0. Everyone should be holding a copy of the handout.

1. a. Thanks.
   b. Rather than trying to explain, we'll do.

2. Abstract 1-2

3. Explain problem using webcam.

4. Show NCGE handout and explain my lecturing ideology.

   ... "at end: We had a theoretical problem
   We figured how to solve it and even wrote a program
   We applied it to the case of the Rubik's cube
   We got some numbers,
   yet I have to leave you with a the assignment"

5. I could be a mathematician.... or an environmentalist.

6. State Goal, show speed limits picture.

7. A similar problem occurs elsewhere ...
   a. Fermat's principle & optics.
   b. The Brachistochrone.
   c. Airline routing.
   d. The least action principle.

8. Ball & rubber band. / The Pseudosphere.   *

9. The happy Segway principle.

10. A word on the Lobachevsky plane & non-Euclidean geometry.

11. Remind me at end to play the Lobachevsky song.--

12. The Lobachevsky view of the world. Things are richer near the boundary. In fact, things are richer, period.

13. The details (centre, parametrization) and the program

14. I used almost every key on a scientific calculator!

15. Recap/Summary:

   "We had a goal to attain, it we learned about the happy Segway principle

We needed to use every key on a calculator, ~
      that's the hardest math I've ever really used,
   and as a side benefit, we learned about the Lobachevsky
                                                    plane.

16. and that's all.

17. If playing Tom Lehrer:

    I do not endorse the main theme, and neither would have

         Lobachevsky ~ ...