and team work.



WITH WHOM ?

- With a university researcher who submits the topics and monitors the progress of the research.
- With a maths teacher : he leaves great freedom to students without providing them with the answers
- With a paired school with another MATH.en.JEANS workshop working on the same topic.



$$A_{n+1} = 3T_0 \cdot 4^n + 2 \cdot A_n$$

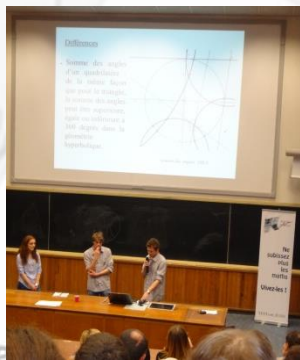
HOW ?

- Students, in small groups choose their topic.
- They progress at their own pace, coached by their Maths teacher.
- The researcher may assist them if they face troubles
- The workshop is weekly (one hour per week)
- Students commit to attending the sessions on a regular basis.



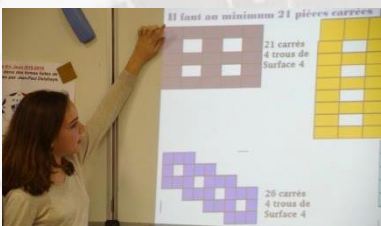
WHAT IS THE AIM ?

- Students participate in an annual regional MATH.en.JEANS congress and present the results of their work while meeting other workshop teams
- Students can publish a scientific article on the MATH.en.JEANS' Internet page.
- Some workshops may take part in competitions or meetings .



A FEW EXAMPLES

- How to simulate avalanches ?
- How to modelize a flu epidemic ?
- Is it possible to predict the shape of a sand dune ?
- How to optimize the coverage of a territory with antennas ?
- Can we modelize the way crystals grow ?
- How do crowds behave ?
- How to classify and test knots ?
- The "Super Farmer" game



WILL YOU CATCH THE FLU NEXT WINTER?

OUR AIM : MODELING THE SPREAD OF THE FLU IN ORDER TO BETTER PREVENT THE NEXT EPIDEMIC

OUR FIRST MODEL : After having studied the most relevant parameters that influence the spread of the flu, we have tried to work out the evolution of the number of sick, healthy and immune people in our region.

We took into account the contamination factor F_{c0} (number of people being contaminated by a sick people), the weekly vaccination rate T_{v0} (as well as the schedule of the vaccination campaign) and the duration of the illness d_0 (time during which a sick people is contagious). The equations of our model are then:

$$S_{n+1} = S_n - \frac{F_{c0}}{d_0} \times M_n - T_{v0} \times S_n$$

$$I_{n+1} = I_n + T_{v0} \times S_n + \frac{M_n}{d_0}$$

Immune M_n , Sick I_n , Healthy S_n