Information for Teachers

Emmy Noether Circles can be used with individual students or in small groups in the following ways:

- A Circle could be the culminating activity of a problem-solving unit.
- Some Circle problems could be used to discuss different problem-solving techniques.
- Individual Circle problems, chosen to match your current curriculum strand, could provide an introduction or a warm up to a new unit.
- Each problem could also be used as a "Problem of the Week".
- A Circle could be used as a Math Club activity, or combined with other "group-building" efforts such as cooperative games.

Group work is especially encouraged (although not essential except in the final problem of each Circle). Exploration and discussion among students of the strategies and solution steps for each problem may prove to be just as important as actually finding an answer to a problem. Teachers might start with pairs or threesomes of students with varying mathematical abilities; groups of four are needed for a few of the final problems.

Encourage the students to **read the problems carefully**! (In trials, failing to do so was the main stumbling block.)

Hints are given with each Circle; you may provide them at any time, but preferably after the students have attempted the problems. Where there is more than one hint for a specific problem, use them one at a time, as needed.

Solutions and notes are provided so you can discuss the problems with the students, preferably as a class so they can compare and contrast different approaches, thus deepening their understanding.

A template for a Certificate of Participation is provided for participating students. There is also a Certificate of Merit, should you wish to recognize exceptional problem-solving skills. (These certificates should be given out at the end of the school year.)

You may also wish to check out other online resources at www.cemc.uwaterloo.ca/ such as mathfrog.ca (Fun Resources and Online Games), Problem of the Week, and the more extensive series Invitations to Mathematics.

Suggestions and comments can be sent to Emmy Noether Circles care of Professor Bev Marshman at bjmarshm@uwaterloo.ca. Comments are welcome.

Enjoy!