# From a CLIME Microworlds* Sampler: The Factor Game

*by Ihor Charischak*

*I recently converted my four favorite CLIME Microworlds to the LCSI Microworlds format. These are Darts (originally written by Ricky Carter), Spiros, Billiards, and the Factor Game. In the last issue of Clime Connections (#6) I described Spiros. This time I talk about the Factor Game.*

*Note: I am looking for someone who knows Terrapin's Logo for the Macintosh and is willing to help us convert these programs to the Terrapin format. If you are interested, please let me know.*

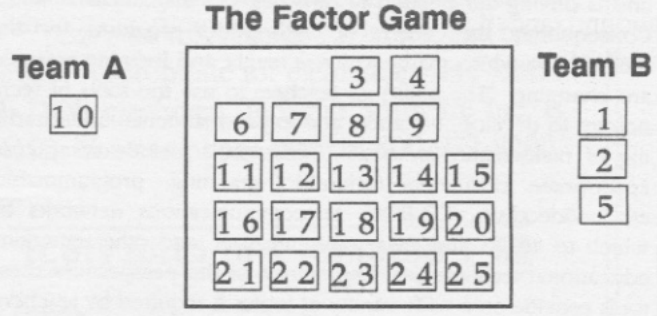
The Factor Game is a modification of *Dr. Factor* which originally appeared as one of a four part program called *Playing to Learn* published by HRM. This Logo version of the program was written in LogoWriter by Ricky Carter and became part of the CLIME Microworlds collection.

## How the Game is played

Two players compete for the highest score by picking numbers (1 to 25) from the screen which gets added to their totals. There is a catch though. After a player picks a number, the opponent gets the factors of that number. For example, if player A chooses 25, then B gets 1 and 5 (since they are factors of 25). At this point A has 25 points and B has 6. The chosen numbers are then removed from the screen. And now it is B's turn to go.

## What is special about this game?

In my pre-computer days I would play the factor game as a large group activity. I would split the class into two groups and assign a captain to each group. On the blackboard are cards numbered from 1 to 25. After explaining the rules, I tell my class that my role would be strictly mechanical. They had to tell me what to do. For example, if the first team chose 25. I removed 25 and taped it in the team space for retrieved cards. Team B then had to tell me what cards they should get. In this case it was 1 and 5 which I then removed and placed in Team B's hopper. If the students make mistakes, I allow them. But usually the students figure them out and don't allow them to happen. If some errors are not picked up, I make sure to go over them after the game is over.




## Variations of the Game

Even though the group game is still my favorite way to play the game, the computer does offer some advantages. It allows for students to play against each other in a lab situation. You can also easily change the range of numbers. Watch out for time though. A game of 40 can last a full period.

I discovered an interesting variation because of the range feature. I asked the players to play a game of 10 several times with player A always going first. Then I raise the question. Assuming that both players are using an optimal strategy, does player A always win? Try it for other ranges? Is there a pattern?

This game fits in nicely with a unit on number theory. As a followup to the game the teacher can lead a discussion about prime, composite, deficient, abundant, and perfect numbers. 18 is an *abundant* number because the sum of its factors (not including 18) is greater than 18. (1+2+3+6+9=21). A variation of the factor game is used in the *Middle Grades Mathematics Project (MGMP)* published by Addison Wesley. ❑

---

**This should not to be confused with LCSI's new Logo-like environment also called Microworlds. These programs (which are in the public domain) were created by the Council for Logo and Technology in Mathematics Education (CLIME), 10 Bogert Avenue, White Plains, New York 10606 (914) 946-5143. Copyright @ 1989-1993*